

Eid-Sabbagh, Karim-Philipp (2015) A political economy of water in Lebanon : water resource management, infrastructure production, and the International Development Complex. PhD Thesis. SOAS, University of London.

<http://eprints.soas.ac.uk/id/eprint/20365>

Copyright © and Moral Rights for this PhD Thesis are retained by the author and/or other copyright owners.

A copy can be downloaded for personal non-commercial research or study, without prior permission or charge.

This PhD Thesis cannot be reproduced or quoted extensively from without first obtaining permission in writing from the copyright holder/s.

The content must not be changed in any way or sold commercially in any format or medium without the formal permission of the copyright holders.

When referring to this PhD Thesis, full bibliographic details including the author, title, awarding institution and date of the PhD Thesis must be given e.g. AUTHOR (year of submission) "Full PhD Thesis title", name of the School or Department, PhD Thesis, pagination.

A POLITICAL ECONOMY OF WATER IN  
LEBANON: WATER RESOURCE MANAGEMENT,  
INFRASTRUCTURE PRODUCTION, AND THE  
INTERNATIONAL DEVELOPMENT COMPLEX

Karim-Philipp Eid-Sabbagh

Thesis submitted for the degree of PhD

2014

Department of Development Studies

SOAS, University of London

## Declaration for SOAS PhD thesis

I have read and understood regulation 17.9 of the Regulations for students of the SOAS, University of London concerning plagiarism. I undertake that all the material presented for examination is my own work and has not been written for me, in whole or in part, by any other person. I also undertake that any quotation or paraphrase from the published or unpublished work of another person has been duly acknowledged in the work which I present for examination.

Signed:

A handwritten signature in blue ink, appearing to read 'K. Sid-Sabbag', written over a horizontal line.

Date: 29.04.2014

# Abstract

This thesis argues that the interaction of the International Development Complex – the network of international development actors – and the Lebanese water administration generally follows the patterns of reproduction of existing Lebanese power structures and relations. This interaction is analysed through its effects on the hydrosocial cycle. The socially unjust and ecologically unsustainable waterscape which took form after the civil war (and as a result of it) is reshaped in this interaction and reproduces the unequal access to water.

The interaction is shaped by the at times opposing logics of the actors. The IDC's involvement is guided by a neoliberal development ideology. The Lebanese elite acts following a logic of power reproduction centred on the control of financial resources, control over administrative bodies, and the division of territory. When these logics are at odds the elite's logic generally subverts water sector development projects and reform attempts to incorporate its own needs. The IDC's continuous efforts to shape the water resource management process disregard the structural roots of their failure and it is unwilling and incapable to address these. As a result promoted solutions are inherently incapable of delivering promised progress. Thus the contribution of the IDC to power reproductive dynamics becomes the most significant outcome of this interaction. This happens along four lines at varying scales: 1) the ideology of the IDC reinforces the actually existing neoliberalism and forecloses alternative forms of water resource management; 2) IDC funding for infrastructure supports the reproduction of the existing accumulation regime and influences developmental priorities according to its own priorities; 3) the administration is increasingly shaped according to neoliberal templates that cannot but maintain its structural shortcomings because the elite's control over it is not and cannot be fundamentally challenged; 4) the Lebanese water sector becomes increasingly dependent on the IDC's involvement.

# Contents

<b>Abstract</b>	<b>3</b>
<b>Acknowledgements</b>	<b>14</b>
<b>Introduction</b>	<b>16</b>
<b>1 Literature review</b>	<b>24</b>
1.1 Political Ecology . . . . .	24
1.2 Historical Materialism and Actor Network Theory . . . . .	25
1.2.1 Historical Materialism, the Production of Nature and Infrastructure . . . . .	26
1.2.2 Actor-Networks and the New Materialism . . . . .	28
1.3 The Hydrosocial Cycle . . . . .	30
1.4 The International Development Complex? . . . . .	32
1.5 Aspects of Water Resource Management . . . . .	34
1.5.1 Scalar Politics, Scale and Problemsheds . . . . .	35
1.5.2 Water Sector Reforms . . . . .	36
1.5.2.1 Integrated Water Management . . . . .	36
1.5.2.2 Institutional Reform . . . . .	38
1.6 A Framework Combining Theoretical Elements: The Hydrosocial Cycle, Scale, the IDC, and Neoliberalisation . . . . .	39
<b>2 Lebanese Water Resources and Administration</b>	<b>41</b>
2.1 Hydrology, Water Balances, Climate Change, and Scarcity . . . . .	41
2.1.1 Water Masses and Measurements . . . . .	43
2.1.2 Climate Change . . . . .	46
2.1.3 Demand and Supply . . . . .	47
2.2 The Lebanese Water Sector Administration . . . . .	51
2.2.1 The Problems of the Water Sector: a View from the Mainstream . . . . .	52
2.2.2 The Lebanese Water Sector Actors . . . . .	53
2.2.3 The Water Resource Management Administration . . . . .	56
2.2.3.1 The Legislative Process . . . . .	56
2.2.3.2 Infrastructure Planning, Production and Operation . . . . .	58
2.2.3.3 Infrastructure Planning . . . . .	59
2.2.3.4 The Reconstruction Agencies: Only Infrastructure Production . . . . .	59

2.2.3.5	The Water Sector Administration: Infrastructure Production, Operation and Maintenance . . . . .	62
2.3	Where are the Politics? . . . . .	64
2.3.1	The Post War Elites – Class and Patron in Lebanon . . . . .	64
2.3.2	Structural Elements of a Political Settlement . . . . .	68
2.3.2.1	Taef and after . . . . .	68
2.3.2.2	Consensus and Gridlock . . . . .	70
2.3.2.3	Resolution by Division of State Resources . . . . .	73
2.3.2.4	Resolution by Avoidance . . . . .	76
2.3.2.5	Patronage Networks and the State . . . . .	78
<b>3</b>	<b>The International Development Complex</b>	<b>81</b>
3.1	Lebanese Neoliberalism . . . . .	83
3.1.1	A Vision for Reconstruction . . . . .	83
3.1.2	Hariri’s Reconstruction . . . . .	85
3.1.3	Financing the Reconstruction . . . . .	86
3.1.4	The Origins of Lebanese Debt . . . . .	87
3.2	Descent into Dependency . . . . .	89
3.2.1	Donor Dependency . . . . .	90
3.2.2	The Rise of the IDC and Economic Policy . . . . .	92
3.3	The IDC in the Lebanese Water Sector . . . . .	94
3.3.1	The Core of the IDC . . . . .	100
3.3.1.1	IDC Interest and Project Funding . . . . .	102
3.3.1.2	Project Implementation . . . . .	113
3.3.2	Observation on the Networked Nature of the Expanded IDC: Networking, Knowledge Production and Hegemony . . . . .	123
3.3.2.1	The Water Sector Coordination Meeting . . . . .	123
3.3.2.2	The Lobbying and Discourse Reinforcing Network: the Expanded IDC in the Water Sector . . . . .	124
3.3.2.3	The IDC as Site for the Reproduction of a Transnational Policy Expertise . . . . .	127
<b>4</b>	<b>Water Sector Reform</b>	<b>129</b>
4.1	Water Sector Transformation after the Civil War . . . . .	130
4.1.1	Post-War Reconstruction of the Water Sector . . . . .	130
4.1.1.1	Assessments without Data . . . . .	131
4.1.1.2	The State of Water Infrastructure after the Civil War . . . . .	132
4.1.1.3	The State of the Water Sector Administration after the Civil War . . . . .	133
4.2	The Water Sector Reform . . . . .	136
4.2.1	The Vision Driving the Reform . . . . .	136
4.2.2	Water Sector Administrative Reform . . . . .	138
4.2.2.1	The Beginnings of the Reform . . . . .	138
4.2.2.2	Administrative Reform Imposed . . . . .	138
4.2.2.3	A Chronology of the Reform . . . . .	140
4.2.3	Water Sector Legal Reform: a new Water Law? . . . . .	142

4.2.4	The Reform between the IDC and the Lebanese State : a Juxtaposition of an early Draft and Law 221 . . . . .	143
4.2.4.1	Global Best Practices and Good Governance versus the Concentration of Decision-making . . . . .	143
4.2.4.2	The Waste Water Sector and Local Politics . . . . .	144
4.2.4.3	Delaying Decisions as Strategy . . . . .	145
4.2.4.4	The Private Sector Expelled . . . . .	145
4.2.4.5	Transboundary Water Security and the Changes to the Law . . . . .	146
4.2.5	Legal Reform Attempts . . . . .	148
4.2.6	Reforming Utilities: Technical Assistance and Private Sector Management . . . . .	153
4.3	The State of the Water Sector after 20 Years of Reforms . . . . .	155
4.4	Geographical Reconfiguration . . . . .	157
4.4.1	Topography and History: Boundary defining elements . . . . .	158
4.4.2	New Administrative Boundaries . . . . .	160
4.4.2.1	The Beirut Mount Lebanon Water Establishment . . . . .	161
4.4.2.2	The South Lebanon Water Establishment . . . . .	163
4.4.2.3	The Bekaa Water Establishment . . . . .	163
4.4.2.4	The North Lebanon Water Establishment . . . . .	164
<b>5</b>	<b>A Political Ecological Analysis</b>	<b>165</b>
5.1	Uneven Development . . . . .	165
5.1.1	The Lebanese Economy . . . . .	166
5.2	Infrastructure and Development Planning . . . . .	168
5.2.1	Infrastructure Development . . . . .	173
5.2.2	Efficiency of Public Expenditure: a Study of the Waste Water Sector . . . . .	175
5.2.3	Infrastructure and the Hydrosocial Cycle in Keserwan: a Case Study . . . . .	177
5.2.3.1	Socioeconomic Features of the Study Area . . . . .	179
5.2.3.2	Infrastructure and Hydrogeology . . . . .	180
5.2.3.3	Keserwan Problemshed . . . . .	182
5.2.3.4	Water Supply Infrastructure . . . . .	184
5.2.3.5	Waste Water Infrastructure . . . . .	187
5.3	Political Ecology and Uneven Development . . . . .	190
5.3.1	Uneven Development of Domestic/Urban Water Infrastructure . . . . .	194
5.3.2	Private Water Supply and Social Justice . . . . .	199
5.4	Agriculture in Lebanon . . . . .	203
5.4.1	The Structure of the Agricultural Sector . . . . .	205
5.4.1.1	Agricultural Markets . . . . .	205
5.4.1.2	Financing the Agricultural sector . . . . .	208
5.4.2	Agriculture and Water Resources . . . . .	210
5.4.2.1	Assessing the Data . . . . .	210
5.4.2.2	Irrigation and Irrigated lands . . . . .	211
5.4.3	Production, Irrigation and Export . . . . .	213
	<b>Conclusion</b>	<b>218</b>

<i>CONTENTS</i>	7
<b>Annex 1</b>	<b>224</b>
<b>Annex 2</b>	<b>225</b>
<b>Annex 3</b>	<b>230</b>
<b>Annex 4</b>	<b>236</b>
<b>References</b>	<b>243</b>

# List of Figures

2.1	Topography of Lebanon with rivers and major urban centres . . . . .	42
2.2	National Water Sector Strategy — Water balance in Lebanon . . . . .	44
2.3	Modelled streamflow of Nahr Ibrahim . . . . .	47
2.4	Water resource predictions per capita by Bou-Zeid and El-Fadel . . . . .	48
2.5	Supply- demand balance for a dry year in the NWSS . . . . .	49
2.6	Sketch of the Lebanese water resource management administration . . . . .	57
2.7	Annual CAPEX Expenditure (2008 prices) by Agency and Sector . . . . .	60
3.1	National Water Sector Strategy Acknowledgements . . . . .	82
3.2	Development of debt and GDP . . . . .	87
3.3	Pledges at Paris II by country/agency (US\$ million) . . . . .	91
3.4	Diagram sketching IDC interaction with the Lebanese Water Sector . . . . .	97
3.5	Diagram of the core of IDC in the water sector . . . . .	101
3.6	Value of contracts signed by year . . . . .	104
3.7	Ratified, signed and approved Foreign Funding in the Water Sector . . . . .	105
3.8	Share of funding by IDC actor . . . . .	106
4.1	Water Offices . . . . .	139
4.2	Watershed, Administrative boundaries and Rivers . . . . .	159
4.3	Administrative boundaries of the water sector before and after 2000 . . . . .	162
5.1	CDR Waste Water Works Progress in 2012 . . . . .	176
5.2	Keserwan problemshed . . . . .	178
5.3	Urban sprawl in the Nahr el Kalb watershed . . . . .	179
5.4	Groundwater hazard map . . . . .	181
5.5	Nahr El Kalb and Jeita Spring Catchment from BGR project . . . . .	183
5.6	Coastal Water Supply Project . . . . .	186
5.7	Waste water treatment plan for Keserwan . . . . .	188
5.8	FDI in Lebanon by Origin (only Arab countries) and Sector 2007 . . . . .	191
5.9	Areas covered by master plans . . . . .	192
5.10	Major quarrying operations across the Lebanese Territory . . . . .	194
5.11	Expenditure by RWE and Sector (1992 -2006) . . . . .	195
5.12	Household Connection Rate (%) and Connected Population (in 1,000s) . . . . .	196
5.13	Network Water Availability . . . . .	198
5.14	Age of Water Supply Network . . . . .	199
5.15	Percentage Water Expenditures in Household Budget . . . . .	201

5.16 Expenditure of Connected Households . . . . .	201
5.17 Rehabilitated, planned, and not rehabilitated irrigation networks . . . . .	204
5.18 Exploitations larger than 4 ha . . . . .	214

# List of Tables

2.1	Comparison of water balances . . . . .	45
2.2	List of Water sector administrative bodies and their mandate . . . . .	54
2.4	CDR expenditure in the water sector 31 December 1992- 31 December 2011 . . . . .	61
3.1	Table Cumulative government expenditure by economic category 1993 - 2002 . . . . .	89
3.2	IDC Actor by category (core, expanded) . . . . .	97
3.3	CDR Investments in Water Sector vs Foreign Funding . . . . .	103
3.4	Terms and conditions of existing debt finance in 2002 . . . . .	113
3.5	Partial List of Technical Administrative Assistance Projects . . . . .	116
4.1	Summary of state of Water Offices and water supply . . . . .	135
4.2	Comparison of Water Law Drafts . . . . .	150
4.2	Comparison of Water Law Drafts . . . . .	151
4.2	Comparison of Water Law Drafts . . . . .	152
4.3	Summary of Typology of Offices . . . . .	158
5.1	Sectoral Contribution to GDP in US\$ billion . . . . .	167
5.2	Priority of Dam Projects in NWSS and NPMPLT . . . . .	172
5.3	CDR percent expenditure by sector 2003 and 2008 . . . . .	174
5.4	Growth of building stock in Keserwan between 1996 and 2004 . . . . .	185
5.5	Destruction and Reconstruction of Building Stock in Beirut and Surrounding Areas	191
5.6	Building Equipment - Wells, Water Network and Sewage System connection by Caza	197
5.7	Prices of Agricultural Produce along Supply Chain . . . . .	206
5.8	Distribution by Plot Size of Area Planted with Potatoes . . . . .	207
5.9	Cereal Growing Areas by Size of Exploitation . . . . .	209
5.10	Comparison of water use by sector in the Region . . . . .	210
5.11	Distribution of land according to size of farm . . . . .	211
5.12	Area irrigated by type and source . . . . .	212
5.13	Irrigated Area by Size of Exploitation . . . . .	213
5.14	Size of Exploitation in Relation to Pump Ownership . . . . .	213
5.15	Irrigation by caza . . . . .	215

# List of Acronyms

ACWUA	Arab Countries Water Utilities Association
AFD	Agence Française de Développement
AFESD	Arab Fund for Economic and Social Development
asl	above sea level
BGR	Bundesanstalt für Geowissenschaften und Rohstoffe
BMTLWE	Beirut Mount Lebanon Water Establishment
BOT	Build-Operate-Transfer
BWE	Bekaa Water Establishment
CDR	Council for Development and Reconstruction
CFD	Central Fund for the Displaced
COM	Council of Ministers
COS	Council of the South
DAI	Development Alternatives Incorporated
EIB	European Investment Bank
EMWIS	Euro-Mediterranean Information System on know-how in the Water sector
ENP	European Neighbourhood Policy
ERP	Emergency Recovery Program
ESCWA	Economic and Social Commission for Western Asia
EUdel	EU delegation in Lebanon
EU	European Union
EUWI Med	European Water Initiative Mediterranean Component
FAO	Food and Agricultural Organisation of the UN
GBWSP	Greater Beirut Water Supply Project
GDE	General Directorate of Exploitation

GDHER	General Directorate of Hydraulic and Electrical Resources
GIZ	Gesellschaft für Internationale Zusammenarbeit
GTZ	Gesellschaft für Technische Zusammenarbeit
GWP-MED	Global Water Partnership Mediterranean
GWP	Global Water Partnership
HCP	High Council of Privatisation
IDBG	Islamic Development Bank Group
IDC	International Development Complex
IFAD	International Fund for Agricultural Development
IME	Institut méditerranéen de l'eau
IPEMED	Institut de Prospective Economique du Monde Mediterranéen
IPP	Investment Planning Programme
IRG	International Resources Group
ISF	Internal Security Forces
IWRM	Integrated Water Resource Management
JICA	Japan International Cooperation Agency
JSC	Jeita Spring Catchment
KFAED	Kuwait Fund for Arab Economic Development
KfW	Kreditanstalt für Wiederaufbau
LED	Lyonnaise des Eaux Dumez
lcd	litres per capita per day
LLTB	Lebanese lira-denominated treasury bill
LRA	Litanit River Authority
MCM	million cubic meter
MEDA	Mésures d'accompagnement financières et techniques
MENBO	Mediterranean Network of Basin Organisations
MEW	Ministry of Energy and Water
MHER	Ministry of Hydraulic and Electrical Resources
GCC	Gulf Cooperation Council
MNC	Multi National Corporation

MNC	Multinational Corporation
MOA	Ministry of Agriculture
MOE	Ministry of the Environment
MOF	Ministry of Finance
MPH	Ministry of the Public Health
MPW	Ministry of the Public Works
NERP	National Emergency Reconstruction Programme
NLWE	North Lebanon Water Establishment
NWC	National Water Council
NWSS	National Water Sector Strategy
OIEAU	Office international de l'eau
PAB	Public Accounting Board
PB	Plan Bleu
PMO	Prime Minister's Office
PMU	Project Management Unit
PPP	Public Private partnerships
PRC	Public Recruitment Council
RWE	Regional Water Establishment
SIU	Sector Implementation Unit
SLWE	South Lebanon Water Establishment
UfM	Union for the Mediterranean
UfW	Unaccounted for Water
UNDP	United Nations Development Program
UNEP	United Nations Environment Programme
UNICEF	Children's Rights and Emergency Relief Organization
UNRWA	United Nations Relief and Works Agency for Palestine Refugees in the Near East
UN	United Nations
WB	World Bank
WHO	World Health Organisation
WO	Water Offices
WRM	Water Resource Management

# Acknowledgements

This project has finally reached fruition. Over the five years it took to nurse this from an initial idea to grow into this lengthy piece of work a lot of debt was accumulated. With the reaping of the rewards of this labour it is time to begin repaying what is owed. The first person to be mentioned is Gilbert Achcar my supervisor, his interminable patience and encouraging support were always a point of reference to navigate the sometimes stormy emotional upheavals of this project. His seemingly limitless good will reading and commenting until the very last day have been invaluable. My most heartfelt thanks. My second supervisor Mark Zeitoun is also owed a debt of thanks for the opportunity to work with him on the Upper Jordan River study, his unfailing support during this project and all the work he put in the resulting publications. His critical commentary helped improve this thesis. I thank Peter Mollinga for taking the time to comment on a draft of the work and his useful feedback early during my research.

One of the highlights of any such project is the final examination, an experience that can be as terrible as some had to suffer, and as interesting as mine. I would like to thank both my examiners Jan Selby and Eric Swyngedouw, for having agreed to read through the whole 220 pages of it, for making it a stimulating discussion, and for giving me useful feedback. Thanks.

While I am solely responsible for the final outcome of this project, it would certainly not be of the same quality without the support, help, and presence of the dear friends that have accompanied me since the beginning and before, and those that I have encountered during this long labour. I thank Laleh Khalili, without her sisterly advice this project wouldn't have been born and Gilbert not have been my supervisor, her warm and welcoming embraces were always a refuge. I thank John Chalcraft for always generously making his couch available, late night quots and good discussions. Baby sitting their two wonderful kids, May and Pablo, reading them Ernst Mandel as a bed time story, watching Lord of the Rings with a four year old, and being their furry monster made London another bit nicer.

Hannes Baumann for his useful PhD thesis, making my arrival in London so simple, and for the good moments of therapeutic drinking. Hannah Proctor and Michael Runyan for a great time in Clissold Crescent and good advice on living on little in London. Lucy Stackmore-Pool for being such a good example of how to get things done and efficient living – the lack of educational effect is wholly my failure.

In Beirut Roland Riachi and Christèle Allès have been the source of many a good conversations on the topic of water resource management in Lebanon. Our exchanges have most certainly informed this thesis far beyond the few places where they are attributed for their scholarly work.

All those that took the time to be interviewed, speak to me, and share their knowledge and experiences with me. Special thanks go to Iman Abd el Al, Ramzi Arab, and Antoine Salame who have been very welcoming and generous with their knowledge and contacts. The members of the

Thimar network for letting me present different aspects of this study, the useful feedback and the interesting ideas. Martha Mundy and Elisabeth Saleh deserve thanks for taking me on board. I thank the Orient Institute in Beirut for its generous financial support.

Daniel Drennan and Paul Cochrane have my wholehearted appreciation for their generous efforts, the pain endured editing these pages, and their positive encouragement. Paul heroically and without hesitation sacrificed the last four days to make this present version legible.

Finally, I thank my family who have been a solid rock of support and encouragement. My parents, Oma and Totoro for laying the groundwork for so many years. Yasmine and Rami for always being encouraging and for their financial support in times of need. My wife Doris I cannot thank enough for her unwavering support throughout, for her patience and encouragement in moments of crisis, for bearing with me until the end and still loving me. I am grateful for the two most wonderful beings, my daughter Yara and my son Nassim – for making it clear to me that this is *just* a PhD thesis.

Beirut

18.01.2015

# Introduction

The study presented here is an investigation of the political economy of water in post-civil war (1975–1990) Lebanon and the role of international development agencies and related organisations. I will later define these as the International Development Complex (IDC). It is an attempt to place the political economic processes related to water resource management, infrastructure development, allocation and governance of the resource into the larger political economy of the country. In this sense it is a study in political ecology, as it must relate political economic processes to the natural and environmental conditions and processes governing the flows of water through the Lebanese territory. It does this through the application of the concept of the hydrosocial cycle (Linton & Budds, 2013; Swyngedouw, 2009).

A specific focus on the political, and by extension power, in scholarship about water resource management is according to Peter Mollinga (2008) relatively new. He frames “the expanding amount of work on the political dimensions of water resources management” (Mollinga et al., 2008, p. 8) under the phrase “political sociology of water resource management” and points to the importance of analysing the political aspects of water resource management.

The entry point to the politics of water resource management in this study will be a focus on the processes of infrastructure development, as it is at the root of all distribution and treatment of water and waste water. Other resource management tools — such as environmental laws, water rights and other legal mechanisms, demand management by way of price structures and/or other incentives — influence the infrastructure production process but also depend on the specific technological arrangement for supply and discharge (according to a given policy).

How water resource management policy comes to be is the result of a number of intertwining processes influenced by numerous actors or actants and not least by nature or socionatural arrangements themselves. In Third World countries the water authorities and related administrative bodies are joined by international development agencies, bilateral agencies, donors and NGOs: in short, the IDC. These have considerably more clout with regard to the development process in general and the water development process in specific than is the case for industrialised countries.

The literature relating to water and development is extensive, but the role of international development agencies in it has only recently begun to be addressed. The World Bank and aspects of its role in water development politics has been critically analysed. Karen Bakker (2013), for example, traces the evolution of World Bank policy on domestic water and interprets it as an attempt to extend the biopolitical power of the development state (see Bakker, 2013; Goldman, 2005). Francois Molle (2008) interrogates its role in the creation of water resources management concepts and approaches. The World Bank is often named as an actor in the water sector and its specific interventions are analysed; sometimes other actors taking part in specific water resource management projects are analysed as well (see Molle, Foran & Kähkönen, 2009; Swyngedouw,

2004b). Molle (2008) mentions a range of bilateral actors and their role in policy definition, so does Bakker (Bakker, 2010). The interventions of agencies like the German GTZ (now GIZ) or USAID are also subject to investigation (see for example Mishra, 2010; Trottier, 1999).

This already points to the multiscalar aspects of the water resource management process. International donors join state administrations, which in themselves operate at multiple scales, to produce local development projects often of an infrastructural nature. The scholarly debate about the politics of scale or scalar politics is not new but as Bakker (2012) points out this debate and analyses of water related to power have occurred separately. In order to fill this academic lacunae Emma Norman, Bakker and Cook (2012):

call for closer attention to the interrelationships between governance, water, and social networks (power), and an emphasis on the role of institutional framings and scalar constructions in these processes. (Norman et al., 2012, p. 53).

Depending on the country more than one bilateral or multilateral agency is active. Often there are numerous agencies active in the water sector. And while individual interventions are analysed what remains out of focus is the effect of the sum of the interventions of these actors on the water resource management process in the Third World — or developing — states in which they are active.

The body of academic work on development has produced analysis of international development efforts, the agencies, their action and the effects these produce (see for example Bush 2007; Ferguson 1994; Kiely 2007; Mitchell 2002). James Ferguson (1994) has coined the phrase the “anti-politics machine” in his study of international development in Lesotho. He describes the depoliticisation of international development interventions when framed in technical discourses and so evacuated from the politics and the effects of power these entail. Mitchell (2002) in his study of Egypt analyses the power and effects of international development over a longer time period. His study does include an analysis of the material and discursive effects of a large hydraulic project — the Aswan dam — and the related changing flow regimes, but his focus is on the *power of development* knowledge, as well as its construction, representation, and effects. Subir Sinha (2008) looks at transnational development regimes and shows how they are not a unilateral application of power but how they co-articulate the power structures that are the result of community development programs launched by the Indian state in the early 1950s. The point is precisely that international development is not external to these dynamics but part of it (Sinha 2008). Pointing to writers in the Foucauldian tradition such as Ferguson and Artur Escobar (1995), Sinha questions the usefulness of their approach to studying transnational development regimes. According to Sinha the conceptions of developmental power that are deployed in these writings tend to underplay the role of the state in the “formation of those complexes of power” (Sinha, 2008, p.85).

Ray Bush (2007) questions international development agency and donor policy towards poverty alleviation and “its insistence on resource led growth”. The resources he investigates are “labour, land minerals, and food,” to show how access to and control over these shape the power hierarchies within and between states and so reproduce poverty (p. xiv). Bush further writes that among the aid agencies and donors:

There is little understanding of the ways in which politics and power are constructed in the Global South and how the power of office holders undermines struggles for poverty reduction and redistribution of resources, money and wealth. (Bush, 2007, p.xv)

This analysis also points to the importance of the existing power structures in the countries subjected to international development efforts. He goes on to highlight “the need to strengthen analyses of the character of politics” by detailing the decision-making process and how these “shape class and power” (Bush, 2007, p.19).

Water and water resource management have received only scant attention in this critical development literature. Similarly, the relationship between international development regimes — or what I call the IDC — power, and water resource management in a specific locale has also received little attention in the “political sociology of water resource management” (Mollinga, 2008). This study situates itself in the three academic discussions described above. It is a multiscalar analysis of power reproduction and the specific role of the IDC in the case of water resource management in Lebanon. By analysing the political economy of water resource management in Lebanon, this study aims to unearth some of the contradictions that emerge from the IDC’s integration into current mainstream water resource management and water development practices and discourses in the country.

## Lebanon as a case study

Lebanon is an interesting case study for this purpose. Depending on the source, Lebanon is just below or just above the water scarcity threshold of 1000 m<sup>3</sup> per capita per year as defined by the FAO and scholars in the field (See Falkenmark, Lundqvist & Widstrand, 1989; Gleick, 1996). Parts of the population lack access to safe drinking water and reasonable sanitation, while farmers fear and at times suffer from droughts. The seasonal variation in rainfall is large. Almost all the rainfall occurs in four to five winter months, while the summer demand necessarily feeds off reserves accumulated over the winter.

In specific locations the population suffers from water shortages in public water supply. Twenty years after the end of the civil war this is still the case in Beirut, for example. It is the largest urban agglomeration in the country and home to almost half of the population. But shortages are experienced in other locations as well. These shortages are met by private initiatives. The quantities of water are available but the infrastructure to guarantee supply is not. A similar situation is found in the agricultural sector, as the lack of irrigation infrastructure has led to an over-exploitation of groundwater. Further, climate change predictions suggest that temperatures will rise in the Middle East/Eastern Mediterranean and cause a decrease in precipitation in the region.

There thus exists a tension between current availability and constructed scarcity, that further emphasises the importance of water resource management to the development process. The civil war which lasted from 1975 to 1990 caused considerable destruction. State institutions were barely functional. In the wake of the war they were severely understaffed and under-equipped. The physical destruction of the built environment and infrastructure was immense. Reconstruction offered a unique opportunity to reshape the country’s infrastructure, and thus policy choices are particularly evident in the Lebanese case. Infrastructure reconstruction has remained a major development concern over the last 20 years. It has repeatedly been brought back to the fore as a result of the destruction from the numerous Israeli attacks (1993, 1996, 2006) on the country and is thus a more prevalent topic than in most Middle Eastern countries.

But not only the destruction dating from the civil war or at the hands of Israel is to be blamed for the state of water infrastructure and water resource management in the country: development

policy at large driven by neoliberal ideology, supported by the IDC, and a political culture of clientelism and corruption are equally important factors, as this thesis sets out to show. Another important factor with regard to infrastructure development is the crippling public debt. At some US\$ 64 billion in 2013 it is at about 150 percent of GDP. The country is, furthermore, the most neoliberal in the region. As such, of the countries in the region, Lebanon comes closest to fulfilling (at least theoretically) the prescriptions of mainstream development discourse. It is also one of the few Arab states not under authoritarian rule but governed by a sectarian multi-party democratic system (as limited as it may be). Political rule is thus openly contested and struggles for power become more visible.

The country, starting with the immediate post-civil war period, has hosted an ever-growing and evermore active population of international development actors in various fields of development, water related development certainly being among the more attractive fields of activity. The development actors are firmly entrenched in the Lebanese policy making mechanism. The UN and the World Bank for example have advised successive government and financed administrative personnel since the end of the war. This study identified some 40 different international actors active in the sector, not all of them equally important, but all influence aspects of water resource management, or at least attempt to do so more or less successfully. Bilateral institutions were also involved in the reconstruction process as large infrastructure (energy, transportation, and water) projects promised large profits for international contractors. The bulk of infrastructure funding in the water sector, almost 70 percent, was financed through donor financial support. With the enormous efforts and funds mobilised by international donors it is perplexing that water resources and their management are still in such a bad state two decades after the civil war ended and reconstruction began. The IDC certainly had an important influence on the political economy of water, and it is only by critically analysing its role that a political economy of water in Lebanon can fully be elaborated.

Finally, Lebanon is a small country and as such it is suitable for a study on a national scale. With a surface area of 10,452 km<sup>2</sup> and a resident population between 4 and 4.5 million it is possible to give a description of the power dynamics at the scale of the country, to understand the effects of IDC intervention on water resource management in this context, and at the same time investigate water resource management at a smaller scale, as well as the necessarily localised process of infrastructure production.

## Research question

A considerable amount of work has been expended to bring about an amelioration of water resource management processes by both the state and the IDC over the last two decades; and yet these efforts failed to substantially improve this process and water resources remain polluted, domestic supply rationed, and irrigation strongly contributes to the depletion of groundwater. If this state of affairs is taken as a starting point for thinking about water resource management in Lebanon, a number of questions arise. Despite the lack of substantial improvements of the water sector, international agencies are still active in the sector and in Lebanon. Why? More importantly, if these efforts have not produced the promised developmental gains what other effects did they generate? Drawing on the literature above the politics and the related power dynamics are seen as central to the development process. Thus, concerned with IDC involvement and issues of power

and its reproduction in water resource management processes, the research question that framed this study was articulated as follows:

Does the interaction between the Lebanese Water Sector (actors) and the International Development Complex in the dual processes of water resource management and water infrastructure development produce and reproduce social, political, and economical power relations and dependencies on different scales and, if so, how are these power geometries reproduced?

This overarching question can be subdivided into four interrelated categories that are:

- *The material aspects of the hydrosocial cycle*; that is the quality and quantity of flows through the landscape and society and how all these affect each other. This means understanding the hydrological cycle and the geo-hydrological properties of the terrain; origin, route (including technology), and destination of water flows, not necessarily for the whole territory. This includes questions regarding distribution and use of water, as well as sources of pollution due to human activity. It also means understanding how these are represented as well as socially and discursively constructed.
- *The Lebanese water administration and the political economic processes/structures in which it is embedded*. A detailed profile of the Lebanese water administration includes a mapping of the tasks and responsibilities of the different administrative bodies and their actual (versus the theoretical or legal) mode of operation. Related to this are the political economic structure or processes of the Lebanese polity and how these affect the administration of the water sector.
- *The International Development Complex in Lebanon and specifically in the water sector*. An assessment of the IDC consists of the identification of the actors and their varied interest and activities, as well as an understanding of their integration into the Lebanese political economy, specifically in policy and decision making processes in the water sector, as well as the discourses and solutions that are promoted.
- *The water resource management processes as product of the interaction of the IDC and the Lebanese water sector administration, with a focus on infrastructure production and the water sector reform process*. This requires an understanding of how the interaction takes place, how these two processes and their (always temporary) results are articulated through sometimes opposed and other times overlapping interest of the Lebanese decision makers and the IDC, and how the process of water resource management in turn affects power dynamics.

## Argument

This thesis will argue that the interaction of the IDC and the Lebanese water sector/Lebanese state generally follows the patterns of reproduction of existing power structures and relations and so contributes to it. Socially and ecologically just and sustainable development is substituted for large scale infrastructure production with ambiguous results.

The IDC and Lebanese elites, who drive the water resource management process, work according to different logics. The IDC's logic is guided by a neo-colonial neoliberal development ideology. The

Lebanese elite acts according to a logic of power reproduction centred on the control of financial resources, control over administrative bodies, and the division of territory. When these logics are at odds the elite's logic generally subverts water sector development projects and reform attempts to incorporate its own needs. The IDC's immense and continuous efforts to redress the dilapidated state of water resources and their management disregard the structural roots of the related issues, and are unwilling and incapable to address these. As a result promoted solutions are inherently incapable of delivering promised progress. Because of this failure the contribution of the IDC to power reproductive dynamics becomes the most significant outcome of its involvement in the water sector. This happens along four lines and at different and changing scales:

- 1) The neoliberal ideology of the IDC reinforces the elite's own brand of neoliberalism and forecloses needed alternative venues of water resource management;
- 2) IDC funding for infrastructure supports the reproduction of the existing accumulation regime and influences development priorities according to the IDC's priorities;
- 3) The administration is increasingly shaped according to neoliberal templates that cannot but maintain its structural shortcomings because the elite's control over it is not fundamentally challenged and cannot be;
- 4) The IDC's own power is reproduced by rendering the Lebanese water sector increasingly dependent on its involvement.

## Structure of this work

Following this introduction five chapters will build the argument of this thesis. The next chapter will review the literature that framed the methodology. First, this thesis positions itself in the broader literature on political ecology. Drawing on the geographical materialism of scholars such as David Harvey and Eric Swyngedouw and its actor-network-theoretical critique (or the new materialist critique) the chapter identifies the hydrosocial cycle as the concept through which the interaction between international development actors and the Lebanese water sector is best understood. The chapter then revisits how water and water resource management has been theorised and debated. Finally it lays the theoretical groundwork for what is called the International Development Complex (IDC).

The four empirically grounded chapters of the thesis that follow elaborate different aspects of the hydrosocial cycle and its shape, the waterscape. The second chapter focuses on the Lebanese water sector administration and the structural roots of its functioning. It opens with an introduction to Lebanese water resources and the discursive construction of water as a scarce resource. After a description of the water resource management process the chapter shows how it is shaped by Lebanese political structure and process.

The third chapter identifies the specifically Lebanese neoliberalisation process, the locally existing variation of neoliberalism, and the main pillar of the accumulation regime that was put in place as part of this process. The IDC's increasing influence is rooted in these dynamics. The chapter then offers a detailed description of the IDC and its influence in the water resource management process. It posits the IDC as central in this process and by extensions in the shaping of the hydrosocial cycle.

The fourth chapter focuses on the reform process that was initiated in the early post war years. It investigates the efforts to implement a reform modelled on market environmentalist templates. It shows how these efforts did not produce the hoped for productivity and management

improvements because the interests of the Lebanese elites were at odds with the good governance targets promoted by the IDC. The most obvious result of this intervention is the partial rescaling of water governance.

The fifth and last chapter closes the analysis of the hydrosocial cycle by investigating the interaction of bio-physical and ecological processes with the political economic and technical processes described in the earlier chapters. It does so by investigating uneven sectoral and geographical development, especially with regards to water infrastructure, at the national and at the subnational scale for the case study of an area called Keserwan. As part of this analysis the water distribution and use patterns in the urban/domestic and the agricultural/irrigation sector are analysed.

## Notes on Method

Data was collected as follows:

1. I conducted 85 structured interviews with various Lebanese government and administrative officials, Lebanese and international private sector engineers, Lebanese academics and researchers, members of Lebanese associations and NGOs, as well as IDC employees and experts;
2. I attended ten conferences and workshops about water or related issues;
3. I collected and analysed government and IDC strategic and technical studies;
4. I obtained GIS data from different sources. These were used for geographical analysis and for the maps I produced;
5. I cross-referenced my research through numerous informal meetings/discussions. These were occasions when participants did not wish to be recorded, cited, and did not want their information to be used;
6. My field work was done in two regions of the country to understand the hydrological cycle at the local scale;
7. From mid 2010–2011 I worked as a researcher on a project analysing transboundary water issues on the Upper Jordan River Basin of which Lebanon is an upstream riparian. This allowed me to make contacts in the water sector and offered the opportunity for field work in a second area of the country (see Zeitoun, Eid-Sabbagh, Dajani & Talhami, 2012a; Zeitoun, Eid-Sabbagh & Loveless, 2014; Zeitoun, Eid-Sabbagh, Talhami & Dajani, 2013).

## Limitations of the Study

One limitation of my study is related to the quality of the data. The Lebanese administration treats data and reports with a lot of secrecy. These can be extremely difficult to obtain when they are not published. For this reason recent data could not always be obtained. For example up-to-date data regarding water supply network connections and network volumes could not be obtained from the Regional Water Establishments or the Ministry. Data is also often not very

accurate, especially water but also socio-economic data is of limited quality. The limitations of the data are explained where necessary throughout the text.

Further, because I framed my study very broadly it covers a wide range of issues and actors by design. This has also meant that I had to compromise on the depth of analysis for some aspects, but this should not be read as negation of their causal agency in the water resource management process. In Chapter 3 for example a more in-depth (micro) sociological or anthropological study of the individual Lebanese and IDC experts could offer a better understanding of the process of knowledge and discourse production and reproduction at that level. Similarly, because the study interrogated the interaction between the IDC and the state administration and infrastructure development processes at a national scale, it focuses on elite politics in the neoliberalisation of the water resource management process. It could not detail the numerous ways in which individuals cope with, subvert, or adjust to the the water resource management process resulting from the interaction of the IDC and the Lebanese administration. Finally, because the analysis is so broadly framed and contextualised it needs to present and describe large amounts of data and is thus very empirical.

# Chapter 1

## Literature review

In what follows I will give an overview of the literature relevant to this study and build from it the conceptual framework to guide this work. I shall start with issues of a more general theoretical and political nature. As I see this study rooted in the field of Third World political ecology, I shall first address the question: What is (Third World) political ecology? How is it useful for this study? Following, I shall build the theoretical foundation of this study; this draws on historical-geographical materialism and specifically its theorisations of space and nature, as well as insights from what is called Actor-Network-Theory (ANT) (also called new materialism). I will elucidate the conceptual tools that will help me make sense of the issues at hand; for example notions of metabolism and circulation as elaborated in Marxist thought, and different ways to think about the human–technology–environment nexus that takes centre stage in this study.

### 1.1 Political Ecology

From its inception, political ecology was never a coherent theoretical position for the very good reason that the meanings of ecology and political economy, and indeed politics, were often in question. (Watts & Peet, 2004a, p. 9)

As Watts and Peet point out political ecology is not based on one single foundational theory. It is rather an area of research concerned with the relationship between social and environmental change. It highlights the social and ecological processes through which control over and access to natural resources — “with all their implications for environmental health and sustainable livelihoods” (Watts & Peet, 2004a, p. 9) — formulate themselves.

Often cited as exemplary are Blaikie and Brookfield’s (1985) “Political Economy of Soil Erosion”, and this definition from their 1987 work on the social and political causes of land degradation:

The phrase “political ecology” combines the concerns of ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land based resources, and also with classes and groups within society itself. (Blaikie & Brookfield, 1987, p. 17)

According to Bryant and Bailey (1997) Third World political ecology distinguishes itself from other environmental research by the radical theoretical (and political) approaches that are typically employed, as well as its commitment to social justice. The main areas of research and topics in

political ecology and specifically Third World political economy are land degradation, deforestation, and soil erosion. A specific focus on water is of a much younger date, especially more critical approaches (Boelens and Zwarteveen 2005; Budds 2004; Molle 2007; Mollinga 2008).

The term political ecology originates from the early 1970s in the context of research challenging the wider held notions that the causal origins of environmental crises were to be found in the supposedly apolitical fields of culture, technology, population growth, or poor land use practices. As a field of study political ecology emerged from (Neo-) Marxist critiques — rooted in world systems theory, dependency theory, and peasant studies — of the narrow focus of “cultural ecology and ecological anthropology on isolated or subsistence communities.” These new strands of Marxism sought to understand the dynamics (and their environmental impacts) within peasant societies that were subjects to the stress of integration into world markets (Bryant and Bailey 1997; Watts and Peet 2004a).

A major point that political ecologists seem to agree upon, according to Bryant and Bailey, are first that “the environmental problems facing the Third World are not simply a reflection of policy or market failure (as for example the World Bank would have it), but rather a manifestation of broader political and economic forces” (Bryant & Bailey, 1997, p.3). Capitalist dynamics on a world scale feature prominently among them. But these problems cannot be attributed solely to the machinations of global capitalism. Third world states also (sometimes just as importantly) intervene in socio-economic activity in such ways that promote environmental degradation within their territories. Questions about ecology were thus never severed from the larger questions of development in the Third World. Beyond this though numerous methodological and theoretical approaches have been deployed to make intelligible various processes of socio-ecological transformation questioned (especially) by third world ecologists.

In the last two decades the incorporation of the post-structuralist critique into political ecology has produced very interesting innovation and provided new venues of investigation and new ways to formulate radical political projects (Forsyth, 2003, 2008; Paulson, Gezon & Watts, 2005; Watts & Peet, 2004a). Central to these are questions of scale and their interrelation and theorisations of the relationships between nature and society and their conceptions. Scholars of political ecology and from varied other fields of study sought to rethink enlightenment Nature - Society dualisms in reaction to the increasingly obvious environmental (and related political) challenges of the end of the 20th century and the beginning of the 21st (Braun and Castree 1998).

Political ecology today mobilises the concept of social nature or second nature as a way to avoid the crude society-versus-nature binaries, as well as the related technocentric environmental management approach and the radical ecocentric counterpart. It emphasises the social construction of nature (and the sciences through which it is represented) to highlight the political processes in play (Castree 2001; Castree and Braun 2001).

## 1.2 Historical Materialism and Actor Network Theory

Two theoretical approaches, historical materialism and what Braun terms the new materialists — Bruno Latour’s Actor Network Theory, Donna Haraway’s and Timothy Mitchell’s thinking — are useful to make sense of the society-technology-nature nexus that is central to this study. Infrastructure is as central to a political economy of water as the socio-political arrangements that govern these relationships. An academic debate exists about whether these can enter into a productive dialogue or not; whether they form an antithesis, or are commensurable. Noel Castree

(Castree 2002) for one attempts to “split the difference” and sees points in common with weaker interpretation of ANT and relational geographical materialism.<sup>1</sup> Whereas Braun reflecting on Harvey’s work suggests that:

the difference between Harvey and the new materialists is the difference between immanent causality and external determination. Crucially, we cannot simply ‘split the difference’ between these, despite the obvious attraction of doing so (for an attempt see Swyngedouw 1999). One cannot have a ‘less exacting’ philosophy of immanence or a ‘modified’ transcendentalism. (Braun 2006, p. 217)

The point here is not to resolve these differences or the discussion, nor to argue their philosophical intricacies. It would go beyond my abilities and the scope of this work to do so but different political implications may follow from the resolution of this debate.<sup>2</sup>

### 1.2.1 Historical Materialism, the Production of Nature and Infrastructure

What is evident then is that all debate about ecoscarcity, natural limits, overpopulation, and sustainability is a debate about the preservation of a particular social order rather than a debate about the preservation of nature per se. (Harvey 1996, p. 148)

A good starting point to enter the debate about conceptions of nature and society are theorisations of historical geographical materialism. Neil Smith (1984) in his “Uneven Development: Nature, Capital and the Production of Space” coined the phrase “the production of nature”. He was referring to patterns of uneven geographical development that were systematically created by the “specific social (class) relations and specific (profit driven) ‘value relations’ to environment” under conditions of (global) capitalist production. What he meant by this was how “the competitive and accumulative imperatives of capitalism” combine in a metabolic relationship “natural environmental and concrete labour processes upon them” that produce nature(s) anew (Braun & Castree, 1998 p.7).

Smith’s thesis was built on two conceptions of nature drawn from Marx’s texts. The first of these Smith termed “the ideology of nature.” This represented the bourgeois conception of nature that posits it as external to society — as its unalterable other. Accordingly nature is governed by immutable scientific laws to which humans must eventually submit, thus “denying any social relations to the environment” and with that any creative possibility to shape and change it. This he observes is paradoxical, as “the very act of positing nature requires entering a certain relation with nature” (Braun & Castree, 1998 p.7). The second, saw the labour process as central to the metabolism of natural matter through society. “Nature is mediated through society and society through nature” writes Smith (2008,p. 33).

Labour is, first of all, a process between man and nature, a process by which man, through his own actions, mediates, regulates, and controls the metabolism between himself and nature... Through this movement he acts upon external nature and changes

---

<sup>1</sup>Tim Forsyth (2008) also makes the point that the opposition between the two, ANT and Marxism, “is usually misplaced” (p. 762).

<sup>2</sup>How can one retain a political commitment that challenges global capitalist dynamics (or the juggernaut of global capitalism) in one’s analysis without giving it undue coherence and explanatory power? And vice versa, how can one seek local/event specific political solutions that remain committed to more general ‘systemic’ change?

it, and in this way he simultaneously changes his own nature. (Marx, 1970, pp. 283 and 290 quoted in Swyngedouw, 2006, p. 108)

Swyngedouw builds on Marx's definition. To him:

this socio-natural metabolism is the foundation of and possibility for history, a socio-environmental history through which the natures of humans and non-humans alike are transformed ... To the extent that labour constitutes the universal premise for human metabolic interaction with nature, the particular socio-technical vehicles and social relations through which this metabolism of nature is enacted shape its very form. (Swyngedouw, 2006, p. 108)

Water is a very good illustration of what is meant. Society today is held together by and lives off the complex ways in which water is circulated through it for its various uses in production and reproduction. Canals, pipes, pumps, and dams are the basis for the transformation and use of water. It is through the metabolic processes that use values are produced by labour. Farmers need water to irrigate their crops, electricity is generated by turbines, water runs from the tap, tools are made — all of which is then again used in new metabolic arrangements. In this sense the products — or the heterogeneous assemblages — of this socio-natural metabolism enter the circulation of commodities (Swyngedouw, 2006). According to Foster (1999) these processes were intimately bound up with the flows of money/capital.

The economic circular flow then was closely bound up, in Marx's analysis, with the material exchange (ecological circular flow) associated with the metabolic interaction between human beings and nature. (Foster, 1999, pp. 157–158 quoted in Swyngedouw, 2006)

Both the prevalent view of nature as separate from society and the specific forms of the metabolic relations are historically produced. They are not then immutable facts of life but the object of political struggles, ideas, and the underlying power geometries that shape them. Harvey puts it as follows:

All ecological projects (and arguments) are simultaneously political-economic projects (and arguments) and vice versa. Ecological arguments are never socially neutral any more than socio-political arguments are ecologically neutral. (Harvey 1996, p.182)

The same can be said for the infrastructural artefacts that are so important to the arrangement of socio-natural metabolisms. Far from being neutral technological/logistical processes, changes in infrastructure systems are “necessary elements in the struggle for maintaining, changing, or consolidating social power” (Swyngedouw, 1992, quoted in Graham & Marvin, 2001, p. 191).

According to Harvey (1996) “capitalism as a mode of production has necessarily targeted the breaking down of spatial barriers” for flows of people, goods, information, and resources such as water. In its quest for new profits and never-ending capital accumulation, capitalism is predicated on the extension of its geographic reach, the improvement of productivity, and the reduction of the cost of social reproduction. All these depend on the ability to command movement of resources through space. Reductions in cost or time of transportation, which Harvey (Harvey, 2003) calls the reduction of the “friction of distance”, translate into productivity gains and offer opportunities for higher rates of profit.

The production and improvement of infrastructure systems for transportation, telecommunications, as well as electricity and water, are central aspects of development under capitalism. Their production “and the financial, engineering and governance practices that support them, are therefore necessarily embedded within the broader power relations of global capitalism” (Graham & Marvin, 2001, p. 194).

This happens on multiple scales: international, transnational, national and finally local connections are infused with struggles between different actors, groups, institutions, firms, and nations. These power struggles tend to contribute to the “wider reproduction of the capitalist social relations” (Graham & Marvin, 2001, p. 190). On all scales, this logic divides into winners and losers, and as such, these processes will tend to reproduce the local social relations of power as well. Infrastructure works in this view become an exercise in power and geopolitics pitting international and local powers against each other and against local populations (Graham & Marvin, 2001; Harvey, 1985). Before turning to the specific concepts and analysis that geographical materialists deploy to make sense of water and related issues a discussion of the new materialist critique of the above approach is in order.

### 1.2.2 Actor-Networks and the New Materialism

Central to post-structuralist approaches towards nature is an emphasis on the cultural politics of the construction of nature. Simplified, the argument points to the semiotic formations and prefigures the new materialism, namely Actor-Network-Theory as advocated by Latour, Callon, and others, as well as Haraway’s thinking. They offer venues by which to integrate the materiality of things into theorisations of society and nature. Both approaches draw on insights from the field of sociology of scientific knowledge that posits that scientific knowledges are also the result of historically specific and socially situated constructions (Braun, 2006).

These approaches contest contemporary categories such as the economic, the political, or society and nature. These scholars deploy vocabulary such as cyborg, quasi-objects or hybrids to describe the in-between, the fuzzy middle which is neither one nor the other and that makes up most of the world. This, it is claimed, is in contrast to Marxist theory which, according Braun and Castree following Latour:

has for the most part relied upon realist epidemiologies where ‘nature’ and ‘culture’, and ‘scientific knowledge’ and ‘politics,’ are kept separate or regionalized. Nature is assumed to be something that is unproblematically ‘ready-at-hand’ to human actors; while its social transformation may be seen as historical, its ‘materiality’ is not. (Braun & Castree, 1998, p. 15)

One of the more important observations to be drawn from these approaches is the centrality of technoscience in the making of society. Latour (1993) argues that by creating two distinct spheres, the “natural” and the “cultural” (or nature and culture), and in parallel assigning (scientific) knowledge to the realm of nature and politics to the realm of culture, modern thinking hides how society and nature are simultaneously built “through, or in relation to, things (microbes, door closers, machines and importantly infrastructure) along with the various ways that science is the cause rather than the medium of nature’s representation” (Braun & Castree, 1998, p. 29).

Without the many objects, hybrids, quasi-objects, that mediate social interaction, and in many ways give materiality and/or durability to society, neither the constitution of “society” nor that of

the “subject” can be made sense of. Society is, according to this view, constructed “materially and semiotically” by both things and social actors.

Explanation is achieved by analysing how these heterogeneous associations of humans and non-humans are created. A brilliant study and a relevant example of this new materialist thinking, is Timothy Mitchell’s “Rule of Experts” (Mitchell, 2002) in which he shows how the damming of the Nile, new irrigation infrastructure, mosquitoes, statistical analysis, water, weaponry, capital, and local elites and so on came to interact and affect Egyptian development. According to this, an explanation referring only to abstract capitalist dynamics and centring on the economic would obfuscate aspects of rather than explain “the expansionary nature of capital” that is enabled by the association of multiple agencies, human and non-human alike. Thus he shows that “capitalist development covers a series of agencies, logics, chain reactions, and contingent interactions” (Mitchell, 2002 in Braun, 2006, p. 217).

Agency is here also associated with non-humans. For infrastructure this means that beyond being a relational artefact, in the very material sense of connecting space and society across distance, it actively shapes material and social reality for far longer and beyond the intentions of its makers. David Mosse (Mosse, 2003, 2008) illustrates this with the example of the Tamil plains in India. There he shows how a vast and complex system of interrelated locally autonomous tanks and channels was produced as a function of the existing political systems between the eleventh and eighteenth centuries. This highly decentralised system has in turn shaped and still shapes the political and social system today, long after its original purpose when the social reality that shaped it had disappeared.<sup>3</sup> One can infer from this that infrastructure is a political artefact or a socio-technological hybrid that mediates nature in political ways (not necessarily dependent on and often beyond the intentions of its producers).

The insights from ANT are rooted in the principle of (radical) symmetry in explanation that its adherents stress.<sup>4</sup> Through this emphasis on symmetry proponents of this approach situate themselves in between dualisms, and so bridge them by giving (or attempting to give) equal explanatory causality to both nature and society. According to Jonathan Murdoch:

by standing in the middle working its way outwards, this approach sees modifications in both the social and the material realms. And this applies to all dualisms: by incorporating materiality into the heart of the analysis, actor-network theory attempts to link all divided domains in social theory. Thus terms such as ‘actor’ and ‘structure’, ‘local’ and ‘global’ only make sense in relation to one another; this relationality forces us to shift our gaze away from the pure forms (that is, the stabilised categories of ‘actor’, ‘structure’, ‘local’ and ‘global’) to the associations which give rise to the purified outcomes (that is, the processes of category making). (Murdoch, 1997, p. 334)

It is in this way that the couplet actor-network makes sense. The actor depends on the network of humans and non-humans alike. It is through the specific links between them that s/he gains the ability to act. What remains are chains of different length, time and scope that connect humans, machines, things, resources, animals, technologies and so on. Power and reach, or scale, are not given categories but are made with the connections. Thus, it is in the understanding of how

<sup>3</sup>See also Anita von Schnitzler (von Schnitzler, 2008) for an example on the much smaller scale of water meters.

<sup>4</sup>Castree situates the origins of the principle of symmetry in explanation to the “Edinburgh School”, according to which “‘valid’ and ‘false’ knowledges must be explained in the same terms; one cannot be explained through reference to nature and the other through reference to culture (or ideology). Rather both must be seen as a result of historically specific social and scientific practices.” (Braun and Castree 1998, p.28)

networks are made that the possibility for their transformation emerges and politically liberating potential is found. However, this politics is not clear. Latour for one has been criticised for failing to demonstrate or illustrate the political implications of his theories. It is also not clear how a politics that includes non-humans can be operationalised beyond the legitimate criticism of political views that see humans or non-humans as having political rights “in themselves”, that is either pure anthropocentric or ecocentric politics. Similarly problematic, if not more so, seems the suggestion that no two networks are alike nor shaped by the same or similar set of rules/logics. This seems to restrict politics to separate issues, while denying all coherence to capitalist dynamics on a global scale (Castree, 2002).

From this point of view, Marxist approaches face strong criticism. Unlike the network ontology that situates causal explanations within socio-natural networks, dichotomous thinking is seen as reductive and evading complexity by conferring causal agency in one or the other pole: nature or society. A second binarism subjected to similar criticism is related to the question of scale and concerns global versus local causes and effects. This approach highlights the importance of the in-between arrangements that connect local to global and make a continuum rather than discreet realms. Another set of criticisms is related to asymmetry and points to the anthropocentrism that pervades most Marxist thinking, by viewing space, nature, and matter as being imbued with or a mere reflection of social relations, nature can only be seen in human terms, as a mere construct of the social (and an effect of power), missing the co-constitutive relationship of nature (and for that matter technology and science) and society. Because new materialists see agency as an immanent effect arising from the relationship between actants or actors (human or not), Marxist anthropocentrism is understood as producing an impoverished conception of actors and denying the agency of non-humans. Finally, this also results in a conception of power that is charged as being overly centred and anthropomorphic, as something held rather than a relational effect/achievement that flows towards an actor through the various connections (Braun 2006; Castree 2002). This is not the position taken in this thesis, much rather the importance of micropolitical dynamics (not necessarily related to capitalist logics) is taken from this theoretical proposition. Its influence on more recent historical materialist thinking which is elaborated below is how it is considered in this thesis.

### 1.3 The Hydrosocial Cycle

The new materialist critiques of historical materialism points to a need for theoretical complexity that aims to avoid reductionist interpretations of perceived/studied reality and causal agency. One way this critique has been integrated into geographical historical materialist thinking about water is by historicising the concept of hybridity or the actor-networks. Karen Bakker and Gavin Bridge (2006) engage with different accounts of “materiality” to see how these can enrich and inform resource geographies. They point to Swyngedouw’s combination of “Latourian notions of networked reconstruction with Lefebvre’s (1991) historical and geographical production of space” (Bakker & Bridge, 2006, p. 17) as one fruitful avenue to include post-structuralist critiques within historical materialist approaches. He (Swyngedouw, 1999, 2004b) highlights the necessity of analysing the power dynamics involved in the historical and spatial (or geographical) process in which the hybrid is produced. It is the analysis of the process of hybridisation rather than the analysis of the assemblage itself that takes priority (Bakker & Bridge, 2006; Swyngedouw, 2004b). According to him this type of analysis can avoid the depiction of simplified binaries when it “maintains a view of

dialectics as internal relations” (Swyngedouw, 2004b, p.21) as, for example, Harvey elaborates in his work on political ecology “Justice, Nature, and the Geography of Difference” (Harvey, 1996). What Swyngedouw proposes is a “process based episteme;” a theoretical approach that centres around the notion of process and change. Socio-nature is constantly produced and reproduced (materially and discursively), in the interaction and recombination of “chemical, physical, social, economic, political, and cultural processes”, which are themselves changed in this process “of perpetual metabolism” (Swyngedouw, 2004b, p.21). In a later work Swyngedouw advances the concepts of “metabolism” and “circulation” to overcome “the binary construction of ‘nature’ and ‘society’ that characterised much of the modern scientific and cultural tradition” (Swyngedouw, 2006, p. 113). The dualism is broken with the emphasis on movement and change that is represented by “metabolic circulation” that combines human and non-human agents in a process of environmental and technological transformation (Swyngedouw, 2006, p. 113).

Jamie Linton and Jessica Budds (Linton & Budds, 2013) build on Swyngedouw’s analysis and the work of other critical geographers (for example Bakker, 2003, 2012; Gandy, 2004; Kaika, 2003; Loftus, 2009) in their attempt to systematically conceptualise the hydrosocial cycle, which as a term often used in scholarship, according to them, lacked precision and coherent definition. Their work starts with the history of the hydrologic cycle that is said to embody the separation of nature and society (see also Linton, 2008, 2010).<sup>5</sup> The concept of the hydrosocial cycle they propose is defined “as a socio-natural process by which water and society make and remake each other over space and time” (Linton & Budds, 2013, p. 6). Society depends on the management of water. This process affects the physical properties and discursive construction of water which in a circular fashion changes older or “gives rise to new forms of social organisation” (Linton & Budds, 2013, p. 6). In this circular co-production process they are internally related and thus specific forms of social relations are also shaped by the “different kinds of water” they produce.

The hydrosocial cycle focuses analysis on the interrelationship of “heterogeneous entities”: water, technologies and infrastructure, social power, knowledge formations, water management and water governance practices, as well as related regulatory and organisational changes (Bakker, 2012; Linton & Budds, 2013). “These relations are mediated through specific political projects” (Bakker, 2012, p.618) that can be unearthed through an analysis of the hydrosocial cycle as one facet of the social metabolism. It is with a view to these dynamics that Swyngedouw (2009) states:

There is an urgent need, therefore, to theorise and empirically substantiate the processes through which particular socio-hydrological configurations become produced that generate inequitable socio-hydrological conditions. Interventions in the organisation of the hydrological cycle are always political in character and therefore contested and contestable. This intrinsically social character of water resources management and organisation needs to be teased out and clarified. (Swyngedouw, 2009, p. 57)

This thesis aims to excavate the role of the international development actors and their intervention in the hydrosocial cycle (as a constituent part of it) as well as the resultant effects on social power and on water. Before turning to a more detailed review of how scholars have thought about relevant aspects of water management or elements of hydro-social metabolisms, I shall introduce what I refer to as the International Development Complex as the focal point of the investigation.

---

<sup>5</sup>Jeremy Schmidt engages Linton’s work (Linton, 2010) and shows that notions of water’s agency were already present in the work of 19th and 20th century American water thinkers (Schmidt, 2014).

## 1.4 The International Development Complex?

Water resource development in the Third World is heavily populated by international development actors and what Tony Allan calls “earnest outsiders”. The World Bank has been repeatedly noted as a principle propagator of the IWRM discourse in water development, and as vehicle for neoliberal policy and governance reform (Goldman, 2005, 2007; Peet, 2003; Watts & Peet, 2004b). The role in discourse formation of the Global Water Partnership (GWP) and its institutional backers, the UNDP and the World Bank has also been noted (Molle, 2008). Regional development banks as well as the World Bank are involved in project finance and implementation (Molle & Berkoff, 2006; Mollinga et al., 2008; Saravanan, McDonald & Mollinga, 2009). Bilateral aid and development agencies, the GIZ, USAID, or DFID, and the various UN agencies are equally implicated in a range of activities related to water development. Like international NGOs they are involved in boring wells, infrastructure provision, livelihood programmes for farmers, and institutional reform consultancy (see for example Cleaver, 2008; Cleaver, Franks, Boesten & Kiire, 2005; Trottier, 1999). Larry Swatuk (Swatuk, 2008) points to the WWF and others that have been engaged in conservationist efforts while other alliances further a technocratic approach. The list could go on, the same organisations might be involved in different fields in the same country or engage in certain activities in one place of the globe and in another somewhere else.

Inspired by Walden Bello’s (2006) conception of the Relief and Reconstruction Complex, as the set of actors that deploys in post disaster and post war situations, I group the international actors briefly described above under the label “The International Development Complex” (IDC). This is not to say that they are a homogeneous group, quite clearly they are not. They can subscribe to different ideologies (but they generally do not), they are supported by and represent different interests, they follow different agendas, and are organised differently. Yet they also form a network whose actions are guided by a common discourse and related goals.

Terje Tvedt (1998), in his analysis of development NGOs, talks of an international system. He points to the local specificities of each country, donor and recipient. Different laws and historical trajectories shape these sectors in a variety of ways, but more importantly, he identifies a number of characteristics that prompt him to see these actors as a “distinct social system”. This systemness is highlighted by the “shared language and symbolic order”:

It has been knit together and held together by common rhetoric. This special type of value consensus can be understood as norms which also establish boundaries around the NGO channel, but a consensus to which a variety of different and in reality competing, value agendas and even manipulative attitudes have been attached (government organisations posing as NGOs to attract funds and legitimacy, for-profit firms dressed up as NGOs to earn money, mission organisations acting with the development aid channel while using it as a shield for achieving their main aims, political parties and movements establishing a neutral humanitarian arm to compete for funds, etc.). While the resource transfer has made it into a system, one might say that it is this rhetoric and the way it has been handled which has made it into, and reproduces it as, a social system. (Tvedt, 1998, p. 78)

Others have assessed this sector critically and place it in the framework of international development. They contend NGOs have become agents of governments and of a neoliberal global order (see for example Hardt and Negri 2009; Townsend, Porter and Mawdsley 2004). Mark Duffield talks

about the role of NGOs as well as donors and aid agencies in “governing the borderlands” for security purposes (Duffield, 2001). James Petras and Henry Veltmeyer have argued that, what I call the IDC, has been a vehicle for contemporary imperialism and imposes power from outside onto nation states (Petras & Veltmeyer, 2001, 2002). James Ferguson states that from the Marxist point of view development tends to be seen as an endeavour to extend capitalist relations and to incorporate new territories into the world system. There is a tendency in this literature to emphasise the failure of development projects or to dismiss them as distractions covering imperialist and strategic aims and processes (Ferguson, 1994). This is not to say that there is no relationship between imperialist interest and international development, only that this view disregards a number of processes and actors involved therein. As Subir Sinha (2008) rightly points out “this does not explain how politics within national frames intersect with these external forms of power” (Sinha, 2008, p.60). It is less this largely “unidirectional flow of development’s power” that is of interest here but rather the interaction of the IDC with the local context.

In his example of Lesotho, Ferguson (1994) shows how what he calls the international development apparatus “depoliticises” the political process of development. He shows how the state extends its reach or power through development interventions that are posited as technical managerial solutions void of politics. His approach is based on a reading of international development that emphasises its discursive nature. Drawing on Michel Foucault he emphasises the decentred nature of power. In his approach he stresses:

that power is not to be embodied in the person of a powerful subject. A ‘development’ project may very well serve power, but in a different way than any of the ‘powerful’ actors imagined; it may only wind up in the end, ‘turning out’ to serve power... the outcomes of planned social interventions can end up coming together into powerful constellations of control that were never intended and in some cases never even recognised, but are all the more effective for being subjectless. (Ferguson, 1994, 18-19)

This approach could be read as de-emphasising the power associated with social actors too much. In a similar but inverted critique as that levelled against historical materialist approaches this decentred interpretation of power seems asymmetrical on the other extreme and in that sense equally totalising. In the case of water in Lebanon the subject, the IDC, is very much related to the material conditions and the related material wealth derived from it by social actors. The aim is not to posit discourse as a mere mystifying ideology and so give causal primacy to the material and anthropomorphic forms of power. Terming this set of actors the IDC rather than reverting to Ferguson’s concept of the international development apparatus then highlights the networked nature of discrete social actors not subsumed in an all-encompassing development discourse, but separate and yet related. In this way it will allow me to differentiate between, on the one hand, international water development discourse and knowledge, and on the other, specific localised practices that emerge from the interaction of the IDC within the Lebanese social and material context.

With this introduction of the IDC the theoretical framework of the thesis is completed. Through an analysis of the hydrosocial cycle, as the theoretical lens, this study investigates the interaction of the IDC with the Lebanese water sector actors. The next section will refine this framework, expanding the discussion of the theory to include relevant issues with regard to water. It will refine the understanding of the social metabolic relations and how these “are organised in terms of

property and ownership regimes, production or assemblaging activities, distributional arrangements and consumption patterns” (Swyngedouw, 2006).

## 1.5 Aspects of Water Resource Management

That water is the basic stuff of life is hardly news. Water is an essential input for bodily reproduction: and every-body needs water. Water is a resource in the vast majority of human activities or the production of tools used therein. It is central to human-nature metabolism. Beyond these human activities, water feeds ecosystems and environmental needs. As Molle and Berkhoff put it, all water is used (Molle & Berkhoff, 2006). Physically, water is heavy, it is easy to store but expensive to transport. It requires relatively large amounts of sunk capital and energy to displace from one place to another in a controlled fashion. This cost of transportation is high and often a multiple of what is considered water’s value. The source of water, with exception of relatively few fossil water aquifers, is the hydrological cycle. Precipitation, as snow or rain, becomes run-off and seeps into the ground. Some of it remains suspended in the soil and more fills aquifers and replenishes groundwater. From the soil, it will be used by plants. As run off (and groundwater) it feeds into rivers running their course into lakes, seas and oceans. Evaporation and evapotranspiration closes the cycle. Circulating in temporally varying quantities — depending on the seasons and the local geography — water links people, communities, societies, crosses boundaries to link states, and the multitude of heterogeneous human and non-human activities upon it. In many ways it creates its own scales, the river basin being one of the most obvious.

Hydrological interconnectedness is typified by the well-known upstream-downstream nexus. Even much before having conceptualised river basins, humans had recognised how actions on the upper reach of a river could affect its downstream part. (Molle, 2007, p. 360)

Increasing human intervention to divert, abstract, dam, use, and in other ways modify water’s flow makes this interconnection increasingly visible. The type and location of use affects the quantity and quality of the water that reaches downstream users. Effects are not necessarily felt immediately, but can be delayed for long periods of time or even extend to future generations (Molle, 2007).

It is also this interconnectedness that prompts Bakker, in her analysis of institutional change of urban water supply in Britain, to write that “externalities [are an] inevitable by-product of production of drinking water” (Bakker, 2003, p. 28) and to characterise water as an “uncooperative commodity.” This observation can be extended to other water uses. Any type of use can, and is likely to create effects on others, the environment, agricultural industries and so on.

The multiple uses can coexist when enough water of sufficient quality for the respective activities is being replenished into the basin and can be accessed at relatively low cost. When pressure on water resources grows because of climatic events, population growth, development, and increasingly thirsty cities, eventually renewable sources cannot supply for increased demand, or subside entirely, and water shortages occur. It is in this context of “closure of a basin” that discourses about scarcity are mobilised and competition and conflicts are likely to occur (Molle, Wester & Hirsch, 2010). It is also in the context of scarcity or shortage that water becomes an issue for development.

### 1.5.1 Scalar Politics, Scale and Problemsheds

To stick to the spatial scale of the watershed would be to exclude the numerous non-hydrological factors that are at play in the distribution of water resources. Power differences between the various interconnected and thus interacting stakeholders bring in a whole range of socio-political issues whose spatial scale generally does not overlap with that of the watershed. Different actors can mobilise different forms of political, economic, and discursive resources at different scales (Allan, 2001; Mollinga, 2008; Norman et al., 2012).

On an international scale states negotiate over water resources and flow allocations. In this context the concept of hydro hegemony as developed by Mark Zeitoun and others (Zeitoun, 2008; Zeitoun & Allan, 2008; ?) describes the situation where a particular riparian is in a hegemonic position and can so secure an unequal allocation of available water. Egypt in the Nile valley or Israel on the Jordan River basin (of which Lebanon is an upstream riparian) are examples in the region (see also Warner, 2008).

In his analysis of the evolution of Spain's socio-hydrological landscape under Franco, Swyngedouw shows how the reconfiguration of geopolitical and geo-economic networks of funding were fundamental to the implementation of a new water resource management strategy largely based on an extension of infrastructure. A project that itself was a part of efforts by the regime to produce "a socio-culturally, politically integrated national territorial scale," (Swyngedouw, 1999, p. 11) and the concomitant overwriting of regional aspirations depended crucially on financing by the US and international funders. Similarly, issues of distribution and allocation in basins within national boundaries are often decided or influenced by political clout from outside the basin. State development policy and investment priorities are often defined for the country as a whole but influence investment patterns a long a river (Molle, 2007; Warner & Wester, 2002).

Emphasising the role of the political in water management and the plurality of actors and discourses Mollinga et al (Mollinga, Meinzen-Dick & Merrey, 2007) suggest the problemshed and the issue network as a more appropriate conceptual tool:

Mapping of a water management problem from a 'problemshed' rather than a watershed perspective avoids confining the scope of analysis to a hydrologically defined unit. The question regarding the boundaries of a given water management issue, in space, in time and socially, is treated as an open empirical question in a problemshed perspective, while, in a watershed perspective, boundaries are pre-defined spatially, sectorally and analytically through the primacy of water management problems. (Mollinga et al., 2007, p. 707)

These observations highlight the importance of scale and the associated politics in an analysis of water. Emma Norman, Karen Bakker and Christina Cook (Norman et al., 2012) make this point drawing on debates between scholars of critical urban studies (see for example Brenner, 2001; Jessop, Brenner & Jones, 2008; Marston, Jones & Woodward, 2005; Marston & Smith, 2001; Purcell, 2003). As was already alluded to above, this debate is also rooted in the differences between the new materialist theoretical approaches and geographical historical materialism. This discussion contrasts "horizontally networked relations ... with the vertical hierarchies of scale theory" (Marston et al., 2005, p. 417). On one hand scholars argue for flat ontologies that do away with scale as a social science concept altogether (Marston et al., 2005). On the other scholars retain it as useful tool to render visible the power relations involved in its construction. The discussion of scale is in many cases related to the reregulatory dynamics associated with the processes of

“variegated neoliberalisation” (see Brenner, Peck & Theodore, 2010b; Brenner & Theodore, 2002; Castree, 2008a, 2008b; Jessop et al., 2008; MacLeod & Goodwin, 1999; Swyngedouw, 1997, 2004a). According to Norman, Bakker and Cook “the argument that a scalar perspective is crucial for understanding water governance” (Norman et al., 2012, p.55) is more recent and the complex economic, political, and environmental interrelationships that play into this rescaling process are “understudied”.

Jessica Budds and Leonith Hinojosa (2012) propose the concept of the waterscape as deployed by critical geographers (Baviskar, 2007; Loftus, 2006; Loftus & Lumsden, 2008) as a way to avoid “the confines of conventional spatial scales and administrative structures” (Budds & Hinojosa-Valencia, 2012, p. 125). Their elaboration of the concept can be summarised as a freeze-frame of the hydrosocial cycle; it represents a snap-shot of institutional, technological, and discursive assemblages of a particular point in time. Changes in the waterscape are the equivalent of changes in the hydrosocial cycle. This allows a discussion of rescaling processes without giving priority to either governance structures or hydrological units (Budds & Hinojosa-Valencia, 2012).

With regard to this thesis the process of rescaling of institutions and governance involved in water resource management is central. The IDC forms a network that is international acting on necessarily local socio-technical assemblages. Its interface is with the Lebanese state and its administration produces a bias towards the national scale.

## 1.5.2 Water Sector Reforms

### 1.5.2.1 Integrated Water Management

Over the last two decades Integrated Water Resource Management (IWRM) has entered the development discourse as the panacea to tackle the challenges of uneven and “inefficient” water distribution and use, decreasing water quality, and associated environmental degradation. The Global Water Partnership (GWP), founded in 1996 by the World Bank, the UNDP and the Swedish International Development Agency to promote IWRM, defines it as follows<sup>6</sup>:

[IWRM is] a process which promotes the coordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital eco-systems. (GWP, 2010)

It is currently the hegemonic, or the new “sanctioned discourse” (Allan, 2006), with regard to water development. Though its history can be traced back further, its entrance into the global arena can be dated to the Dublin conference of 1992 (see Biswas, 2004; Butterworth, Warner, Moriarty, Smits & Batchelor, 2010; Molle, 2008). The four Dublin principles were a reaction to the growing concern with the perception of a looming water crisis promoted by the ‘pessimists’, as Allan (2006) calls them (see Gleick, 1996; Postel, 1992). Importantly, it enshrined the concept of water as an economic good, and in the subtext to this fourth principle, it also recognised water as a human right.<sup>7</sup>

<sup>6</sup>This definition can be found in numerous text with Biswas (2004) and Molle (2008) calling it the most cited definition.

<sup>7</sup>The other principles are: 1 - Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment; 2 - Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels; 3 - Women play a central part in the provision, management and safeguarding of water.

The efforts of the conference also sprang from the realisation that water management had previously been a disjointed exercise in most countries around the world. Different ministries were responsible for different aspects of water policy and acted without coordination; interventions did not sufficiently take the upstream-downstream nexus into account; hydrological interconnectedness was often overlooked and so on (2008). IWRM emerged as the response to this state of affairs and the perceived global water crisis. It is not clear though that IWRM approaches have indeed contributed to an improvement of the situation. Biswas (2004) goes so far as to say that “its impact to improve water management has at best been marginal” (cited in Butterworth et al., 2010, p. 69). At the same time, others see it as having led to positive reforms towards integrated management. The concept remains amorphous, it is so broadly and widely defined that most actors will find an interpretation to suit their needs. Today most water sector reform projects will proclaim their adherence to these principles and similarly most or all the actors involved in such projects (2004; 2008). IWRM also does not necessarily replace previous hydraulic paradigms. The hydraulic mission being the most noteworthy in the context of this thesis. Wester (2009) defines the hydraulic mission as “the strong conviction that every drop of water flowing to the ocean is a waste and that the state should develop hydraulic infrastructure to capture as much water as possible for human use” — a notion that is reproduced in Lebanon. Larry Swatuk (2008) shows how IWRM and the hydraulic mission coexist and influence decision making for a case in South Africa.<sup>8</sup>

Molle calls it a “Nirvana” concept because it remains an elusive goal. It is by definition a process, ongoing, never final. Lack of success can always be explained by wrongful application, by this or that missing ingredient. He further explains:

By its very nature, it is an attractive yet woolly consensual concept (nobody is against Nirvana). Such concepts typically: a) obscure the political nature of natural resources management; and b) are easily hijacked by groups seeking to legitimise their own agendas ... The above definition emphasises the three desired ‘E’ (Efficiency, Equity and Environmental sustainability) but implies that they can be achieved concomitantly if – as the word ‘maximise’ suggests — problem-solving can be informed by neutral and rational approaches, good science and expert knowledge, reflecting these three dimensions rather than being informed by one of them only. (Molle, 2008, p. 133)

This is not to claim that water problems should not be approached holistically and that integrated management is undesirable – they should and it might be desirable. But as Molle goes on to show IWRM has become a “buzzword” (like governance, participation, or sustainability) with very little precise content. Its application produces as many different results as the contexts in which it is deployed are locally specific and varied from one another (Molle, 2008), so that it cannot be treated as an indicator of the actual management practices in any given context.

---

<sup>8</sup>Tony Allan (2003) defines five paradigms on an evolutionary scale. The hydraulic mission in his conception is the second and follows the pre-modern paradigm and IWRM is the last. He sees the developing world still stuck at that second stage. Larry Swatuk (Swatuk, 2008) criticised this perspective. According to him today’s “water discourses reflect an on-going intra-paradigm debate among approaches that range along a technocentric-ecocentric continuum”(Swatuk, 2008, p. 27). He goes on to show, for the case of South Africa, how positive or negative (less positive) outcomes or IWRM efforts are the result of “particular configurations of social power” being associated with certain perspectives and approaches. Actors, he suggests, do not line up along one specific paradigm, but coalesce around issues.

### 1.5.2.2 Institutional Reform

In its current guise the emphasis of IWRM projects is on “policy and institutional reform at the national and river basin level with a specific focus on managing demand, i.e. better management and sharing of water resources between users” (Butterworth et al., 2010); in other words allocative and sectoral efficiency. At the centre of this clearly are water authorities or what Molle, Mollinga and Wester (2009) call hydrocracies.

Douglas Merrey et al. (2007) see that “the state will remain the main driver of reform for the foreseeable future but is also the institution most in need of reform” (Merrey et al., 2007, p.195). The role of the state has been redefined through the neoliberal state restructuring discourse over the last few decades. The water sector reforms of the past decades have mainly followed this neoliberal mantra of less state and formal property rights/water rights (Boelens & Wegerich, 2008; Boelens & Zwarteveen, 2005; Budds, 2004) to support a self-regulating market. As critical theorists (Brenner et al., 2010b; Castree, 2010a; Peck, 2002; Peck, Theodore & Brenner, 2009) have pointed out the translation of neoliberal governance templates does not follow the same uniform path. The reregulatory process happens in an uneven fashion and depends on local context producing variegated forms of “actually existing neoliberalism” (Brenner & Theodore, 2002). This neoliberalisation process does not come to an end point or reach completion, much rather it happens in a wave like dynamic, intensifying and ebbing over time (Brenner et al., 2010b).

According to Bakker (2007) a new philosophy of development — framed in the 2001 Kyoto agreement — which she terms market environmentalism, aims at:

a virtuous fusion of economic growth, efficiency and environmental conservation: through establishing private property rights, employing markets as allocation mechanisms, and incorporating environmental externalities through pricing, proponents of market environmentalism assert that environmental goods will be more efficiently allocated if treated as economic goods — thereby simultaneously addressing concerns over environmental degradation and inefficient use of resources. (Bakker, 2007, p. 432)

The neoclassical economic argument underlying this logic suggests that only by allocating the proper value to a resource, water in this case, can efficient use and best allocation be guaranteed. Only by getting the price right would water flow where it could produce the greatest value/returns. The perceived failure of allocation is associated to the state because water is usually allocated by way of centralised management, with subsidies seen as distorting prices. The market is seen as the one mechanism able to solve these issues. The state was ascribed the role of guaranteeing the proper functioning of markets by formalising property rights and providing the necessary legal framework. “The wider application of commercial principles to service providers, the broad use of competition, and the increased involvement of users where commercial and competitive behaviour is constrained” (World Bank 1994, cited in Robbins, 2003) were the means by which this would be achieved. In a functioning market it would be the private sector that would provide the necessary investments in all sectors related to water. In addition developing countries are under tremendous pressure by donor conditionalities and structural adjustment programmes to reduce state expenditures (see Bakker, 2007; Hall & Lobina, 2007; Hall, Lobina & De La Motte, 2005; Robbins, 2003; Swyngedouw, 2005).

With this discussion of the neoliberal institutional and administrative reform discourse and the importance of understanding its hybridised application in varying local contexts this brief overview

of the theoretical elements informing this thesis has been completed. I now turn to an elaboration of how these have structured the following argument.

## 1.6 A Framework Combining Theoretical Elements: The Hydrosocial Cycle, Scale, the IDC, and Neoliberalisation

Understanding IDC interaction with the Lebanese water sector and its administration and the resultant effects on power will be achieved through an analysis of the hydrosocial cycle. This perspective allows like no other to draw a comprehensive (as much as possible) account of water resource management and its effects on society and nature and vice versa, and as such to crystallise IDC influence in the process. The argument is further structured by its focus on the IDC. The aggregation of international development actors under the label IDC requires its empirical substantiation. It also, by definition, sets it apart from specifically Lebanese structures. As will be shown the water resource management process exists, in its current form, only in their interaction, and it is impossible to always precisely attribute causal primacy or establish clear and unidirectional causal chains. The process is (can be seen as being) dialectical, it is articulated in the interaction of the two sets of actors.

Another implication of studying the IDC is an analytic primacy of the national scale, the effects of IDC intervention on Lebanese development, and by extension Lebanese power structures and political economy can only be understood fully at this scale – having posed the problem in terms of the IDC. (For the case of Lebanon in part also because of the important hydrological interconnection between surface and groundwater due to the specific hydro-geological configuration.) Furthermore focusing on the question of political and economic power from a historical materialist perspective requires an understanding of the class dynamics of the process; how political and economic elites and/or the most disenfranchised section of the population profit or not from the process, which sections of the population have access to sufficient affordable water of good quality and which do not?

The goal in analysing the hydrosocial cycle is to unearth the role of the IDC in the construction of discursive/knowledge, material, social, technological, economic, political aspects of the specifically Lebanese hydrosocial constellations and dynamics; most importantly for the argument, to differentiate it from the contributions of the specifically Lebanese social dynamics, and from the multiple and often contingent influences that find their origin in the material, such as meteorological and hydro-geological processes as well as the technosocial dynamics that shape the flows of water and their distribution and quality.

This basic separation is reflected in the following two chapters (Chapter 2 and 3). The argument is structured to first identify the specifically Lebanese context and dynamics: existing water resources and their representation, the water sector administration, and the related definition of the water management problems by both Lebanese and IDC experts. This problem definition is then juxtaposed to a description of how the Lebanese political system affects water resource management (and by extension the hydrosocial cycle). The third chapter focuses on the IDC. The first part details its emergence and growing importance in the Lebanese development process and situates this firmly in the hybridised neoliberalisation of the country. The second part focuses on IDC influences and interventions in the water sector. It details various ways in which it intervenes in infrastructure production, management, and the construction of water resource management

specific knowledge. With this separation the presentation of the political economy is also divided over the two chapters, whereby the economic base of the power structure of Lebanese elites is explained in Chapter 3 as it is also the source of Lebanese dependence on international capital and development aid and as such the growing influence of the IDC. These two chapters together explain the larger political economic structure of the country and also sketch the discursive and knowledge related aspects of the hydrosocial cycle.

Where the first two substantive chapters focus on one and then the other set of actors, the fourth and fifth chapter elaborate on the interaction between the two, whereby the fourth looks at the results of this interaction on the water sector administration and the fifth on the planning and production of infrastructure and its articulation within the Lebanese geographical and hydrogeological context. Chapter four explores the changes of the administrative structure while juxtaposing this process to the resilience of the Lebanese structures of social power. Chapter 5 explains geographical and sectoral uneven development and related deteriorating ecological resources and resulting uneven access to water resources.

Finally, notwithstanding the analytic primacy of the national scale, partly in reaction to the new materialist critique of historical materialist approaches and its insistence on descriptive detail, and the importance of micro scale political analysis the study is substantiated by numerous smaller case studies. This approach is also inherent in the idea of the hydrosocial cycle, whereby here the micro level politics are more relevant in view of their structural characteristics. The always local character of water flows and accordingly infrastructure projects – by way of being material processes – also necessitates analysis at this scale. These small scale case studies serve to illustrate how the social metabolism of water materialises and is shaped also by bio- and geophysical processes and other often contingent dynamics. Water and its management serve as the binding element in this critical analysis of international development and also serve to illustrate the specific pathways of its (and by extension nature's) neoliberalisation.

## Chapter 2

# Lebanese Water Resources and their Administration

This chapter begins the analysis of the hydrosocial cycle in Lebanon with three important elements that shape it. First the scientific representation of the hydrologic cycle as well as the demand and supply scenarios built on it which serve to render the resource calculable and manageable. In this context I will show how water is constructed as a scarce resource and how this influences water resource management policy.

The next section moves to a description of the water sector administration and its functioning. As an introduction to this section I will show how the administration and its problems are represented by the IDC in a depoliticised manner. Following, the water resource management process within the Lebanese administration will be detailed. This description shows that the process is invariably tied to the parliamentary and governmental process and so inherently political.

The last part of this chapter focuses on the socio-political power structures to begin to show how these affect the water resource management process, the water sector administration, and the decision making process.

The water resource management process is tightly intertwined with the Lebanese political process and reflects its six characteristic features: 1) the prevalence of sectarian clientelist networks and related patron-client dynamics in the administration and the private sector; 2) a need for consensus between the different elites also rooted in the constitution; 3) a frequently recurring deadlock of the political process; 4) which is often resolved through a distribution of resources among political elites and/or 5) through attempts to bypass the political and legal process. Finally, 6) direct Syrian dominance over the political process until 2005 which has decreased since.

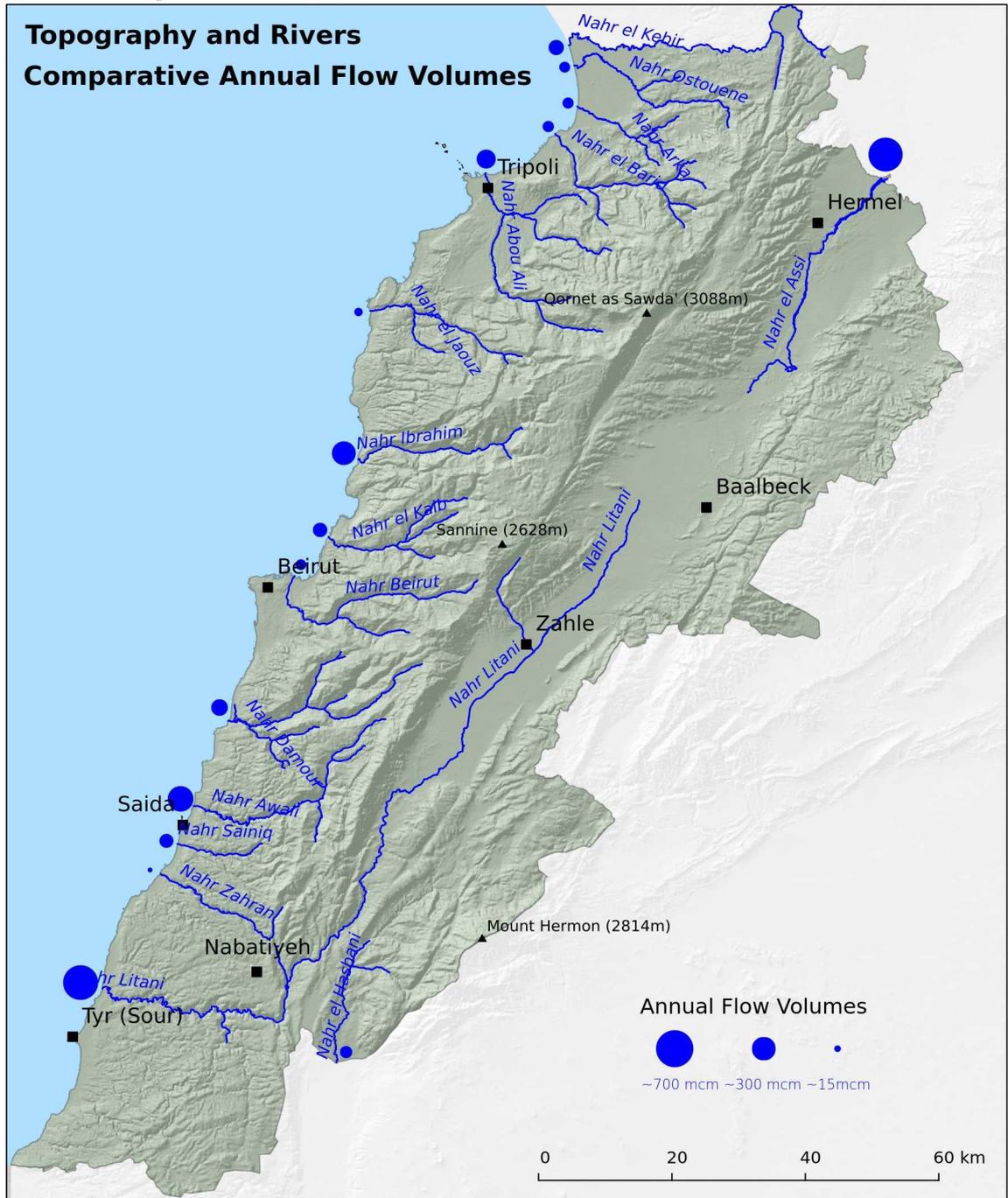
### 2.1 Hydrology, Water Balances, Climate Change, and Scarcity

The national scale is the largest at which water resource management takes place, WRM remains a state endeavour. In the Lebanese case the national scale remains small in size, its surface area is 10,452 km<sup>2</sup>. The country had approximately 4 million inhabitants at the beginning of this research.<sup>1</sup>

---

<sup>1</sup>With the Syrian revolution cum civil war going into its fourth year and the related influx of refugees that number has swollen drastically to somewhere between 5 and 6 million residents.

Figure 2.1: Topography of Lebanon with rivers and major urban centres



For comparison, metropolitan London has an area of 8,382 km<sup>2</sup> and a population of about 15 million, the Berlin metropolitan area extends over 30,370 km<sup>2</sup> and houses 4.5 million inhabitants, and Mumbai metropolitan area is the home of some 18–20 million residents in an area of 4,300 km<sup>2</sup>.<sup>2</sup> That is to say that not only is Lebanon small, but what is the national scale in this study, in terms of absolute size, is the scale of a metropolitan area in a different location.

The Lebanese geography is marked by two mountain ranges running north to south. The

<sup>2</sup>Data on the metropolitan areas was obtained from Wikipedia and serves only for comparison.

Mount Lebanon range rises steeply from the coast and reaches heights of 3,084 meters in the north. The crest slopes towards the south at altitudes between 2,000 and 2,600 m and falls off towards the southern border. In the west the Anti-Lebanon range runs parallel. Its highest peak is Mount Hermon with 2,814 meters and marks the border with Syria and the Israeli occupied Golan. Between the two lies the Bekaa Valley with altitudes ranging from 1,400 m in the north to about 900 m in the south where the terrain falls off towards the Hula plain in occupied Palestine (see Fig.2.1). Due to the geographical variations the different areas receives widely varied amounts of rain. The all year round lush green coastal strip and western slope are contrasted by the much drier Bekaa area.

Lebanon has about 2,000 springs and 40 surface watersheds of which 16 sustain perennial rivers, the remainder feed seasonal streams. Of these 13 run from the western mountain ranges towards the coast and three originate inland. The Litani runs from the Bekaa towards the south along the Mount Lebanon range and cuts towards the sea in its foothills. The Assi river flows north from the Bekaa into Syria and the Hasbani flows south from the slopes of Mount Hermon towards the Houla plain into occupied Palestine. Figure 2.1 depicts the topography and rivers and provides a comparative measure of the river flows. The flows are not exactly quantified because of the poor quality of the data and the widely differing estimates. Finally, not indicated on the map are the main groundwater aquifers which also form an important source of water for both irrigation and the domestic water supply. Two geological layers act as reservoirs for groundwater and all perennial rivers are sustained mainly by spring discharge from groundwater and only to a very small degree by surface water run off.

### 2.1.1 Water Masses and Measurements

Most of the rainfall or about 70 percent occurs on the western slope of the Mount Lebanon range. The coastal area receives around 880 mm to 1,000 mm. This increases with altitude to estimated highs of 1,600–2,000 mm in the high mountains above 1,500 m. Because the western mountain range forms a weather barrier, the Bekaa plain receives only between 200–600 mm. Nearly all rainfall occurs in the months from mid November to the end of April.

An assessment of the total water masses the country receives through precipitation is more difficult. In 2010 the government published a national water balance in the National Water Sector Strategy (NWSS) (see Figure 2.2). According to this document the country receives 8,600 MCM (million cubic meters) as rainfall and snow, total evapo-transpiration is estimated at 4,500 MCM leaving about 4,100 MCM total renewable water resources.

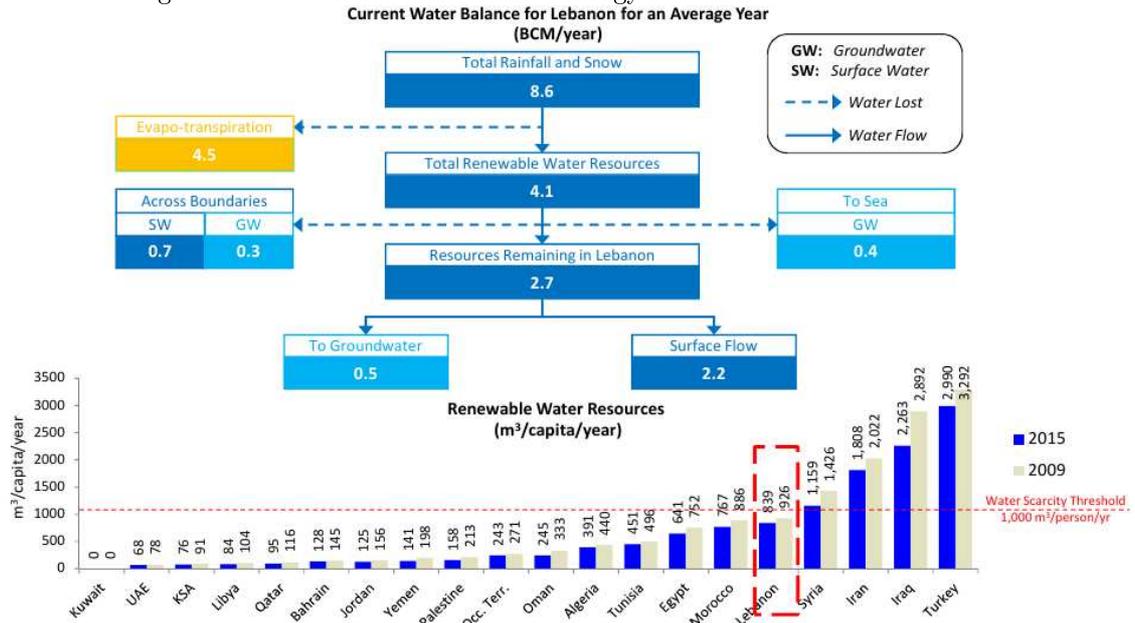
These numbers stem from the mid to late 1990s and have been reproduced since.<sup>3</sup> They are the numbers that form the basis for Lebanese water resource planning. But as will be seen shortly these numbers cannot be considered accurate representations of the water volumes of an average rainfall year (disregarding the fact that an average rainfall year seldom happens). There is a considerable margin of error in these numbers and their usefulness for planning needs to be questioned. Where their usefulness is more obvious is as justification for a capital expenditure plan of US\$ 7.74 billion from 2011 to 2020 (MEW, 2010b, p.79), an expression of the Lebanese hydraulic mission<sup>4</sup> and confirms their political value.

---

<sup>3</sup>Hussein Amery (2000) cites a presentation from 1998 by Fadi Comair, President of the Board of the Litani River Authority (LRA) at the time, that presents similar numbers.

<sup>4</sup>See Ghiotti and Riachi (2014); Riachi (2013) for a historical view of Lebanese hydraulic mission.

Figure 2.2: National Water Sector Strategy — Water balance in Lebanon



Source: National Water Sector Strategy 2010, p. 46.

They form the basis for the declaration that Lebanon falls below the commonly used water scarcity threshold of 1000 m<sup>3</sup>/capita/year and gives just the right sense of urgency to the investment program. This indicator has been widely criticised for its aggregation of regionally varying situation and the “data problems from which it suffers.”<sup>5</sup> In the case of Lebanon the uncertainty concerning the water volumes and the population numbers is considerable.<sup>6</sup>

A more sensible analysis of the hydrologic cycle (at the scale of the country) is presented by Michel Bakalowicz (Bakalowicz, 2009). In his analysis he reviews a number of previous reports and compares the varying estimates for average rainfall, evapo-transpiration and surface water run-off (see Catafago & Jaber, 2001a; Comair, 2007; World Bank, 2003; ?). He establishes a range of 8,300 MCM and 10,400 MCM for a year with average rainfall. For a dry year with 10-year recurrence interval total rainfall is estimated at about 60 percent of the average year.

The values for evapo-transpiration Bakalowicz produces also diverge considerably from those presented by other authors. Based on a statistical approach he estimates the value between 5,200–6,200 MCM, whereas others estimate the values at 4,000–4,300 MCM.<sup>7</sup> Finally he estimates surface water run-off between 3,670–4,800 MCM. Following an analysis of resources at a subnational scale, using spring and river data, as well as information regarding the principal aquifers, he concludes that the known exploitable resources are in the order of 2,600 MCM or about 60 percent of the total resources of 4,500 MCM remaining in the country after subtracting surface flows to neighbouring

<sup>5</sup>See Molle and Mollinga (2003) for a discussion a detailed discussion.

<sup>6</sup>The population is calculated from the Central Administration of Statistics (CAS) estimation of residents living outside of Palestinian camps in 2007. 3,759,135 residents in 2007 with a growth rate of 1.75 percent for three years until 2010 proving an estimate of 3,975,000 residents outside the camps in addition to 450,000 Palestinian refugees registered with the United Nations Relief and Works Agency (UNRWA) responsible for service provision to Palestinian camps. A joint American University of Beirut and UNRWA study published in late 2010 estimates the number of refugees actually living in Lebanon ranges between 250,000–280,000 less than the 425,000 registered refugees (Chaaban et al. 2010, p. x). This is mainly due to the “massive emigration of Palestinians”. (p.x) But even the population data from the CAS must be treated with care as they are based solely on small scale households surveys and extrapolated from there (CAS, 2010).

<sup>7</sup>He notes that no explanation for these numbers are given. Two different interviewees pointed out the same to me suggesting that the roughly 50 percent that is currently used as reference number has no scientific basis.

countries. Table 2.1 summarises his analysis of the national water resources (for the in-depth discussion see Bakalowicz, 2009).

Table 2.1: Comparison of water balances

Elements of the Balance (in MCM)		Values from the Literature	Retained Values
precipitation		8 320 - 10 400	10 000
evapo-transpiration		4 300 - 6 200*	5 000
flows from the 40 major rivers and streams		3 673 - 4 800	4 500
surface water flows to neighb. countries		300 - 670	500
groundwater flows to neighb. countries		310	?
submarine springs		385 - 1000	< 200
Total resources	avg. year	2 600 - 4 800	4 500
	dry year	1 400 - 2 600	2 600
Exploitable resources	surface water	1 500	
	groundwater	700 - 1 165	
	Total	1 400 - 2 200	2600**

Source: Balakowicz 2009, p. 15.

\* The unpublished report of the Japanese International Cooperation Agency estimates evapo-transpiration at 2 700 MCM.

\*\* this number presents his very rough estimate of exploitable resources. It has to be highlighted that exploitability is also a function of technological cost (energy cost being an important variable).

This summary shows that considerable differences exist in the assessment of water resources. At the root of these differences is the quality and incompleteness of precipitation series, and river flow data, as well as the lack of knowledge about groundwater flows and volumes. The different authors acknowledge the gaps in the data (Amery, 2000; Catafago & Jaber, 2001a; Sene, Marsh & Hachache, 1999; World Bank, 2003). The measurement infrastructure was largely destroyed during the war and has not been rehabilitated to prewar levels. As Amery (2000) observes:

Lebanon's infrastructure for gathering water data is very weak to nonexistent, and this reflects negatively on the quality and accuracy of currently available data.

This had not changed by 2012 as the director of a UNDP implemented project to assess groundwater confirms (Interview Khayat 2012). Most importantly in terms of precipitation the amount of snowfall was never measured.<sup>8</sup> According to Bakalowicz:

It seems that this incertitude is due to the absence of viable data about the snowpack cover because no measurements are done at altitudes that would allow to reconstitute the precipitation above 1,500 m in a valid form. The few proposed estimates suggest a probable underestimation of precipitation at high altitude. Yet altitudes above 1,500 m cover about 3,000 km<sup>2</sup>, or close to 30 percent of the Lebanese territory. (Bakalowicz, 2009, p. 6)

The case is similar for the measurements of river flows. The measurements that are taken have been questioned by numerous experts (Interview Margane 2012, Renck 2011, Khayat 2012, Abdallah 2011) and personal observation of a couple of stations confirms that many are in poor shape.

The need to improve the data gathering infrastructure is understood by Lebanese water sector officials but to-date very little has been achieved in this realm. Data is produced on a piecemeal basis usually in the framework of infrastructure project designs or implementation. This comes with the drawback that data, project necessities, and the economic feasibility assessments have a

<sup>8</sup>Only by 2012 have very limited efforts in this direction begun (Interview Khayat).

tendency to confirm each other. The view expressed by officials and international experts is that it is better to have some data rather than none (Interview Klingbeil 2013, Interview Jaber 2010). The fact that the existing data is nevertheless presented in absolute terms and that possibly significant variations<sup>9</sup> in the volumes at different stages of the hydraulic cycle are rarely explained point to the purposeful construction of the official model and the interest behind its retention over the last two decades.

That the efforts to improve the situation are at best halfhearted highlights the priority given to other aspects of resource management, especially infrastructure development. It further stands in contrast to notions that emphasises scarcity and aim at a commodification of the resources to produce an efficient allocation through prices determined in a free market (which in theory would require a thorough understanding and knowledge of the quantities involved).

### 2.1.2 Climate Change

This uncertainty is exaggerated by the prospects of climate change. The predicted rise of average temperatures is widely seen as leading to a decrease in total renewable water resources. Treaties on climate change often invoke the spectre of shortages or scarcity (see Bou-Zeid & El-Fadel, 2002 for example). Experts agree that climate change dynamics will lead to a rise in annual average temperature across the region (see for example Assaf, 2009; Pachauri & Reisinger, 2007; United Nations Development Programme, 2011). A general decrease in precipitation throughout the Middle East and North Africa is a related scenario which is considered very probable by experts (see also Assaf, 2009, 2010). Yet, given the range of different micro climates, Lebanon's geographical specificity, and the margins of error in general circulation models for climate change predictions, the overall effects of climate change on precipitation in Lebanon remain uncertain.<sup>10</sup>

Amin Shaban (Shaban, 2009) shows a decreasing trend in precipitation volumes, a decrease of the snow-cover area, as well as a decreasing snow-cover period based on analysis of satellite imagery from 1989–2007. Yet given the quality of the existing data experts have voiced their reservations with regard to his findings (Interview Khayat 2012, Klingbeil 2012, Margane 2012).

Bakalowicz reviews the predictions of general circulation models and finds that the precipitation data generated does not match observed data accurately enough, i.e. considerable error margins exist that make the models unsuitable to make predictions for Lebanon (Bakalowicz 2009, p.28–29).

Based on evapo-transpiration calculations he goes on to predict increases of water losses through the evapo-transpiration process conditional on decreases in both precipitation and increases in temperature. He models for 10 percent and 20 percent decreases in total precipitation and average temperature rises of 1°C and 2 °C. He concludes that in these conditions water resources would decrease between 6–8 percent and 12–16 percent respectively. Translated to total volumes this yields changes from the currently estimated 2,800–4,700 MCM (see above) to 2,550–4,400 MCM and 2,350–4,100 MCM for the two scenarios respectively (Bakalowicz, 2009, p.30–32).

Climate change effects on snow-cover and related water masses seem to elicit easier consensus among experts. With temperature increases the snow-rain limit is expected to rise in altitude reducing the snowpack cover. Higher temperatures will also lead to earlier snow melt affecting flow patterns of rivers. A research project conducted by a Lebanese and French team of scientists

---

<sup>9</sup>2,700 MCM remaining in the country according to the NWSS all of which are considered exploitable and 4,500 MCM according to Bakalowicz which remain in the country but only 60 percent of which he estimates to be exploitable.

<sup>10</sup>Mohamed el-Raey (2009) points out that: "Development of a regional model simulation for the Mediterranean is presently missing and one needs to be made in the future." (p.61)

modelled run-off scenarios for temperature and precipitation changes for the Ibrahim river (Nahr Ibrahim). Based on the model they show that peak flow of rivers is likely to be shifted to earlier months without necessarily affecting overall volumes dramatically (see fig. 2.3). The implications are that river flows will peak and start decreasing “15 days to a month earlier”, thus prolonging the draught period (Hreiche, Najem & Bocquillon, 2007, p.1132).

Figure 2.3: Modelled streamflow of Nahr Ibrahim

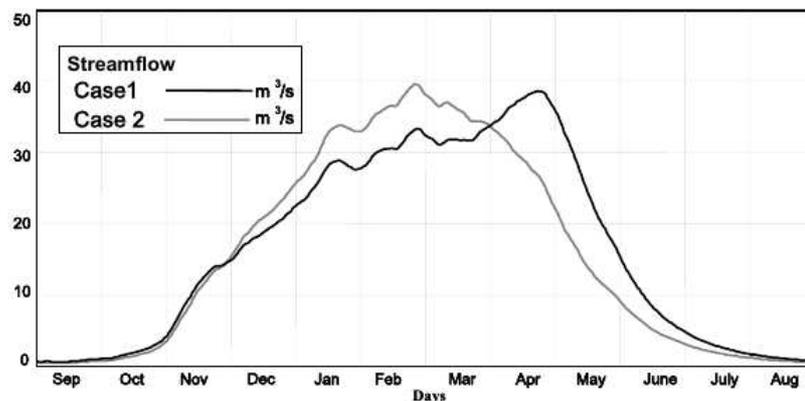


Fig. 12 Mean daily streamflow data of Nahr Ibrahim (Case 1: reference simulation, Case 2: scenario of an increase by 2°C).

Source: Hreiche et al. (2007), p.1131

### 2.1.3 Demand and Supply

Compared to neighbouring countries Lebanon receives relatively abundant amounts of rain. The shortage that is experienced in the urban context, as well as for agricultural purposes, has two aspects. One is the geographical aspect, some areas and groups have water for multiple purposes others do not, this is a function of available infrastructure and local water resources (this will be elaborated further in Chapter 5). The second aspect is seasonal, water demand is highest in the summer months when it does not rain. When reserves run low by the end of the summer the period when public water supply operation decreases drastically and irrigation becomes more expensive. The scarcity discussion is usually linked to water demand, related population growth rates and climate change.

An often cited study from Elie Bou Zeid and Mutasem el-Fadel (2002) estimates 15 percent decrease in available water resources and coupled to this a 6 percent increase in demand by 2025.<sup>11</sup> A summary of predictions presents per capita estimates for future scenarios (See Fig 2.4).

With the benefit of hindsight it can be observed that the population estimates are very high. By 2010 the population was more likely closer to 4 million or even to the 4.5 million estimated in the NWSS than the 5.5 million that Bou Zeid and el-Fadel produce. Demand projections are equally much higher than the those produced by the NWSS. The latter produces three demand projections until 2035. In the high demand scenario demand is modelled to reach 2,518 MCM/year, moderate demand 1,802 MCM/year (see figure 2.5), and low demand 1,410 MCM/year (NWSS 2010 p. 39). The differences to Bou Zeid and el-Fadel (2002) are striking and for the year 2030 their predictions are 42 percent, 92 percent, and 134 percent higher than the respective NWSS

<sup>11</sup> Among others it is cited in a World Bank report titled “Making the Most of Scarcity: Accountability for Better Water management Results in the Middle East and North Africa”(World Bank, 2007) to emphasise the potential cost of scarcity in terms of GDP.

scenarios. The variations originate from the different assumptions which are explained in both cases.

Figure 2.4: Water resource predictions per capita by Bou-Zeid and El-Fadel

**Table 3.** Annual Water Resources in Some Middle Eastern Countries (Berkoff 1994; Shuval 1994; FAO 1997; ESCWA 1999, Alatout 2000; Amery 2000; El-Fadel et al. 2000; Lithwick 2000; Shannang and Al-Adwan 2000)

Country	Average annual rainfall (mm)	Use of desalinated water and reclaimed waste water (% of total withdrawal)	Total renewable water resources (billion m <sup>3</sup> )	Current and Projected Renewable Water Resources <sup>b</sup>		
				1997	2015 (m <sup>3</sup> /capita)	2025
Iraq	154	— <sup>a</sup>	62.85–100.00	2,963–4,628	1,832–2,938	1,359–2,000
Israel	630	11.56	1.50–2.57	280–435	190–356	140–311
Jordan	94	5.32	0.75–1.35	168–229	78–133	70–91
Lebanon	827	0.16	2.00–3.94	766–1,287	336–979	262–809
Palestinian Authority	350	1.08	0.20–0.22	72–92	43–56	34–36
Syria	252	2.56	15.00–21.48	1,160–1,438	759–948	535–609

<sup>a</sup>Not available.

<sup>b</sup>The level below which a country is considered water poor varies between different agencies and experts, but is consistently around 1,000 m<sup>3</sup>/capita/year.

**Table 7.** Population and Water Demand Projections for Lebanon (El-Fadel et al. 2000)

Projection year	Population (millions)	Water Demand (Million m <sup>3</sup> /Year)			
		Domestic	Industrial	Irrigation	Total
2010	5.5	452	445	1,000	1,897
2015	6.0	532	516	1,200	2,248
2020	6.7	641	598	1,350	2,589
2025	7.6	780	693	1,500	2,973
2030	8.1	876	804	1,600	3,280

Source: reproduced from Bou-Zeid and El-Fadel (2002).

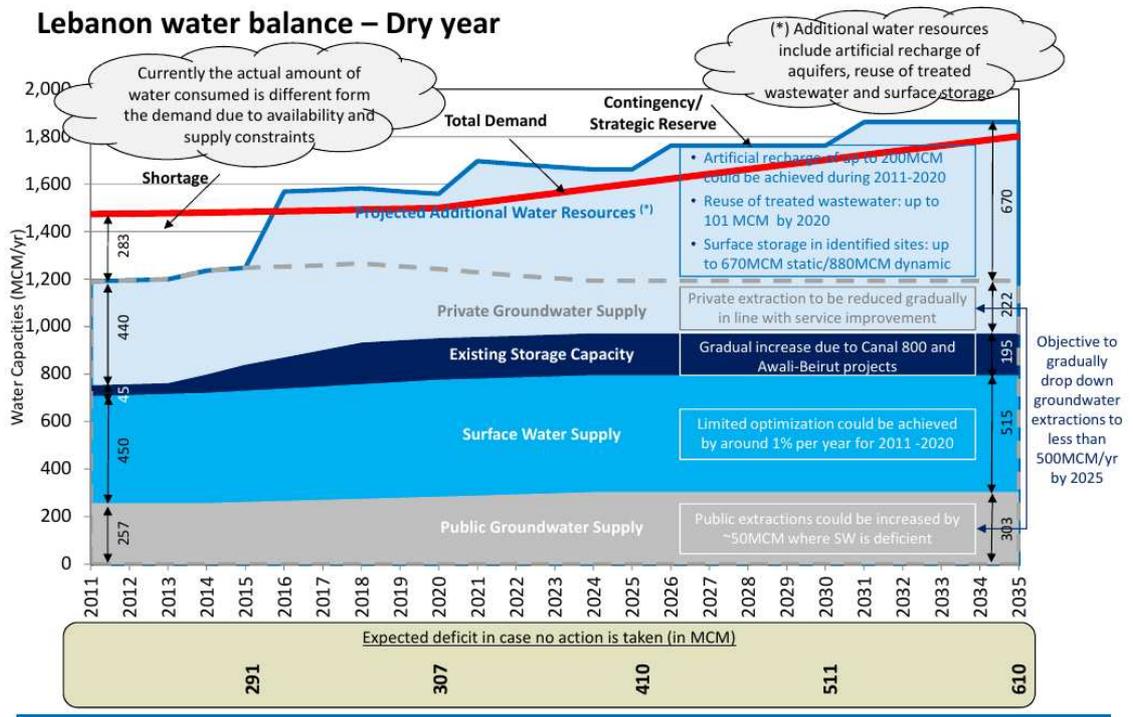
With the benefit of hindsight it can be observed that the population estimates are very high. By 2010 the population was more likely closer to 4 million or even to the 4.5 million estimated in the NWSS than the 5.5 million that Bou Zeid and el-Fadel produce. Demand projections are equally much higher than the those produced by the NWSS. The latter produces three demand projections until 2035. In the high demand scenario demand is modelled to reach 2,518 MCM/year, moderate demand 1,802 MCM/year (see figure 2.5), and low demand 1,410 MCM/year (NWSS 2010 p. 39). The differences to Bou Zeid and el-Fadel (2002) are striking and for the year 2030 their predictions are 42 percent, 92 percent, and 134 percent higher than the respective NWSS scenarios. The variations originate from the different assumptions which are explained in both cases.

The NWSS was produced 10 years later and benefits from a comparable improvement in availability of data, due to the progression of time and experience in the water sector. Nevertheless in both cases the choice of data is not without meaning. Bou Zeid and el-Fadel chose to extrapolate from then current high consumption practices. They estimated that water used per hectare for irrigation will remain at the very high value of 10,000 m<sup>3</sup> for the projected period and total irrigation areas will reach 150,000 ha. Similarly, they chose to represent per capita domestic water consumption to reach 300 l/c/d by 2030, which is very high by most standards but especially for the Middle East. The estimates by Bou Zeid and el-Fadel (2002) were clearly aimed to produce a worst case scenario, do carry an alarmist tone and produce scenarios of considerable scarcity. They make the case that water demand will quickly outstrip available supplies of 2,000 MCM/year

(based on the same official water balance reproduced in the NWSS) leading to water shortages by 2010–2015.

In contrast the NWSS takes 7,000 and 8,000 m<sup>3</sup>/ha as values for irrigation and projects two target scenarios for expansion of irrigated area, 130,000 ha and 180,000 ha. It estimates domestic demand to increase to 169 l/c/d, 195 l/c/d, and 220 l/c/d for the respective scenarios. The NWSS produced by the Ministry of Energy and Water has an obvious interest in presenting a scenario according to which it can achieve a situation where demand and supply match in the time frame of its ambitious investment programme for the water sector.

Figure 2.5: Supply- demand balance for a dry year in the NWSS



Source: Ministry of Energy and Water, National Water Sector Strategy (2010), p.46.

Another study worth mentioning here is presented in the book of Fadi Comair, General Director of the Department of Hydraulic and Electrical Resources (GDHER) at the ministry and responsible for water resource planning. He predicts a total demand of 3,400 MCM/year and a deficit of 1,700 MCM/year for 2040 if the decennial plan he devised is not put into action.<sup>12</sup> Others go even further. Bassam Hamdar, Chairman of the Faculty of Economics at the American University of Science and Technology is cited in the Lebanese daily *al-Akhbar*:

All scientific institutions and researches confirm that water demand in Lebanon currently exceeds the 3 billion m<sup>3</sup> level, and will exceed 4–4.5 billion m<sup>3</sup> in the future. Meanwhile, those who believe that Lebanon will have a surplus are basing their conclusions on research suggesting that the current demand is less than 2 billion m<sup>3</sup>, which is not the case. (Abou-Mosleh, 2014)

<sup>12</sup>The book was published while the NWSS was studied and produced. The studies it contains are a compilation of work he presented on numerous occasions since his promotion to the ministry. It was not discussed here in detail because of inconsistencies in the presentation of the data and uncertainties (mistakes) in the demand-supply scenario (see Comair 2010b, p. 148 -149).

To say that demand will be as high or higher than estimated exploitable resources or even renewable resources is in effect presenting the resource as scarce resource. In the case of Lebanon, a country that was considered to be rich in water resources, these predictions serve to create a sense of scarcity — projected into the future but nevertheless emphasising the economic notion of limited resources faced with quasi unlimited demand (even if managed). The scarcity threshold is mentioned and predicted to worsen in the NWSS as well as the World Bank “Lebanon Country Water Sector Assistance Strategy” for 2011–2016 (MEW, 2010b; World Bank, 2012b). This discourse has found its way into the Lebanese public sphere. In an interview from 2013 the head of the Health and Environment Department at the Lebanese University Dr. Jalal Halawani stated the issues with water is not as much about “mismanagement, bad distribution, and pollution inasmuch as it is about scarcity and shortages” (Berberi, 2013) (see Changpertitum, 2008; Dockery, 2012; Galey, 2011 for other examples discussing the looming crisis).

This drive to frame the water problem in terms of scarcity is not new. In the 1990s it was framed in terms of population growth (see *The Daily Star*, 1998b for example). The threat of climate change reinforces this notion. For Lebanon this means that the reputation of being the “Chateau d’eau” — the water tower — of the region is being replaced. A country where successive ministers entertained the idea of selling water to neighbouring countries is thus represented as being in a situation of shortage and by extension scarcity.

This is not to say that there is no limit to the resource. The NWSS demand supply scenario is represented in Figure 2.5 for a dry year with a 10 year recurrence interval and shows that a water shortage already exists. Figures 2.2 and 2.5 indicate that at least 200 MCM/year more groundwater is exploited than replenishes naturally according to the numbers in the NWSS. Given the uncertainty in the data of both water and the number of wells, this could be much more as it could be less. The falling water tables in many areas of the country indicate that groundwater is being overextracted (see also Chapter 5). But the demand supply models go beyond this simple assertion; they frame a vision of the future and how it should be or how the designers of the model want it to be.

As such they are loaded with assumptions, many of which carry a political meaning. Between the uncertainty resulting from the bad quality of the existing data and the uncertainty of climate change models, predictions on future water availability can only be highly imprecise. The use of this data and its representation as absolute truth (as the uncertainties are never mentioned by state or IDC actors<sup>13</sup>) as well as the claims regarding availability and development made on this shaky scientific basis further highlights that the predictions are not guided solely by scientific and rational planning principles.

In all cases the scenarios that are developed are based on extrapolation from existing conditions in a more or less linear fashion. The numerical assumptions are explicated but other assumptions remain implicit. The most obvious is the population growth rate, in its linearity all sociohistoric dynamics are evacuated from the predictions. Emigration for its various reasons, war, or since 2011 the influx of Syrian refugees, do not happen in these scenarios. These techniques might produce reasonable predictions in a more stable socio-political context, but in a volatile context such as the Middle East and especially Lebanon, their predictive value needs to be questioned; the more

---

<sup>13</sup>The National Master Physical Master Plan for the Lebanese Territory is the only exception that could be found showing the different estimates of the water balance (Dar al Handasah (Shaer and Partners) – IAURIF, 2005) but this plans has never been ratified by parliament.

so when the last population census dates from 1932 and all the more recent figures are based on much smaller household or buildings surveys.

Embedded in the predictions are also visions of continuous economic growth under current production systems (social metabolic assemblages). For demand to increase as predicted not only the population needs to grow but economic activity needs to follow suit. Why would industrial water demand increase if not due to equivalent growth in the sector? The same is true for agricultural activity and irrigation demand; agricultural production systems are assumed to remain the same and at the very least the irrigation infrastructure needs to be produced for the real demand to exist and then to be met.<sup>14</sup> It is a circular process in which growth is predicted, and so posited as inevitable, to justify the interventions that are designed to make this growth possible.<sup>15</sup> In that sense the underlying assumption hides an ideology of maximum economic growth and related maximum exploitation of the resource, a marriage of the hydraulic mission and a capitalist's wet dream of infinite growth. It illustrates Harvey's (1996) point that ecological arguments are simultaneously political economic arguments.

Further, positing the water problem in terms of scarcity makes the resource amenable to being valued in economic terms. The solution is thus reduced to one of assigning water the correct value which will then be allocated through the operation of a free market. This in turn requires the commodification of water, the commercialisation of state utility bodies and the involvement of the private sector through privatisation and public-private partnerships (PPP) in its various guises. In Lebanon this argument is supported by the extremely limited financial capacity of the state. This need for the private sector participation is reiterated at every possibility by the Lebanese decision makers and international water experts. Fadi Comair, the Director General of the Department of Hydraulic and Electrical Resources, expresses this clearly:

We cannot implement infrastructure projects if the private sector does not intervene,  
...Without the private sector we can do nothing. (Halawi, 2010)

Similarly, the governor of the Central Bank Riad Salame presents the problem highlighting the importance of PPPs by mobilising scarcity:

From a perspective of an era of desertification and drought, water is not only a natural resource but becomes an economic and financial resource that is not less important than oil if it is well managed. (Author's translation, L'Orient le Jour, 2010)

## 2.2 The Lebanese Water Sector Administration

Another observation can be made about the water-balance scenarios described above. The scenarios built to predict supply and demand balances are attempts to render the resource, in effect the whole hydraulic cycle, predictable. In their abstraction they attempt to produce a manageable resource. They are representations of aspects of the hydrosocial cycle, present and future, at the scale of the Lebanese territories. They model both demand and supply, existing conditions and future growth, in abstract quantities on the basis of a variety of inputs.<sup>16</sup> What is effectively modelled is the water

<sup>14</sup>The water scarcity threshold of 1,000m<sup>3</sup>/c/y for example calculates the water food requirements for one person. Trade in cereals and other foodstuff balances, or can balance, these water requirements. The real demand for water is thus a different issue, it depends on agricultural production systems and markets.

<sup>15</sup>This not to say that different social metabolic arrangements or a different mode of production would not grow or would not need to exhibit some growth in a more limited fashion.

<sup>16</sup>On the demand side they include different rates of domestic consumption per capita, industrial, tourism and irrigation consumption, population and irrigation growth, impact of economic development, tariff change, water

resource management process for the time period, this includes its administrative and operational aspects, as well as the infrastructure production process.

The water resource management process is recognised as suffering from serious defects by all actors involved. Its improvement and the realisation of the vision expressed by the experts rests on two main components. One is the production of the necessary infrastructure (see Chapter 5) and the second the reform of the water sector (Chapter 4). The implementation of these strategies is guided by the analysis of the shortcomings of the Lebanese water administration, the problem analysis, that these actors produce.

### 2.2.1 The Problems of the Water Sector: a View from the Mainstream

The actors in the water sector and their responsibilities are described in a number of publications by Lebanese and international agencies and experts. Water sector officials like Selim Catafago, President of the Board of Directors of the Litani River Authority, and Bassam Jaber, former Director General of Exploitation at the ministry (Catafago, 2005; Catafago & Jaber, 2001a), as well as Fadi Comair, current director of the resource department (Comair, 2005, 2007, 2010b), are the most important representatives of the Lebanese experts and their writings. The World Bank is the international institution which has produced the most expansive literature on the Lebanese water sector (Akkaya, Junge & Mansour, 2009; World Bank, 1998, 2010d, 2012b), UN organisations such as ESCWA, UNDP and UNICEF have also produced significant volumes of reports on the state of water resources and the water sector administration (see for example Abdulrazzak & Kobeissi, 2002; Lictevout, 2010), as have the EU and bilateral development organisations (Freiha, 2009; Gedeon, 2008; SOGESID, 2005; Tidiere, 2009) (represented in Table 3.2 and Figure 3.4). In these reports the structure of the Lebanese water sector is often described in an idealised and/or schematic fashion built largely on a reading of the laws and regulations that define the responsibilities of the different administrative bodies. This is usually coupled with observations stating the overlapping responsibilities and the fragmentation of the sector that are an important aspect of the dysfunctions characterising the sector.

The World Bank Water Sector Assistance Strategy for 2012–2016 elaborates the problem statement as follows:

The institutional and legal framework envisaged has not been effectively implemented, creating institutional uncertainty over sector responsibilities. Coordination within government remains poor, in particular between MEW and the CDR, with continued fragmentation of responsibilities for investment planning and execution, and consequent low efficiency of public expenditures. The (partial) implementation of a delegated model of service provision has not been complemented by a parallel effort to strengthen central government oversight over the water sector. Reciprocal accountability between Water Establishments and clients remains weak, as WEs are not adequately empowered to improve service levels. (World Bank, 2012b, p.vii)

The reform law of 2000 and the following amendments changed some of this and according to the new legal setup the fragmentation and overlapping responsibilities have been reduced — at least legally (see Chapter 4). The reality of the relationship between the different actors is seldom depicted (or not at all) and then very benevolently. How decision making happens, the politics

---

conservation, and reduction in unaccounted-for-water (UfW). On the supply side: current production rates of ground and surface water as well as storage capacity.

that influence the water management process, is usually summed up in shallow descriptions of institutional and financial weakness of administrative bodies. The actual political mechanisms that shape the institutions and their functioning are a fundamental aspect of this weakness, but are usually left out of the problem analysis, being reduced to “social polarisation” (2010d) but not systematically analysed.<sup>17</sup> This represents a disembedding of the water resource management process from the political context that creates it and of which it is a constituent part. The water resource administration is analysed as if it operated in a benign vacuum.

In part this can be explained by the intended audience and the aims with which these reports are formulated, but also by the ideological positions of the writers. There are certainly limits to how critical of the Lebanese state the development actors can be in public before it becomes diplomatically untenable. Yet, a report by OMSAR (Office of the Minister of State for Administrative Reform) dating from 2001, signed by the minister of state, is very frank about the importance of political interference, clientelist relationships, and corruption as hindering the functioning of the state as well as the failure to reform (Office of the Minister of State for Administrative Reform, 2001, p. 3–6). The exclusion of these factors in analysis of the water sector administration is thus not an entirely innocent or diplomatic oversight. They are removed from discussions regarding water resource management and relegated into a separate realm, the political sphere. The discourse about the water sector and its shortcomings is thus depoliticised.

The following analysis suggests that the depoliticisation of water resource management issues is at the root of the failure to improve these processes substantially. The depoliticisation happens with the relegation of the proposed solutions into the managerial and technical sphere — even good governance discourses are by nature formulaic and as such technical. The solutions become a question of assemblage of governance techniques. Citizen empowerment is transformed into user feedback (via the price mechanism) for example. Yet the failure of infrastructure projects, of policy elaboration (or rather the absence thereof), the disjointed planning efforts and the shortcomings of the administration are all intimately linked to the Lebanese political economic structures. The problems are not only managerial and technical issues but also (if not more so) political issues requiring political solutions.

## 2.2.2 The Lebanese Water Sector Actors

It will first be necessary to describe the different actors and their responsibilities according to the law to make this argument. Table 2.2 provides a list of ministries and the acronyms used throughout this thesis. The actors (see Figure 2.6 for a sketch of the sector organisation) can be divided into four categories.

---

<sup>17</sup>The World Bank expenditure report cites an analysis by Philip Keefer and Stuti Khemani (2005) that analyses the effects of three imperfections of political markets on the provision of public services. The imperfections they assess are “incomplete information for voters, the lack of credibility of political promises, and social polarisation” (p.1). They recommend that: “Where polarisation is in response to grave imperfections in political and economic markets, however, causing people to retreat into groups with which they have the strongest personal links and the greatest hope of accessing resources, the appropriate response is to remove those imperfections” (p.23). The language and analysis depoliticise the issue as if social polarisation did not have complex socio-historical roots that are certainly not easily removed.

Table 2.2: List of Water sector administrative bodies and their mandate

Name	Acronym	Category
Ministry of Energy and Water Before 2000 Ministry of Hydraulic and Electrical Resources (MHER)	MEW	Water Administration Proper
General Directorate of Hydraulic and Electrical Resources	GDHER	Water Administration Proper
General Directorate of Exploitation	GDE	Water Administration Proper
21 Water Offices & 209 Water Committees (Before Reform)	WO	Water Administration Proper
Regional Water Establishments Beirut Mount Lebanon Water Establishment North Lebanon Water Establishment South Lebanon Water Establishment Bekaa Water Establishment	RWE BMTLWE NLWE SLWE BWE	Water Administration Proper
Litani River Authority	LRA	Water Administration Proper
Municipalities		Tangential Regulatory and Management Bodies
Ministry of Agriculture	MOA	Tangential Regulatory and Management Bodies
Ministry of the Environment	MOE	Tangential Regulatory and Management Bodies
Ministry of Public Health	MPH	Tangential Regulatory and Management Bodies
Ministry of Public Works	MPW	Tangential Regulatory and Management Bodies
Council for Development and Reconstruction	CDR	Reconstruction Agency
Council of the South	COS	Reconstruction Agency
Central Fund of the Displaced	CFD	Reconstruction Agency
High Council of Privatisation	HCP	Legislative and Budgetary Body
Parliament		Legislative and Budgetary Body
Prime Minister's Office	PMO	Legislative and Budgetary Body
Parliamentary Committee for Public Works, Energy and Water		Legislative and Budgetary Body
Council of Ministers	COM	Legislative and Budgetary Body
Ministry of Finance	MOF	Legislative and Budgetary Body
Public Recruitment Council	PRC	Legislative and Budgetary Body
Public Accounting Board	PAB	Legislative and Budgetary Body

The most obvious is the water sector administration proper, the administrative bodies explicitly charged with aspects of water resource management (WRM). The Ministry of Energy and Water (MEW) has two departments charged with WRM, the Directorate of Hydraulic and Electrical Resources (GDHER) and the Directorate of Exploitation (GDE). The GDE now oversees the four Regional Water Establishments (RWE) that replaced the 21 Water offices (and 200 plus committees) only charged with water supply management and in some cases irrigation management before the administrative reform of 2000. The RWEs are responsible for water supply, waste water management and irrigation except in the areas where the Litani River Authority (LRA) is charged with irrigation management.

The second category consists of the ministries and administrative bodies with mandates that touch on WRM. The most important ministry in this category is the Ministry of Agriculture (MOA). Agricultural policy, for example touching on price levels, influences water use and allocation, but more directly it has responsibilities to improve on-farm irrigation techniques. The Ministry of Public Health (MPH) and the Ministry of the Environment (MOE) are two more. The MPH sets water quality standards and is tasked with controlling water quality in the potable water market. The MOE sets environmental standards in cooperation with the MEW and is tasked to control and penalise pollution violations. Neither the MPH nor the MOE have the capacity to coherently and fully enforce their regulations. The Ministry of Public Works (MPW) is responsible for road construction and the management of storm water drainage for all major highways.

The municipalities (and with that the Ministry of the Interior responsible for municipal affairs) also fall into this second category. Until the reform they were responsible for waste water management, whereas after the reform they still own the urban waste water networks. In a considerable number of cases municipal councils still manage and have to manage water supply (ad hoc and improvised) though they have no input on policy.

The third category is made up of the government agencies tasked with reconstruction. They are not tasked with water resource management specifically but have a broad mandate to restore destroyed infrastructure and to develop. These are the Council for Development and Reconstruction (CDR), the Council of the South (COS), and the Central Fund for the Displaced (CFD) combined these have funded most of the infrastructure investments in the sector. Figure 2.7 shows that capital investment by the MEW is almost negligible compared to the investments of the three reconstruction agencies.

The CFD and the COS are regionally bound. The mandate of the COS is for the reconstruction of the South. The CFD in combination with the Ministry of the Displaced is tasked with mitigating the effects of forced displacement during the civil war. Its main area of intervention is in the southern Mount Lebanon region where intense fighting caused the most displacement. Both the CFD and the COS have seen their budgets shrink dramatically. The CDR remains the most important infrastructure producing administrative body across all sectors: transportation, power, telecommunications, social infrastructure and the water sector with its different sub-sectors.

The fourth category of actors are those that are at the centre of the legislative and government process. These include the Cabinet or Council of Ministers (COM), the prime minister's office (PMO), parliament, the parliamentary subcommittee for public works, energy and water (and the subcommittee for the environment), the High Council for Privatisation (HCP) which is a permanent ministerial committee, the Ministry of Finance (MOF), the Ministry of Foreign Affairs (MFA), and because it has influence over the employment process, even the Public Recruitment Council could

be included. Of these the MOF and the HCP are often mentioned and sometimes the PMO, the others are not usually mentioned.

Emmanuel Kugnik (1999) for example, in her discussion of reform efforts and related stakeholder analysis omits the parliament and the government. Stephan Ghiotti (2005) includes the latter but fails to mention parliament. These two authors are examples of academic writing. Reports or analysis by Lebanese experts on the water sector and the reform (see Catafago & Jaber, 2001b; Comair, 2010b) mention the role of parliament and the various parliamentary subcommittees in the reform but present them as an actor external to the water resource management process. Reports by international development agencies tend to exclude both government and parliament from their stakeholder analysis. All these administrative bodies, importantly the latter two, and organisations make up the Lebanese component of the water management actors. Water management policy is articulated by them and in their interaction, as well as their interaction with the IDC.

### 2.2.3 The Water Resource Management Administration

Which administrative body influences which aspect of the WRM process and how they influence these is the subject of this section. Their legal mandate and their actual operation do not necessarily overlap, in fact they diverge on a number of issues.

The WRM process, as an undertaking realised and directed by the Lebanese state, can be divided into different interrelated sub-processes for the purpose of this study. These are: legislation, regulation, policy making and planning, infrastructure production, operation and maintenance, and enforcement. They can be pictured on a scale of temporality and dynamism, with the law making process and regulation on the one end and the daily grind of operation, maintenance and enforcement on the other end. These elements are fluidly interrelated, feeding back into each other. Law, policy, and regulation build the theoretical, legal, and ideological framework of WRM, while infrastructure production, operation and maintenance, and enforcement are the WRM process's executive and active realisation.<sup>18</sup>

The administrative bodies listed above are assigned some of these functions in one or more of the three sub-sectors, water supply, waste water and irrigation management. As should be already apparent from the section above the responsibilities are not unambiguously defined and often overlapping. As will become clear later in this chapter, this institutional fuzziness is a product of the structure of the Lebanese political system and the ways in which political power is negotiated. The institutional architecture, and the decision making and implementation processes provide a multitude of avenues for political interference in the WRM process. To point this out is not to strengthen arguments that aim to insulate WRM processes from the dirty day-to-day of political negotiation into the purely technical, much rather it is to show that the process is mired in politics, which need to be taken into account. Figure 2.6 sketches the Lebanese water sector administration.

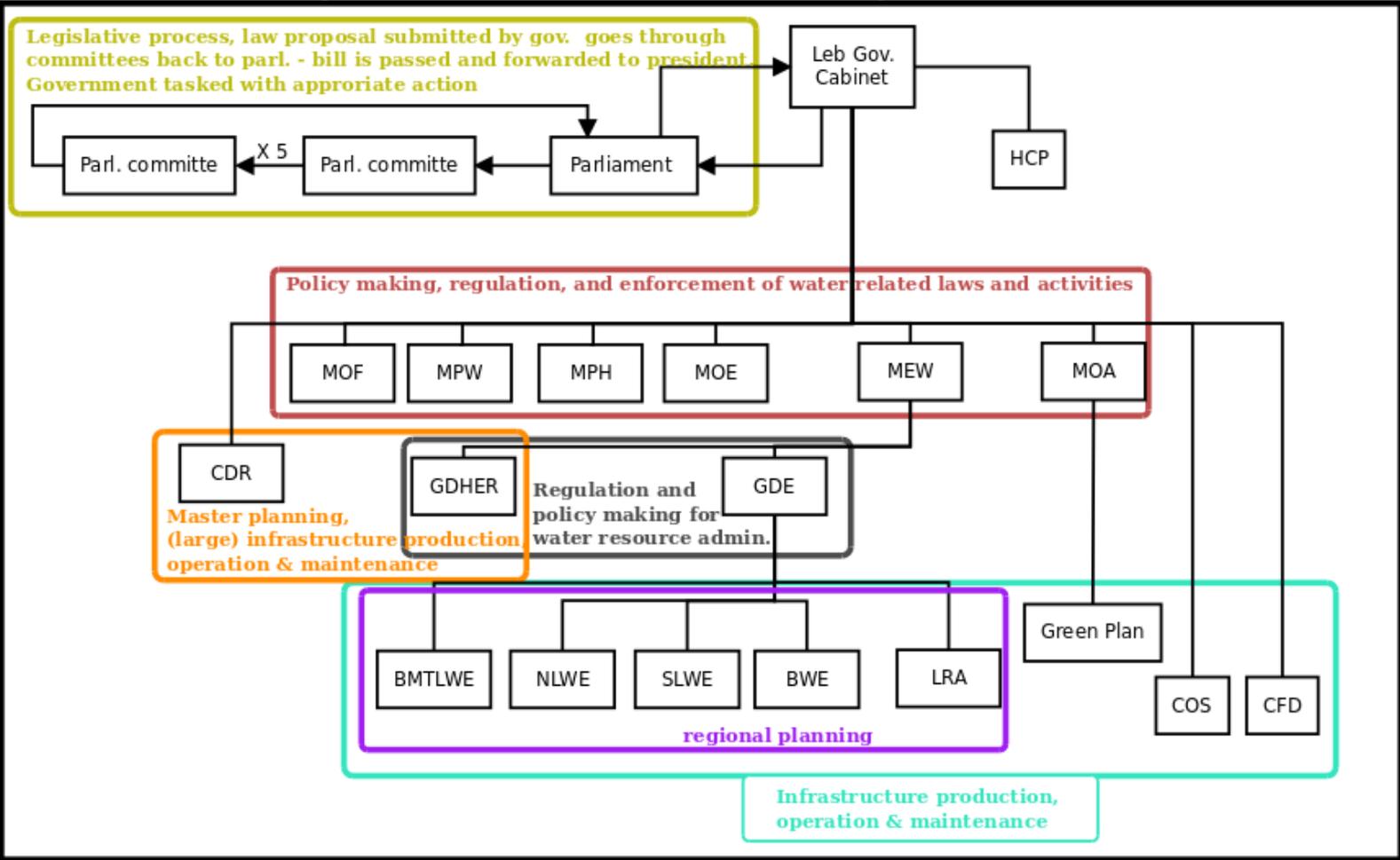
#### 2.2.3.1 The Legislative Process

The legislative process is a political process by definition. The water sector administrative reform, which was launched in the early 1990s and has been ongoing since, is at the root a legislative

---

<sup>18</sup>It is worth noting here that infrastructure once produced takes on a different temporality. Some of the pipes that bring water to Beirut from the north are older than the law establishing the Ministry of Hydraulic and Electrical Resources in 1966. It is the infrastructure production, the actual building of the infrastructure, its implementation that is situated here as being generally shorter than the administrative reform process, which changes the institutions that produce the infrastructure.

Figure 2.6: Sketch of the Lebanese water resource management administration



undertaking. So are the attempts at reforming and unifying water related laws in a new water law. The reform process took off in earnest with the passing of Law 221 of the year 2000 and the following amendments. It reorganised the water administration, integrated the 21 water offices into four RWEs, charged them with the management of all three sub-sectors, and altered the responsibilities of the ministry.

Another example of the importance of these institutions in the water resource management process is the ratification of international conventions which require the approval of the political leaders and legislative bodies. The Barcelona convention, UN Convention for international water courses, free trade agreements, water sharing agreements with Syria and the EU-Lebanon association agreement are the more important ones.

At the centre of the legislative process are the Council of Ministers, the parliament, its subcommittees, as well as the president, the prime minister, and the speaker of parliament. Depending on the law, its content and the ministries concerned, different parliamentary committees are concerned.

These legislative actors are important also beyond the fundamental reforms and laws. The COM approves policy, parliament discusses investment plans and approves a national budget, which allocates funds for investment. Foreign funding needs approval from the COM and parliament; in the case of grants from the COM only, and in the case of loans from both. This means that most of the infrastructure projects necessitate discussion and approval in the parliamentary committees and parliament since the dramatic deterioration of public finances in the mid 1990s.

The CDR is tasked with drawing up and negotiating project agreements with donors which are then forwarded to the COM and then to parliament. The government is then by law authorised by parliament (and the president) to conclude such a loan agreement. During this process an infrastructure project and its financing are subjected to scrutiny by six parliamentary committees. These are: 1) the environmental committee, 2) financial committee, 3) public works water and energy committee, 4) inter-committee committee, 5) legal and administrative committee, and (usually) 6) the committee responsible for municipal affairs and the interior (Interview Charfeddine 2011). A project can be held up in any of the committees. The infrastructure production process is thus intimately wed to the dynamics of parliamentary activity and politics. Also related to infrastructure are associated land expropriations, as these also need parliamentary approval and are then implemented by the ministry or agency concerned (see Fig.2.6).

### 2.2.3.2 Infrastructure Planning, Production and Operation

The process of infrastructure production is implemented by numerous actors. The process is also shaped by the geographical location of the individual project, the specific social, economic and political conditions in that locality, its topography, as well as its hydro-geological properties. All of these can and tend to vary; they will be discussed in a later chapters (Chapter 3 and 5). The theory would hold that infrastructure production choices are based on larger scale master plans and development choices made in a policy context. At least in theory capital investments tends to be prioritised and phased, and later implemented accordingly. In Lebanon, especially in the post civil war period since 1992, this has not often been the case. The World Bank in an unpublished 1998 report describes investment decisions as “rational in theory but ad hoc in practice” (World Bank, 1998, p.9).<sup>19</sup>

---

<sup>19</sup>The rationality is one of economic cost benefit analysis.

### 2.2.3.3 Infrastructure Planning

The theoretical aspect that the World Bank report mentions are the numerous plans for the reconstruction and for the water sector that have been produced over the years. These plans were produced by the CDR, the MEW, and the engineering consultancy firms they hired. Accordingly, the methodologies fit the World Bank report's understanding of rationality.

The Horizon 2000 plan was the blue print for the reconstruction of the country, it was based on a preliminary assessment of damages and urgent repairs to be carried out quickly. The Horizon 2000 plan envisioned massive infrastructure investments for the first post-war decade. In the mid 1990s Lyonnaise des Eaux produced a master plan at the behest of the MHER. In 1999 parliament approved the Decennial plan produced by the GDHER, under the leadership of Fadi Comair. Following this the Lebanese National Master Plan was published in 2004, but never ratified. In parallel the EU funded Investment Planning Programme (IPP) produced an investment schedule for different sectors, among them the water and waste water sector. Only a couple of years later an investment plan for the CDR was produced and published for 2006–2009. In 2008 the Decennial plan was relaunched for the period 2008–2018 because its first iteration had produced virtually no results. Finally, in 2010 the National Water Sector Strategy was published and adapted by the COM in early 2012.

The successive plans have never been fully implemented as planned because implementation seldom followed the envisioned succession of phases and projects. The numerous plans provide a rich pool of projects. The primary consideration according to which they are implemented is the availability of funds, while political, social and technical aspects are subsequent considerations. The plans, the ideas they represent, the policies they enshrined, and the ideology that underlies them will be discussed in later chapters after introducing the WRM process and Lebanese and IDC roles in it. For now it suffices to say that reconstruction was focused on physical infrastructure to the detriment of immaterial policy components and the reconstruction of the state administration. Accordingly, for the water sector focus was put on the possibility of private sector participation, which has not materialised in a meaningful way, and infrastructure production, which has become the central aspect of water resource management.

### 2.2.3.4 The Reconstruction Agencies: Only Infrastructure Production

#### The Council for Development and Reconstruction

The CDR is the central reconstruction agency and tasked with the management of foreign funds and the projects related thereto. Its channelling of funds into the different water sub-sectors is one of the main drivers of water resource management.

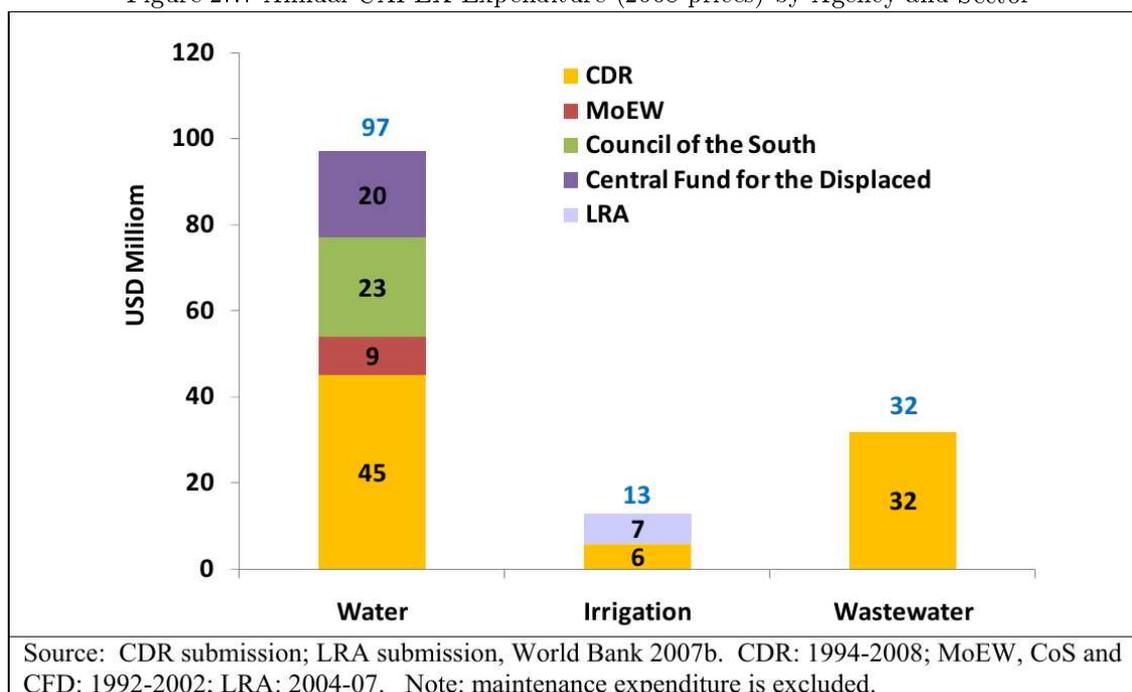
The mandate of the CDR made it the most important reconstruction agency in all sectors. It is subordinated to the prime minister, who customarily appoints its president. It acts on demand of the council of ministers and initiates projects accordingly. In practice the process is not as unidirectional because the CDR also works to match projects to donor funds. To do this it has a portfolio of preliminary and final studies and designs (funded both by international funds and by government funds) for infrastructure projects. These are derived from the successive master plans for development and specific to the water sector that were done over the years. Once a loan or grant agreement is reached and signed the CDR takes charge of project implementation, according to its mandate in cooperation or coordination with the ministry concerned.

CDR works in conjunction with the various ministries concerned by implementing investment projects and providing them with technical assistance. Operation and maintenance of completed infrastructure projects remains the responsibility of the relevant ministries. However, CDR manages and implements operation and maintenance services that may be requested by the Government. (CDR, 2012 p.4)

The opinions on this diverge though, while CDR engineers view this cooperation and coordination as functional and efficient (Interview Youssef Karam 2011). The director general of the GDHER, Fadi Comair, complains that communication is very weak and that he doesn't know what the CDR does or plans (Interview Comair 2011). This is confirmed by a World Bank report stating that "there is little coordination between the CDR and the MEW in the planning of the investment" (World Bank, 2010d, p.40). This lack of coordinated planning of an infrastructure programme reinforces the importance of the CDR in the WRM process. Given its mandate to solicit and manage foreign funds and projects, the CDR has great influence over when and where projects are built.

The CDR has channelled funds to and implemented the bulk of water sector projects (see Fig.2.7). Almost 60 percent of investments since 1992 until 2008 and most of the investments since have been implemented via the CDR.

Figure 2.7: Annual CAPEX Expenditure (2008 prices) by Agency and Sector



Source: World Bank 2010, p.37

Table 2.4 shows CDR expenditures in the water sector since the beginning of the reconstruction. Most of this is spent on infrastructure production, including the preliminary studies and project design cost and very little is spent on operation and maintenance. One delegated water supply management project for the city of Tripoli worth about € 8 million stands out. In the agricultural sector the bulk of investment was in the rehabilitation of irrigation networks but compared to the other sectors the investment into other-than water infrastructure and projects was relatively higher and represents about 30 percent of expenditure, if not more (CDR, 2012).

Table 2.4: CDR expenditure in the water sector 31 December 1992- 31 December 2011

Sector	Total Contracts (U.S. dollars)	Contracts In progress (U.S. dollars)	Contracts Completed (U.S. dollars)	Foreign funding (U.S. dollars)
Water Supply	832.63	233.43	599.20	603.95
Waste water	688.34	385.43	302.91	402.85
Agriculture and Irrigation	114.73	18.46	96.27	87.08
Total	1635.7	637.32	998.38	1093.88

Source: CDR progress report 2012.

The CDR does not usually take responsibility for operation and maintenance of projects. In the water supply sector projects were usually handed over to the MEW and after 2000 to the RWE concerned. In the irrigation sector, depending on the project, it is either the LRA, a committee, or municipality that should take over operation and maintenance.

In the waste water sector projects are handed over to the MEW which takes responsibility for operation and maintenance by outsourcing the work to private operators (or municipalities in the case of small plants) because the RWEs do not have any competencies in this sector. If and for how long this will remain so is not clear. In 2014 only three waste water treatment plants were in operation.

### **The Council of the South and the Central Fund of the Displaced**

As mentioned above the CFD and the COS have both built infrastructure and did so in specific regions. The COS and CFD started their operations in earnest in the mid 1990s and invested heavily until the early 2000s.<sup>20</sup> Figure 2.7 shows their contribution to investment in the water supply sector amount to almost 40 percent. Both institutions were reinvigorated after the war in 2006 and received higher budgets than in the years immediately before the war.

There is no indication that the work these two entities did was coordinated with the CDR or the MEW or after 2002 with the RWEs. The authors of the 2006–2009 CDR investment plan note that:

In some cases, there is an overlap of duties and lack of coordination among them. For instance, the Council of the South and the LRA are constructing a domestic water supply scheme for the West Bekaa and Rachaya that the Water and Waste water Establishment for the South may not be willing to operate due to its high operation cost. (Dar al Handasah (Shaer and Partners)– CNBureau s.a.r.l. - IAURIF (2006), p.11)

Both institutions are known to be used as vehicles for distribution of favours by their patrons. Investment decisions are in all likelihood governed by the patron-client dynamics that will be described in detail below.

<sup>20</sup>See Alles (2007) for more details on COS activity in the formerly Israeli-occupied areas of the south.

### 2.2.3.5 The Water Sector Administration: Infrastructure Production, Operation and Maintenance

#### Water Offices and Water Establishments

The 21 water offices which operated during the 1990s were severely limited in their ability to invest. They did not have the funds, with the notable exception of the Beirut water office which was able to draw on a large subscriber base, and in addition all investments exceeding the equivalent of US\$ 67–US\$ 1,000 depending on the office required approval from the ministry's GDE. The approval process did not make it impossible for infrastructure to be produced but it certainly added an extra layer of bureaucracy and thus interference.

The successors to the water offices were the regional water establishments (RWE). Under law 221 after 2000 the RWEs were created and charged with capital investment, infrastructure development, planning, as well as operation and maintenance in all three sub-sectors and under supervision of the MEW. The reform laws and the by-laws of the RWEs stipulate an a posteriori control of expenses and an annual approval of the budget. But according to interviewees the reality is different and all expenses over about US\$ 100,000 require pre-approval by the GDE (Interview Majdelani 2012, Giantris 2013). The ability of the RWEs to invest in infrastructure remains almost non-existent for three of the four RWEs.

The Beirut Mount Lebanon Water Establishment (BMTLWE) has a certain capacity to invest and according to interviewees it is funding the construction of the Jannah Dam or at least the initial work of this estimated US\$ 200–300 million project. It started doing so on behest of the Minister of Energy and Water Gebran Bassil (Interviews Abd el Al 2013, Margane 2013). This also illustrates how legal independence fails to translate into practice.

The RWEs were appointed directors in 2002 and received their by-laws in 2005, five years after the administrative reform was passed. Legal text and reality, or legal theory and practical WRM were not congruent for a considerable period of time. The water offices and committees continued to operate in a legal limbo. Water sector competencies were still not clearly defined in 2013. For example, ownership of water supply and waste water networks remains opaque as the business plan for 2009–2013 of the South Lebanon Water Establishment indicates:

The SLWE must work closely with the Ministry of Energy and Water, as well as the Ministry of Interior, and the local municipalities and villages, to clearly define the ownership and operational responsibility for the existing and future water supply and waste water systems within the geographic service area of the establishment. At this time, except for some minimal costs for the waste water preliminary treatment plant in Saida, the SLWE has not reflected any further costs of waste water management services in the Business Plan as an operations and maintenance expense. Over the last several years, with the assistance of foreign donors, both water supply systems and waste water treatment plants have been built in a number of villages in the service area of the SLWE. These systems are serving villages with populations of 30 to 1,000 families. The final determination of ownership of these systems, as well as operations and maintenance responsibility, has not been made. These systems are not reflected as systems in the current SLWE asset base for purposes of this Business Plan. (DAI - Development Alternatives, Inc. 2008, p. 7)

In 2013 the issue of ownership of existing infrastructure networks remains and did not show any promise of being resolved in the near future.

### **The Ministry of Energy and Water**

The process based upon which the MEW (and before the MHER) launch infrastructure projects is described in the unpublished 1998 WB report. It presents a very brief discussion of the approval process:

The financing of water and waste water investments is approved in a four-step process and can then be implemented via three entities. First, the investment program of the WO must be approved by its Board Of Directors. It must be then approved by MHER (under law no. 20/66). MHER then asks for Parliament to approve the investment program, and finally provisions for the investment must be included in the budget prepared by the Ministry of Finance, which is in turn passed by Parliament. The approved budget does not normally list specific projects, only lump sums for investment for each ministry. Thus, there may or may not be a close correlation between the approved MHER investment plan and its approved budget. (World Bank, 1998, p. 9)

By 2014 the process remains essentially the same with regard to investment. Very little investment has been realised by the MEW. The MEW draws from the supposedly annual governmental budget for its investments and accordingly its investment capacity has remained rather low. As Figure 2.7 shows the MEW's contribution to capital expenditure in the water sector does not amount to 10 percent of water sector expenditure.

The development of large infrastructure projects, such as dams, remained the responsibility of the MEW and specifically the GDHER after the reform. The only notable completed project that qualifies as such is the Chabrouch Dam in the Keserwan area. New projects were launched after Gebran Bassil became Minister of Energy and Water in 2009 and developed an ambitious investment programme presented in the National Water Sector Strategy. As mentioned above the minister has pushed some investment with the funds of the BMTLWE.

The MEW still takes over a considerable part of operation and maintenance responsibilities 14 years after the reform and seven years after the by-laws of the RWEs were ratified. These still are not in a position to fulfil all the operations they were tasked with and remain dependent on support by the MEW. They have neither the capacity to take over waste water operations nor manage irrigation. As mentioned above the waste water treatment plant management is organised by the MEW and contracted out to the private sector.

Initially the RWEs received MEW support for all their operations, but after 2004 the MEW stopped supporting salary expenditures. RWEs are expected to cover these from their own revenues (World Bank, 2010d). The ministry further subsidises the RWEs by covering their power expenditures and the procurement of service contracts for supply networks. These are managed directly without the funds being diverted through the RWEs. According to the World Bank:

In 2009, US\$ 2.5 million was disbursed to procure nine service contracts for pumping stations in three RWEs. It is difficult to assess the extent to which maintenance is adequate to [or] whether the ex O&M budget of the MEW is likely to be small compared to the needs of the sector, given the low maintenance expenditure incurred by the RWEs. (World Bank, 2010d, p.43)

It is not clear whether the GDHER is also responsible for operation and maintenance of large projects. In 2007 Comair's, the director of the GDHER, interpretation is that the ministry is responsible for operation and maintenance of large infrastructure (Comair, 2007). The NWSS published in 2010 lists only design and implementation of large scale projects and does not mention operation and maintenance as the GDHER's responsibility. Indeed operation and management of the Chabrouch Dam was transferred from the GDHER to the BMTLWE around 2010 (Interview Salame 2011).

The MEW is also charged with executing all expropriations required by water projects implemented by RWEs and itself. The CDR does so for the projects it takes charge of. Expropriation, the cost associated with it and the political influence of those being expropriated plays an important role in the politics of infrastructure production. It can be a decisive factor over the successful implementation of a project, its alteration, or nullification — often after planning and investments decisions are made, loan agreements signed, and other preparatory activities launched.<sup>21</sup>

The MEW also has a small department responsible for maintenance of irrigation networks. It is extremely understaffed with just one engineer, a secretary and one technician. The department processes requests by municipalities and irrigation committees to finance repairs and extensions where plans exist and the state has rights-of-way (i.e. expropriation is completed). These are usually very small scale projects (Interview Kanj 2011).

### **The Litani River Authority**

The LRA is the most important government body with regard to irrigation. It is already charged with management of two large schemes and will be responsible for the South Lebanon Irrigation project (also called the Canal 800). This project was first conceived in the 1950s; it will serve to irrigate 14,500 ha in south Lebanon. An agreement was signed with the Kuwait Fund for funding at the turn of the millennium but work started only in 2013. This US\$ 300 million project is jointly managed between the LRA and the CDR.

### **The Ministry of Agriculture**

The MOA also has an irrigation department which consists of two engineers (Interview Roukos 2011). They work through the extension services and have a mandate to improve on-farm irrigation. More importantly in terms of infrastructure, the Green Plan is a government agency under the tutelage of the MOA. It provides loans and grants to farmers for agricultural improvements. This includes roads, terracing of lands, and reservoirs. It is also the agency responsible for the creation of hill lakes (with a capacity below 1 MCM).

## **2.3 Where are the Politics?**

### **2.3.1 The Post War Elites – Class and Patron in Lebanon**

The protagonists of the economic and political processes and the water resource management and infrastructure production processes are the Lebanese political and economic elites, the government officials and technocrats, and the various actors of the IDC. The specific actors of the IDC and

---

<sup>21</sup>This is true for all infrastructure in Lebanon.

its water resource management arm in Lebanon, how they relate to each other and how they connect to the Lebanese state (and society) will be shown in in the next chapter. The water sector institutions, the administrative bodies with their overlapping responsibilities as presented above are also vehicles through which the different Lebanese elites project and gain their power. As will be shown below, as much as they are water resource management tools they are used by the elites in order to reproduce their own status as leaders. Before then turning to the political dynamics that make the administration such a contested field, an understanding of the elites is required and will be presented here.

The Lebanese elite or oligarchy is not homogeneous (competition and opposition between them originates not solely from the economic realm and is not solely inter-capitalist competition, but stems also from sectarian and geopolitical affiliations). This ruling class is made up of a complex web of actors whose roles are not described neatly in one category. They are capitalists, as members of the financial or commercial bourgeoisie or both, and at the same time hold political office or take a politically relevant role without having been elected or appointed. They may be the heads of a clan or family, or of political parties or all at the same time. Their interests meet and/or diverge on numerous and sometimes seemingly unexpected issues; sectarian alliances can and do overwrite inter-capitalist competition and vice versa.

Often political leadership is dynastic. A prominent example is the Hariri family. Rafik Hariri as the son of a poor peasant from Saida (South of Beirut) built up a construction company, endeared himself to the Saudi king and with this support and his own wealth, started establishing a power base in Lebanon during the 1980s. His ascendancy to Prime Minister was preceded by the displacement of Sunni notables as the most important representatives of their sect. After Hariri's assassination in 2005 his second son Saad el Hariri took over the leadership of his father's political party and eventually became Prime Minister in 2009.

The Gemayel family is another political dynasty; Amin Gemayel – who has banking, real estate and numerous other interests - took over the presidency from his brother after the latter was assassinated only weeks after becoming president in 1982. In 2005 Amin Gemayel, his son Pierre, and his nephew were elected to parliament. His son became Minister of Commerce and Industry for the first time but was assassinated at the end of 2006. The leader of the Free Patriotic Movement (FPM) Michel Aoun made his son-in-law Gebran Bassil his second in command and in 2009 negotiated the Ministry of Energy and Water for him.<sup>22</sup> Many more such examples exist (see El-Husseini & Perthes, 2004; Hudson, 1997).

An investigation of power structures and their reproduction, change and strengthening through Lebanese and IDC interaction warrants a more detailed understanding of the elites and the foundation of their power. Their power is derived from their economic class, their ownership and control of capital, and/or their patronage positions in the mostly sectarian patron-client relationships that organise socio-political life. These two sources of power are co-constitutive. Access to resources is an important, though not exclusive, aspect of ones ability to act as patron and vice versa. One's position as clan, party or religious leader gives privileged access to processes of accumulation and profit generation.

---

<sup>22</sup>This quote from an article about changes in a proposed electoral law in the Lebanese daily *al-Akhbar* illustrates the point further: "Among the biggest losers in this regard must be MP Nayla Toueini, who will have hardly anyone in her family voting for her if she decides to run. Not her television presenter husband Malek Maktabi, a Shi'a, nor her Maronite grandmother, or her Druze uncle MP Marwan Hamadeh. Her maternal grandfather MP Michel Murr also loses his Maronite wife's vote" (Qassem, 2013).

As Paul Kingston writes “although formally a consociational democracy with a constitution, a parliament and regular elections, real political power derives from the informal networks that are governed by the various sectarian elites” (Kingston, 2001, p. 57). This might be underestimating the value of political office for a patron or leader, especially after the civil war, but does point to the varying types of client–patron relationships that exist. They are far from new social formations and have been documented by numerous scholars (Johnson, 1986; Khalaf, 1977 for example). They find their origins in feudal-like relations of the past. Ahmad Hamzeh (2001) looking at modern Lebanon identifies four different forms of clientelism: the Zu’ama (Arabic: Leaders) clientelism being the most important or most prevalent, party clientelism, religious clientelism, and militia clientelism. These still exist and matter, in the varying permutations that they take (Hamzeh, 2001, p.172). His main point is that they are not pre-modern forms of social organisation that are dying, but rather that they have changed and adapted to the historic periods and remain a fundamental aspect of the Lebanese socio-political entity.

The dyadic relationship between the Za’im (Arabic: Leader) and his client base is likened by Michael Johnson (1986, p.49) to a mafia, with the Za’im as the Godfather, and the qabadays (Lebanese equivalent of an enforcer or lieutenant) as the ones organising his clientele. “The loyalty was maintained by a mixture of manipulation and coercion” (Johnson, 1986, p.49). Consent plays an equally important role and is reached or gained through “communal representation” by the za’im of the clientbase (or rather what the latter perceives as such and what the former claims to be in the communal interest) and a limited redistribution of resources.

This type of client-patron relationship evolved over time and broadened beyond the family and clan. Charbel Nahas (2009) identifies three categories of actors. At the top of the hierarchy are the “communitarian emblems”, which include the most important sectarian leaders: Rafik and later Saad Hariri, Nabih Berri, Walid Joumblat; after their return from exile Michel Aoun, Amin Gemayel; and Samir Geagea after his release from prison in 2005; the Maronite patriarch and the president, as well as Hassan Nasrallah the leader of the resistance cum political party Hezbollah. Underneath, he lists

the “professionals” who are in charge of the regulation of the whole system and who therefore hold decisive powers, but who have to stay away from the political scene: the governor of the Central Bank, the commanders of the key security corps and, of course, until recently, the Syrian security officer in charge of the “Lebanese file”. (Nahas, 2009, p. 143)

The final category: the “lieutenants” who include politicians and members of parliament and senior or “high administrative personnel” (the local zu’ama can also be counted in this category) form the base of the oligarchic structures.

The hierarchies are steeply vertical, both in terms of sectarian client-patron networks and in terms of income and wealth. The political elite also formed and forms the economic elite. That Hariri was prime minister, billionaire, owner of one of the most important banks (BankMed) and owner of stakes in others as well as a construction and engineering conglomerate just illustrates the fluidity of these categories. A similar listing could be done for later billionaire Prime Minister Najib Mikati. If the parliamentarians are not millionaires then for most, with very few exception, their families are.

According to Nahas 0.6 percent of bank accounts held more than 40 percent of total deposits towards the end of the 1990s (Nahas, 2000, p. 8), in 2007 some 800 accounts belonging to no more

than 200 families held 20 percent of total deposits adding up to US\$ 14 billion (Nahas, 2009). To further illustrate the concentration, at the end of 2010 US\$ 30 billion or 77 percent of total utilised credit was held by only 2.6 percent of beneficiaries (including businesses etc.), and 0.2 percent of beneficiaries held 48 percent or US\$ 19 billion of credit (Banque du Liban 2012). The Credit Suisse's Global Wealth Databook (2013) estimates that "at least 48 percent of Lebanon's privately held wealth is concentrated in the hands of some 8,900 citizens — just 0.3 percent of the adult population" (Executive Magazine, 2013). The article presenting the report goes on to say that "the richest Lebanese are its six billionaires, all from the Mikati and Hariri families. According to Forbes, their combined worth is \$14 billion — some 15 percent of all private wealth in the country" (Executive Magazine, 2013).

Adib Nehmeh points to a Central Administration of Statistics study from 1997 that shows that 14 percent of households received 43 percent of national income compared to 39 percent of the population receiving only 13.4 percent (Nehmeh, 2001). According to a household expenditure survey published by the CAS for the years 2004–2005 income distribution was still highly unequal. 49.5 percent of households (or 45 percent of the population) declared an annual income of less than 9,599,000 LL or 6,400 US\$ while only 7.2 percent of households (7.6 percent of the population) declared that they earned more than 19,200 US\$ (CAS, 2005). While indicative of high levels of inequality these numbers hide the numerous sources of support and revenue households may have. The 1997 Living Conditions of Household in Lebanon survey indicates that "38 percent of Lebanese families could not make ends meet. Only 13 percent of Lebanese families indicated their living standard to be satisfactory" (UNDP, 1997).

A later report published in 2008 by UNDP analysing "Poverty, Growth, Distribution and the Cost of Poverty Reduction in Lebanon" establishes money-metric poverty lines based on an analysis of expenditure and consumption aggregates. According to this report the (consumption based) Gini coefficient was 0.361 in 2004–2005. 43.5 percent of all consumption in Lebanon was consumed by the richest fifth of the population while the poorest fifth accounted only for 7.1 percent of all consumption. Eight percent of Lebanese were considered to be living in extreme poverty under a poverty line of US\$ 2.4 per capita per day. The upper poverty line is "defined as the value of the basket of goods and services actually consumed by households whose food and energy intake is equal to the minimum requirement of 2200 calories per person per day" (Laithy, Abu-Ismaïl & Hamdan, 2008, p. 45) equivalent to US\$ 4 at exchange rate (and consumer prices) in 2004–2005. 28.5 percent of the population were estimated to live below this line and were not in a position to afford "a consumption level which satisfied minimum food requirements and what is deemed as normal for non-food expenditures at that level of food consumption." (Laithy et al., 2008, p. 45).

According to the authors of the UNDP study, poverty becomes more pronounced when including those parts of the population living just above this US\$ 4 line, who remain vulnerable to economic and environmental shocks. Given the dearth of good and comprehensive statistical data it is difficult even to access the accuracy of these numbers but they certainly indicate that the wealth of the elites stands in stark contrast to the poverty, precarity, and insecurity of a large part of the population. This growing inequality, the distribution of wealth and the related sectarian patron-client structures are one important aspect of the Lebanese power system.

During the war armed conflict was an important aspect of the redistribution of power, though shifts in economic power were also an important if not the most important factor that brought an end to armed confrontation. In the post-war era elite competition over power was much less violent. Nevertheless, numerous bombings and assassination attempts, failed and successful, occurred. The

post-war period also saw armed confrontations over longer periods of time. In May 2008 militias of the two main political blocs clashed in different areas of the country, and since 2011 an area in the north in Tripoli has seen a more or less intense confrontation between two adjacent areas. For the purpose of understanding water resource management policy the most important arena in which struggles over power were played out, within the boundaries set by the Syrian occupiers, was the political process to which I will turn next.

### 2.3.2 Structural Elements of a Political Settlement

After introducing the water sector and explaining the IDC analysis of it, I will show in this section how water resource management processes are linked to the general political structures and the ups and downs of political life. While this might seem self-evident, the structural links between the general political process and the resource management process are analytically important. They are often ignored aspects of the water resource management process and they are not addressed by IDC consultants and the policy, reform ideas, and templates they promote. They cannot be addressed because this would require direct and active state restructuring by the IDC that would border on direct (colonial) administration, the formal recognition of Lebanese sovereignty by the IDC and its rulers, as watered down as it might be, makes this impossible.

The following section will focus on the most important aspects of the political process starting with the war-ending Taef agreement. This study is not the place to provide a full retelling of the political dynamics of the post civil war era, but where necessary political actors and their affiliation will be explained.

#### 2.3.2.1 Taef and after

After 15 years of conflicts<sup>23</sup> between different factions and shifting alliances the Taef<sup>24</sup> agreements of 1989 would set a path towards an end of the war. Negotiations between the warring factions were encouraged by the US, Saudi–Syrian rapprochement and produced a Document of National Reconciliation. Tacit US acceptance of Syrian hegemony in Lebanon, due to its support for and participation in the first Gulf war in 1990, would form the background for a stabilisation of the Lebanese situation in the following years. New leaders, warlords, and entrepreneurs emerged from the civil war and joined the remaining traditional notables to take over the running of the state under Syrian custodial care.

The Taef Agreement of 1989 and, based thereupon, the constitutional amendments of September 1990 reflected the outcome of the civil war. The war had changed the balance of power, the Christian elites had lost their dominant position while both the main Muslim sects had gained power. The Sunni elites led by Hariri had solidified their economic predominance and Shi'a political parties had entered the political arena. Under the slogan “no victor no vanquished” the accord reconfigured the political system so as to account for the new balance of power that the war produced. It aimed at political inclusiveness and was designed to prevent the monopolisation of political decision making by a political party or a sectarian group. It formed the basis for the emerging Second Republic and is colourfully described by Georges Corm as:

---

<sup>23</sup>The war is better understood as sequential conflicts between different (or a recombination of the same) actors for different causes rather than one long war.

<sup>24</sup>Named so after the Saudi city that hosted the conference where most of the remaining Lebanese parliamentarians and the leaders were gathered to negotiate an end to the war.

far from reestablishing the “national understanding” and the functioning of democracy, the Second Republic will resemble a veritable banana-republic, put in a greenhouse by its powerful neighbour and protector, Syria, with full consent of the new social forces that emerged victorious from the war and federated around the overwhelming omnipresence of Rafik Hariri. (Author’s translation, Corm, 2005, p. 230)

Corm points to the most important characteristics of the post war state: the two governing forces, the Syrian occupiers and their allies, the Saudi-backed agent of neoliberalisation Hariri and his allies, and to the weak state institutions and administrative bodies, as well as deeply embedded practices that are commonly labelled corruption, but which are related to client-patron networks and practices. This is not to say that these are immutable cultural traits, rather to the contrary. Reinoud Leenders in his analysis of “political corruption” in post-civil war Lebanon makes an argument that the Taef political settlement “left the door wide open” for these practices to enter into the political process (Leenders, 2004b).

The constitutional amendments born out of the Taef agreement form one starting point for an understanding of the post war Lebanese state - the Lebanese political economy and its functioning. The formulation, interpretation and implementation of the agreement has importantly shaped the structures of Lebanese political economic life. Based on Leenders (2004) and Picard (2002) six important features of the Lebanese political process can be identified. These are: 1) a need for political consensus, 2) related and recurring institutional and political gridlock, 3) politics of division of the spoils by the elites (allotment state), 4) attempts at bypassing the political process by creating extralegal or temporary arrangements with related overlap of responsibilities, 5) wide ranging clientelist networks and related patron client dynamics, and 6) the Syrian presence and influence until 2005 when Syrian forces were expelled under international pressure and it lost some of its control. (Because Syrian influence on the water sector is limited to transboundary water issues this last aspect will not be further discussed here).

The sectarian system dating from independence days was kept in place and even reinforced, but the sectarian distribution of power therein was altered. To adapt to the new balance of power and related changing demography and political representation of confessional groups (with a demographic increase of Muslims as well as the assent of political representation of Shi’a constituencies/communities) the division of seats in parliament was changed so that Christian representatives would be allocated only 50 percent of seats (versus 55 percent before) and Muslims equally 50 percent.<sup>25</sup> Within these two religions the division of parliamentary seats would be further subdivided according to sects. Maronites, Greek Orthodox, Greek Catholics, Armenian Orthodox and other Christian sects, as well as Sunni, Shi’a, Alawite, and Druze sects were assigned a number of parliamentary seats each; yet the system is less rigid than one would expect. While these numbers remained fixed their geographical allocation is periodically renegotiated with the redrawing of voting district boundaries as part of the regular gerrymandering prefiguring elections and attempts at fixing their results. In 2005 only a few and mostly Christian areas were actually witnessing contested elections.<sup>26</sup>

<sup>25</sup>The two major Islamic sects, Sunni and Shi’a, had gained in political power while the Christian sects had lost influence. The allocation of political offices and parliamentary seats was based on a 1932 census, the last official census to date. But even after the adjustments of Taef political representation and actual demographic weight of the Christian sects don’t match. Though no reliable data on the demographic weights of different sects exists it is generally accepted that Christians represent well under 50 percent of the population.

<sup>26</sup>Election results were for the longest time predetermined and even in the last election of 2009 some 100 seats were secured through negotiations in different districts. Numerous districts saw only one candidate running for the respective parliamentary seat.

In the same spirit of political inclusiveness and re-balancing of power the responsibilities and privileges of the three main public offices, that of the president of the republic, the prime minister, and the speaker of parliament, commonly named the troika, were also reconfigured. Accordingly the president's (always a Maronite Christian) powers were curtailed while those of the prime minister (Sunni) and the speaker (Shi'a) were enhanced to match. Effectively each one gained veto power over the political process.

Executive power was relocated from the president to the Council of Ministers, normally presided by the Prime Minister, or occasionally, if he so wishes, by the President. The cabinet is formed upon binding consultation of the Prime Minister designate and the President, guaranteeing the president an important say in the formation of the COM. Like parliament, the COM has to reflect the sectarian division and so will include members from all major sects and political camps. Parliament in turn gained more legislative power, with the speaker of parliament a central actor in this process. His powers were increased as well, a two-year term was extended to four years and he has sole discretion over the agenda of parliamentary sessions and with that the power to block legislative projects for as long as he requires or wishes. It is in this context of horizontal redistribution of political power among the elites that negotiations and conflict over policy would take place.<sup>27</sup>

### 2.3.2.2 Consensus and Gridlock

The most notable outcome of these new arrangements was that consensus, or rather the need therefore, became hardwired into the political process. In turn lack of consensus would lead to political gridlock. Political crisis became a recurrent phenomenon of post-civil war politics. Three governments were in place between 1991 and 1992. But even with the election of Hariri in 1992 consensus would only hold for short periods. Out of such situations he threatened to resign from office towards the end of 1993 and in late 1996, and actually resigned on two occasions in 1998 and August 2004. The government that took over from him, headed by Salim el Hoss, in 1998 lasted just under two years. In September of 2000 Hariri won elections by a considerable margin and took over government until 2004 when he resigned over disagreements with President Emile Lahoud.<sup>28</sup>

After Hariri's assassination in early 2005 political crisis can be said to have become the norm. Two opposing blocs formed, on the one hand the "March 14" alliance supported by western powers and Saudi Arabia, and on the other the "March 8" alliance supported by Syria and Iran.<sup>29</sup> March 14 is dominated by the Hariri's Mustaqbal party representing (or claiming to) the majority of Sunnis, the major Christian parties are the Lebanese Forces led by Samir Geagea and the Phalangist Party led by the Gemayel clan, as well as a number of minor Christian parties and Zu'ama. March 8 consists of the two Shi'a parties Amal and Hezbollah, and Michel Aoun's Free Patriotic Movement (FPM), a large Maronite dominated party, and smaller Christian and Muslim parties. The opposition between these two blocs increased quickly. Consensus broke down completely after the Israeli attack on Lebanon in July 2006 and opposition turned into open hostilities in early May

<sup>27</sup>For an in depth discussion of the political process, commentary on Taef see (Leenders, 2004b; Maila, 1992).

<sup>28</sup>Under Syrian pressure Lahoud's term was to be extended beyond the constitutional limit. Supported by France, the US and via the UN Hariri hoped to counter Syrian efforts to hold on to his most vocal rival.

<sup>29</sup>Foreign involvement in Lebanon is no new phenomenon. The country as a geographic entity was shaped by the colonial powers France and to a lesser degree Britain. Since its independence foreign powers intervened on behalf of or supported one or the other elite faction.

of 2008.<sup>30</sup> A new president was elected with the help of Qatari mediation in late May. Elections marked the first time parliament had convened in 18 months.<sup>31</sup> Stability lasted only for a couple of years and governments would change repeatedly. In the four and half years since the election in the summer of 2009 Lebanon was without a government for a total of almost two years (Muhanna, 2014).

The effects of the recurrent political crisis on the government and governance are substantial. Institutional deadlock and government breakdown becomes the *modus operandi* and entails serious consequences for the legislative process sketched above and affects all aspects of water resource management. Law making comes to a standstill or is severely hampered and delayed.

One major effect of these dynamics was that until late 2012 no new government budget law had been passed by parliament since 2005. The implications of this for development and reconstruction policy are considerable as the Ministry of Finance has to abide by the latest budget law and can only allocate funds accordingly. Theoretically at least the MEW was operating with a budget allocation based on 2005 government decision for seven years.

Yet it is anything but clear how money was actually distributed, a fact that was the subject of visceral public debate for some time. FPM leader Michel Aoun publicly accused Fouad Saniora (prime minister from 2005–2008) of corruption and attempted to initiate legal action to account for US\$ 8.6 billion of government spending that, according to Aoun, was illegal and lacked transparency<sup>32</sup>.

Not only was the budget not adjusted to meet needs, even the development projects profiting from international donor support (which includes most of the large infrastructure projects) were often severely delayed as most require either cabinet or both parliamentary and cabinet approval.

According to one CDR employee infrastructure projects are affected by:

political problems, absence of government, and political disputes. One example is the blockage of the expropriation law relating to a number of projects because of the tension in the government between the President and the Prime Minister [between 2003 and 2005]. (Interview Charfeddine 2011)

On the issue of the expropriation law, Lahoud's bloc questioned the Beirut-centric investment distribution and the cost of expropriation. Hariri's bloc pointed to the procedural difficulties such a delay would entail:

Finance Minister Fouad Saniora warned Wednesday that further delays in the expropriation of land may prompt financial institutions to stop all funding for projects across the country ... Saniora said land expropriation is crucial to starting projects. The minister was alluding to the ongoing debate between Cabinet members about the expropriation of land in Beirut, which some critics claim is overly expensive. (Habib, 2003)

The delays pointed to by the finance minister were real, as much as they were a function of Hariri's leverage in an attempt to force his vision of the school project at the centre of the debate, as well

<sup>30</sup>Starting on May 7 confrontations between the two blocs led to intense street altercations and fighting throughout the country, after five days Saad Hariri's militias were defeated by Amal and Hezbollah fighters. The fighting stopped but only after having claimed more than 100 lives.

<sup>31</sup>The March 8 coalition ministers had resigned from office shortly after the 2006 war to protest Fouad Saniora's reconstruction policies and Nabih Berri as speaker of the house refused to call for a parliamentary session without concessions from the March 14 bloc.

<sup>32</sup>Not much came of his advances and parliament and government (with Aoun's party being part of the ruling coalition at the time) retroactively legalised these and later government expenses as lump-sum 2010, saving themselves the embarrassment of disaggregating and justifying expenditures.

as his vision of development more generally. One month before Saniora's comments, Hariri was observed leaving a cabinet session and threatening:

If schools are not built in Beirut, no schools will be built in Lebanon. And if development projects are not carried out in Beirut, no development projects will be carried out in Lebanon. (Kawas, 2003)

The main cause was the political rivalry between Lahoud and Hariri, the central issue of contention was the expropriation law and also the locations of schools in Beirut and associated real estate prices.<sup>33</sup> The law was finally passed during Fouad Saniora's tenure as prime minister in late 2005. The debate and confrontation though affected projects more generally and beyond the two years that it took for the law to be passed. With the passage of time prices for raw materials and oil increased,<sup>34</sup> prompting contractors "to ask for adjustments and re-negotiations of contracts often leading to stoppage of work," (Interview Charfeddine 2011) causing further delays.

This first example showed how infrastructure projects can be influenced by consensus breaking down. The example of the National Water Sector Strategy (NWSS) which was published by the MEW in 2010 will show how policy formulation is also affected by these dynamics. The NWSS, the most comprehensive attempt at water resource planning until 2014, was not presented nor approved by the cabinet or the parliament for almost a year. In December 2010 during a public-relations media event, the Minister of Energy and Water Gebran Bassil (a member of the March 8 coalition) presented this document to the public. But facing strong headwinds from the political opposition March 14 parties it wasn't adopted by the council of ministers until March 2012.

In a meeting of the parliamentary committee on water, with the consultants to the minister answering inquiries regarding the NWSS, the debate between opposing political parties was much less about the content and orientation of the strategy than about procedural issues. This could arguably be read as an attempt by the March 14 opposition to prevent the minister (March 8) from gaining political capital from his efforts.<sup>35</sup> The debates regarding the NWSS saw on one side the minister (and his party) who had been using every opportunity to present himself as anti-corruption reformer, efficient, as well as working for development and the common good<sup>36</sup>, and on the other side his political opponents, the March 14 opposition, trying to prevent or contain his political ascendancy with attempts to curtail his political successes.

The technical and strategic divergence between the two camps is essentially non-existent. Both embrace the mainstream Integrate Water Resource Management ideology and discourse, as well as the master plan consisting of a network of dams. The NWSS is a reproduction of the 10-year plan ratified in 1999 and renewed in 2008, notwithstanding the fact that Mohammad Qabbani (March 14), who has been the presiding the parliamentary committee, approved the renewed 10-year plan, he and his political allies used every opportunity to confront and oppose current efforts.

<sup>33</sup>Hariri resigned in 2002 in protest to what he perceived as Lahoud's obstructionism but was "convinced" by the Syrian president to head the next government. The new government though was distributed in favour of Lahoud who had been able to negotiate ministerial positions for a larger number of his allies than in the previous government.

<sup>34</sup>These dynamics were especially pronounced after the war in 2006 when cement, aggregate for concrete, and steel, as well as other construction materials were in high demand because of the massive reconstruction efforts.

<sup>35</sup>A source relates disputes between member of the minister's political camp and opponents during a closed door parliamentary committee meeting. (Interview Anonymous 2012; see also The Daily Star, 2011)

<sup>36</sup>That this is more charade than actual substance could be observed in the debate about minimum wages that saw the Minister of Labour Charbel Nahas, officially allied to the FPM, being left deserted by his political allies for a proposal more suitable to the business community and the political interest of the FPM, especially Aoun and his son in law. See Al-Akhbar, 2012a, 2012b; Dakroub, 2012; Ghandour, 2012; Kanaan, 2012 for more details about the story of the wage scale and Charbel Nahas' resignation.

The debate is governed more by political arithmetics than by substantial developmental differences. The NWSS was eventually endorsed by the cabinet, but this example certainly illustrates the political dynamics in general and how these play into the water resource management policy making.

The recurrent standstill of the political process also shifts the attentions of the political elites towards the issues causing the gridlock, and other issues are pushed down the list of priorities. Public and political debate in early 2013 focused on the formulation of a new election law with everything else taking a back seat. That a proposal for a new water law was forwarded to the Council of Ministers and rejected by the Minister of Finance does not enter the public debate, focused on the more immediate issues related to the distribution of power (Interview Abd el Al 2013). Aided by the secrecy that the Minister of Energy and Water cultivates by not making public the law proposal, the importance and potential impact of this new ordering of water rights and water-related regulations is completely eclipsed. The seemingly more urgent issue of electoral law and the general confrontation between the two opposing camps overshadows developmental issues.

These few examples are only a small selection of incidents of political gridlock and its effects but throughout the last two decades projects and planning efforts were often subject to similar dynamics and so were negatively affected in a many ways. It is also this state of affairs — consistent political gridlock and need for consensus — that leads to permanent

bargaining that leaves little room for the public formulation of policies and alternatives, the electoral process no longer being concerned with testing the popularity of policy options, but with asserting and weighting the cohesion and strength of communitarian political parties. (Nahas, 2009, p. 142)

Crisis and gridlock are constant and pronounced characteristics (structural features) of the Lebanese political system, but one that is never taken into account in planning and development efforts, be they by the Lebanese administration or by the individual members of the IDC.

### **2.3.2.3 Resolution by Division of State Resources**

Probably the most important mechanism to resolve these political stalemates was what came to be known as the politics of “Muhassassa” (allotment politics), that would see the three highest ranking representatives of government, the President, the Prime Minister, and the Speaker of Parliament (“the troika”) negotiate between themselves on acceptable resolutions to political disagreement. These types of negotiations are still common and usually require an acceptable division of resources, privileges, and benefits related to and derived from access to state power. This extends to the cabinet and parliament as such a division was meant to satisfy the troika and their respective clients. The first three cabinets of the post war period were not able to produce meaningful results in terms of formulating reconstruction and development policy. Only in 1992 with the nomination of Rafik Hariri as Prime Minister and Nabih Berri as Speaker of Parliament (a post he has held since) did this become a constant and often successful feature of Lebanese politics. Encouraged by Hariri’s largess and his economic policies (see Chapters 3 and 5) ways were found to allocate state resources to the relative satisfaction of the political elites (see Leenders, 2004b).

One aspect of this was an accumulation regime, following the neoliberal trends and logics of the time, that allowed a majority of the elites to profit. How this was created will be discussed in the following chapter, but division of state resources, “the spoils of public office”, went beyond the directly material. Negotiations for ministerial positions, high ranking public servant positions

among others are a regular feature of Lebanese political commentary and are seldom easily resolved. With every new election the distribution of ministries is a point of intense contention and negotiations; most cabinets were made up of 30 ministerial positions with a number of them being ministers of state, only to fulfil sectarian quotas.

For the reconstruction in general and for the WRM process the three reconstruction agencies were immensely important and have remained in the same hands for most of the time since. In line with his neoliberal vision for the country Hariri reserved the state institutions most important to the economy for himself. These would include the Ministry of Finance, the CDR, and the Central Bank.<sup>37</sup>

With the revamping of the CDR in 1991, and with the instalment of Fadl Chalak, Hariri's former Oger<sup>38</sup> employee and right hand man, one foundation stone was already laid. With the passing of Law 117 of December 1991 Hariri had defeated his opposition and calls for reform of the CDR, as well as plans for a ministry of planning that would have limited the CDRs capacity of action.<sup>39</sup> The law provided the legal basis for the private real estate company that was to be responsible for rebuilding the downtown and "granted the CDR sweeping powers to singlehandedly solicit, negotiate and secure funding for reconstruction from foreign sources, issue treasury bonds, and finance infrastructural projects" for real estate companies with a focus on Solidere<sup>40</sup> and infrastructure in general (Leenders, 2004b, p. 138). This administrative body is relatively shielded from interference by political opponents because its budget is not included in the general government budget and it answers to the prime minister only. It would become one of the vehicles through which Hariri would implement his economic vision for the country.

The Central Fund for the Displaced was also associated to the new prime minister. Walid Joumblat, feudal leader in the Shouf and of a large part of the Druze community, received the Ministry of the Displaced that drew funds from the CFD.<sup>41</sup> Syrian ally Nabih Berri, leader of Amal, would have trusted underlings in the Ministry of Health, the Council of the South, and the Litani River Authority, while remaining the speaker of the parliament. The Ministry of Energy and Water (MEW) was given to Georges Frem from 1992–1993, a political opponent of Hariri, followed by Elie Hobeika, a Syrian ally. The basic structure of the water sector was established then and hasn't changed much since. As mentioned above the CDR remains at the centre of the infrastructure production mechanisms.

The MEW is an important ministry in this distribution of the administration (probably on par with the Ministry of Public Works and the Ministry of Telecommunications and unlike the Ministry of Culture, Youth and Sport that have rather little value). As was seen above its ability to fund infrastructure was limited, but it entails discretionary powers over the electricity sector as well. With the integration of the petrol authority under its responsibilities and the subsequent discovery of natural gas fields off the Lebanese coast it has become one of the major prizes of ministerial positions (see Dakroub, 2014; Fattouh & el Katiri, 2013; Halabi, 2011a; The Daily Star, 2014).<sup>42</sup>

<sup>37</sup>The governors of the Central Bank were Hariri allies, first Michel Khoury in 1992, and afterwards Riad Salame who has retained the post since 1993. Hariri further kept the Ministry of Finance for himself but had Minister of State and childhood friend Fouad Saniora run the day to day operation of this ministry.

<sup>38</sup>A French construction company that was acquired by Hariri.

<sup>39</sup>Leenders retells stories of bribery and manipulation related to the parliamentary vote regarding law 117 that saw Hariri recompense votes in favour of the final proposal (Leenders 2004, p.112).

<sup>40</sup>Solidere is the real estate company that was and still is in charge of the reconstruction of the downtown area. In an expropriation process that has been widely criticised and that can be viewed as an act of accumulation by dispossession, the company became the owner of most of the real estate and lands in this area.

<sup>41</sup>Depending in part on Hariri to release funds from the CFD for the operations of the ministry.

<sup>42</sup>The formation of a new government in early 2014 was held among other issues because the Free Patriotic Movement refused to give up its hold on the MEW. A compromise was reached when the party agreed to rotate its

The ministries provided access to patronage resources and would allow the distribution of work contracts (specifically physical infrastructure) and importantly also employment for partisans and clients. The Council of the South (COS) and the Ministry of the Displaced (MOD) through the CFD were, next to the MEW and the CDR, two ministries that did spend considerable amounts on rehabilitation of water supply networks and the drilling of wells. They were vehicles for the patrons to dispense clientelist favours. The Ministry of Public Works (MPW), the COS and MOD were renown for their rampant corruption, which is well documented in Leenders (2004, 2004a) analysis of corruption. Regarding the MEW journalist Rene Naba has the following to say:

Recruited outside of the proper procedures, without the advice of the Public Recruitment Council, decorated with varying titles and missions, the plethora of employees and consultants attained a level so alarming that the public Recruitment Council had to publicly remind [politicians] of the regulations of public employment. Certainly out of atavistic survival instinct, Hobeika and his alter ego levied a personal tithe representing 20 percent of the market, a uniform rate that he applied to all transactions under the ministry. Mohsen Dalloul broke the silence on December 11, 1997, to denounce the ministry's mismanagement, assessing the amount of waste at US\$ 600 million in three years, or 50 percent of the loans allocated to the sector for its renovation.

(Author's translation Naba, 1999 in Debié, Pieter & Verdeil, 2003, p.86)

The case of the US\$ 44–65 million construction of the Chabrouch Dam from 2001–2007 has also gained a certain reputation in the country for having been an occasion for considerable kickbacks. On this occasion, according to the rumours, president Lahoud came into possession of his roof top apartment in a downtown building owned and built by the contractor (estimated at US\$ 3 million). The contractor supposedly made up for this from an illegal quarry that was to provide stone only for the dam, but was eventually used to increase profit margins by selling rock aggregate for concrete on the market.<sup>43</sup>

According to Comair these claims are baseless.<sup>44</sup> The details of these dealings are difficult and even impossible to discern in both examples, the accusation cited by Naba or the rumours about the Chabrouch Dam project. In the case of the dam project, prices for inputs such as concrete, steel, etc. did rise considerably between the time of the tender process which started in 2001 and the completion of works in 2007, as did the euro to dollar exchange rate. An engineer in the project explained that the French company involved made losses because of the fluctuation in the exchange rate (Interview Faysal 2012).

The dealings and agreements between different parties involved, as well as their legality will remain obscure. Nevertheless, the persistence of these rumours and the facts which gave birth to them, as well as the plethora of examples of corruption and pork-barrelling in other sectors should suffice to illustrate the wide-ranging prevalence of these practices. Corruption or what Leenders calls “high political corruption” (2004) is an integral part of the power sharing arrangement, and it is more than just a lubricant to the wheels of power; it is structural.

---

minister Gebran Bassil to the Ministry of Foreign Affairs and appoint the head of the allied Armenian Tshnaq party to the MEW. The MEW thus remained under the control of Aoun's parliamentary bloc. In this deal the advisers of the former ministers retained their positions.

<sup>43</sup>An engineering consultant estimated the volume of stones excavated from the quarry via satellite images, on the request of the union of the municipalities of Keserwan (Interview Salame 2011).

<sup>44</sup>“Every thing that you have heard about Chabrouch is not true” he said on the occasion of a conference — “The Lebanon Water Resources: Challenges and Opportunities” — on October 14 2011 at the American University of Beirut.

Ministries and other administrative bodies serve not only to distribute contracts for infrastructure. They offer opportunities for employment and give the ability to dispense numerous other favours within the capacities and responsibilities of the respective agency. The contracting out of the operation and maintenance of infrastructure is an example that still entails considerable sums. At a much smaller scale, in the case of the MEW and the water office or water establishment this could also entail lenience with late fees on water or electricity bills for individual users.

Further, it is not only ministerial positions that give access to resources. Senior administrative positions are highly coveted because they grant control and access to some of an administration's resources. In some cases also beyond the ability of a minister to reign in a senior official under his legal authority.<sup>45</sup>

Senior positions in one ministry are not easily staffed or exchanged as this usually entails negotiations across ministries and administrative bodies and needs to consider both religious and political affiliation. To find a satisfactory candidate for the post of director of the Bekaa Water Establishment, for example, took until June 2011, while the equivalent appointments for the other three RWEs were successful much early, by the end of 2001 and the beginning of 2002.

Geographical distribution of development and reconstruction investment and projects also follows a political logic, at least in part, not for each sector, but rather across sectors as will be shown in a later chapter. Parliament and the various parliamentary committees are some of the places where these negotiations to balance the regional distribution of projects take place (Interview Charfeddine 2011). This process of geographical distribution is equally linked to sectarian considerations, and while all regions are confessionally mixed each one — with the exception of Beirut — has one pronounced sectarian majority.

#### 2.3.2.4 Resolution by Avoidance

In general, when negotiations failed or could not lead to success, other ways to achieve political or economic aims had to be found. These usually were attempts to bypass the political process — another recurrent feature of the Lebanese political landscape. These types of arrangements would be adapted to the current problem at hand. Leenders (2004b) describes the case of the reestablishment and strengthening of municipalities after the war, or rather the failure to do so. Parliamentarians and especially the troika of president, prime minister and speaker of parliament were fearful of a growing local independence which a revival of war-defunct municipalities could bring. Fighting to keep control over the process, the political stalemate over municipal elections was convenient for the elites, and the dispute would not be resolved for some time so that the first elections would only take place in 1998.

More importantly, in order to keep control over the funds due to municipalities Hariri managed to pass responsibility for municipal affairs from the Ministry of Interior to the newly created

---

<sup>45</sup>An incident over telecommunications equipment illustrates this very well. Minister of Information and Telecommunications Charbel Nahas ordered equipment removed from the state owned (autonomous) telecommunications company. The director Abdel-Monem Youssef (an ally of Rafik Hariri and later his son) of the company refused to conform. When Nahas himself attempted to enforce his orders, he was hindered by Internal Security Forces general Ashraf Rifi (a staunch ally of the Hariri clan) who had sent a group of ISF officers to bar entry to the building where said equipment was housed.

Nahas, a political ally of (Aoun) asked Minister of the Interior Ziad Baroud (politically aligned to the president Michel Sleiman) to order Rifi to withdraw his forces. Baroud's order were refused by Rifi. In turn Nahas managed to draw on a different ISF branch to provide a security detail for his mission. One commentator well versed in Lebanese politics summed up the results as follows: "Rifi's men prevailed, but not before the entire sad spectacle was caught on television: two branches of the same police force staring each other down, with one minister prevented from accessing a building connected with his own ministry and another minister issuing orders to his subordinates to no avail" (Muhanna, 2011). Finally the Minister of the Interior resigned over the issue.

Ministry of Rural and Municipal Affairs, headed by one of his allies. In the same vein the newly created independent municipal fund's budget would be managed by Fouad Saniora and Hagob Demerjian and shielded from public scrutiny and accountability (Leenders, 2004b, p. 205–206) in a set up not dissimilar to that between the the MOD and the CFD.

The rationale given to justify this course of action was the poor state of the municipalities' administrative capacity. The empowerment of the CDR as superministry followed a similar argumentative line and pointed to the state of disarray in the various ministries.

Eventually the administrative responsibility for municipal affairs was reintegrated in the Ministry of Interior, yet the Municipal Fund remained as opaque as before, and disbursement to the municipalities depends on government decrees. To this day many, if not most, municipalities remain underfunded and incapable of dealing with all of their administrative responsibilities, among them being the management of local waste water networks (Attallah 2012).

The same could be said for other ministries. Initial funding and support was directed mostly to the CDR while line ministries received support by what was called sector implementation units (SIUs) enabled by foreign funding. The CDR hired numerous professionals and has a robust structure of expertise at its disposal while the SIUs were only temporary, leaving numerous ministries seriously understaffed. The weakness of the MEW and other ministries is thus at least partially rooted in the preferential treatment the CDR received at Hariri's behest. Hariri managed to create a bypass of the political process that enabled him to act and spend more independently, to the detriment of the other state administrative bodies.

In terms of administrative tasks and reforms, definitions of responsibilities would often be kept vague to avoid confrontations. This led to administrative rivalries and in some cases to overlapping responsibilities down the line. The most obvious example is the CDR's control over the reconstruction and infrastructure production process. Until today the responsibility for waste water management effectively rests with the CDR, while, by law, the four RWE, the municipalities, and the MEW share this responsibility but are in reality unable to fulfil it.

For civil servant positions this propensity to find quick fixes or temporary solutions meant that they were staffed via interim appointments to find temporary solutions for vacant senior civil servant positions. The director of the Litani River Authority, Ali Aboud, or the Director of the General Directorate of Exploitation, Mahmoud Baroud, until 2012 are just two examples. The directors of the four RWE are equally just acting directors and do not hold a permanent and legally secured position. Being appointed as interim directors makes them more easily exchangeable as the process does not require legislative action.

Regarding legislative issues, possible legal loopholes would be exploited or legal provisions simply ignored. To pick up on the earlier example of the budget law, successive governments have actually spent an estimated US\$ 11 billion above the legally set limit since 2005. Another example is related to privatisation efforts, the complete transfer of ownership of state-owned assets, for example, would require parliamentary approval. Certain types of Public Private Partnerships, or Build-Operate-and-Transfer (BOT) arrangements would serve as a way to circumvent political obstacles. The public phone company Ogero or the cellular telecommunications networks are a case in point (see Nahas, 2009). Asked about the failure to create independent regulators for the privatisation of the telecommunications, energy and civil aviation sector, the Secretary General of the High Council of Privatisation had the following to say:

Under Law 431 for telecommunications a regulator for the sector was created, the TRA [Telecommunication Regulatory Authority], yet no regulator was created for the energy

sector or civil aviation. The reason this has not been done in the last two cases and has been done poorly in the first is that a conflict of interest exists between having an independent body and the person of the minister in each one of these ministries. (Brophy, 2013)

Though required by law, these entities were not created because no solution could be found to satisfy the ministers. Such a regulatory body would mean a reduction of the powers of the ministers and ministries and so reduce the value of said position. As will be shown in Chapter 4, similar dynamics are at work in the water sector regarding the national water council. In all cases the easier solution to what in the past promised or currently promises to be intractable negotiations is simply ignoring or bypassing the issue. A similar argument will be made for the so-far incomplete reform where delays in producing law texts organising the ministry, for example, are one way of retaining privileges of an administrative body.

The water sector administration was also expected to undergo large scale privatisation efforts under the guidance and pressure of the IDC though so far not very successfully. Law 221/2000 was to form the basis for later privatisation efforts, one aspect of the law was the regrouping of 21 water offices (and 200 water committees) into four regional water establishments, yet it took five years until the water establishments received bylaws. They operated in a legal limbo and some of the water offices kept operating independently in reality, but under the auspices of a larger water establishment according to the law. Even today some of these water committees are still active. Later chapters will illustrate this dynamic for the water sector administration in more detail.

### 2.3.2.5 Patronage Networks and the State

Leenders (2004) suggests that these clientelist dynamics and the political elite's need to create or strengthen patronage networks were reinforced in the post Taef period. He points to the weak political legitimacy of the post war political actors as the main reason they resorted to patronage networks to buy (and render dependent) their political constituencies. Hannes Baumann (Baumann, 2012) describes Hariri's ascent to power and his political fortunes during his time in and out of government. He shows how this political leader increasingly fell back on mobilising sectarian networks to regain and keep his hold on power. His ascent during the 1980s and early 1990s was sectarian in so far as it profited from Saudi largess and support, but his reputation was that of a successful business man and his credentials came from his economic success. Only after his ouster from government in 1998 did he have to flout his sectarian credentials and present himself as sectarian leader to return to government in 2000 (see Baumann, 2012).

Kingston's (Kingston, 2001) analysis of the capture and penetration of environmental protection/conservation forums by patron-client networks is also directly relevant for the case of water resource management. In the post war years, in part due to the greening of development aid, Lebanon saw the rise of a "real flurry of environmental NGOs". Following global and local environmentalist trends the Ministry of the Environment was established in 1993. Yet it was severely restricted in its ability to monitor and enforce environmental protection or breaches of laws regarding pollution. Previously, environmental activists established the Lebanese Environmental Forum as a coordination committee for Environmental NGOs and with the goal to challenge environmental destruction stemming from the accumulation strategies of the elites. The LEF was also the venue for distribution of funds earmarked for the establishment of three environmental protection areas and distributed by the United Nations-run Global Environmental Fund. Political

elites quickly penetrated the LEF, most notably an NGO, called Amwaj el-Bi'a, established by Randa Berri, wife of the speaker of parliament, who held the post of secretary general until at least 2000. As result of this, members of the LEF, in return for access to international funding, “turned a blind eye to the environmentally degrading activities of Lebanon’s entrepreneurial elites”, be they industrial pollution or the privatisation of the public shoreline (Kingston, 2001, p. 67). Attempts to open other venues for environmental activism and organisations on the national level to replace the LEF were obstructed by Interior Minister Michel Murr, who himself is heavily involved in the quarrying business and also maintains influence in the LEF.

The case of the Beirut River turning red from industrial waste is only one example of the blatant environmental pollution that plagues the country because of the lack of enforcement of regulations (Meguerditchian, 2012). The initial media outcry though was never followed up with serious action. It was claimed that the substance that coloured the water was not harmful to humans or the environment and within a few days the issue disappeared from the public eye.

As has become already clear above, the state administrative bodies and institutions are an important conduit of these patron-client dynamics, the same is the case for NGOs and nonprofit associations. The amplitude of these structures is best described by the retelling of one consultant working for a USAID-funded technical assistance project for the water establishments. He describes his experience of the dynamics related to the announcement of job advertisements for 80 positions at the Bekaa Water Establishment. Once the director of the received approval to start the employment process “every single politician and prominent person and all the religious institutions, Christian and Muslim, every regional government and national government politician” became involved in order to secure a position for their clients.

So if they announce that the RWE is going to hire 80 people, even before they say it, there is about 800 people being assigned, and lists of CVs being sent. Unbelievable pressure is being put on these directors. For example, the same parliamentarian would be calling all day. A young person, about 20, would be standing in front of the office. He would yell at the director for making him wait: “Don’t you know that I was sent by this bishop, or this parliamentarian, or this sheikh?”

This pressure would continue to relieve the person of some or all of his workload:

The director is then being told that this guy has two kids and that he can’t show up to work. “He doesn’t make enough income, so it is unacceptable for him to be asked to show up at the water station every day at 8:00 am. The Water Establishment should let this guy show up when he can.”

This is not an exceptional case:

All the staff that were accepted were from one denomination located in one area in the Bekaa, and all the positions are on the opposite side of the Bekaa. So none of the people who got a job actually have any intention to show up to work. One case I witnessed, it was a Christian priest from north Bekaa that secured a job for somebody else.

We are seeing this now in the Bekaa because it is happening now. In the other establishments it has already happened before. (Interview Jimmy Zazaar 2012)

The high rate of absenteeism and the problems with productivity — the many or constant coffee breaks as it was most often described — repeatedly elicited comments by a number of experts

and officials that were interviewed. These jobs are important to those who get them, especially in areas where jobs are few and incomes are low. And often, also because of the drain these dynamics put on the financial resources of the administration, these contract worker positions demand no qualifications and accordingly pay no more than minimum wage.

The patronage dynamics apply not only to employment. On three occasions I witnessed municipal delegations from some village come to either the MEW or the CDR to further their cause. Introduction would usually start with a reference to the person who recommended the persons present (sometimes backed up by a phone call). The drilling or repair of a well, maintenance on a transmission pipeline, or fixing the leakage of a reservoir, but also the construction of new infrastructure (at a relatively small scale), are the goals of such interactions.

The patron-client relationship also gives protection or negotiating power to contractors with regards to work on infrastructure for example. The prices of material or work, or the substitution of materials, the quality of work, all these can be subject to renegotiation if necessary or possible, and probably more often than not to the disadvantage of the contracting authority.

The inefficiency of the Water Establishments, and the Water Offices before, are, as the examples shows, not a function of the inefficiency of the state but rather a function of how pervasive patron-client relationships are, and as such are related to the power dynamics in Lebanon.

This section has shown that the post-war political order has tremendous impact on water resource management, and does so in many and important ways. The post-war political process serves as framework for the rivalries and elite competition. It lays out one arena of confrontation and the means by which these struggles were and are fought. The post-war reconfiguration of the political process endowed it with chronic features that in turn affect water resources and their management. The shortcomings of the water resource management process are intimately linked to the political structures and the power distribution dynamics. They are, as the last section has shown, deeply political issues.

## Chapter 3

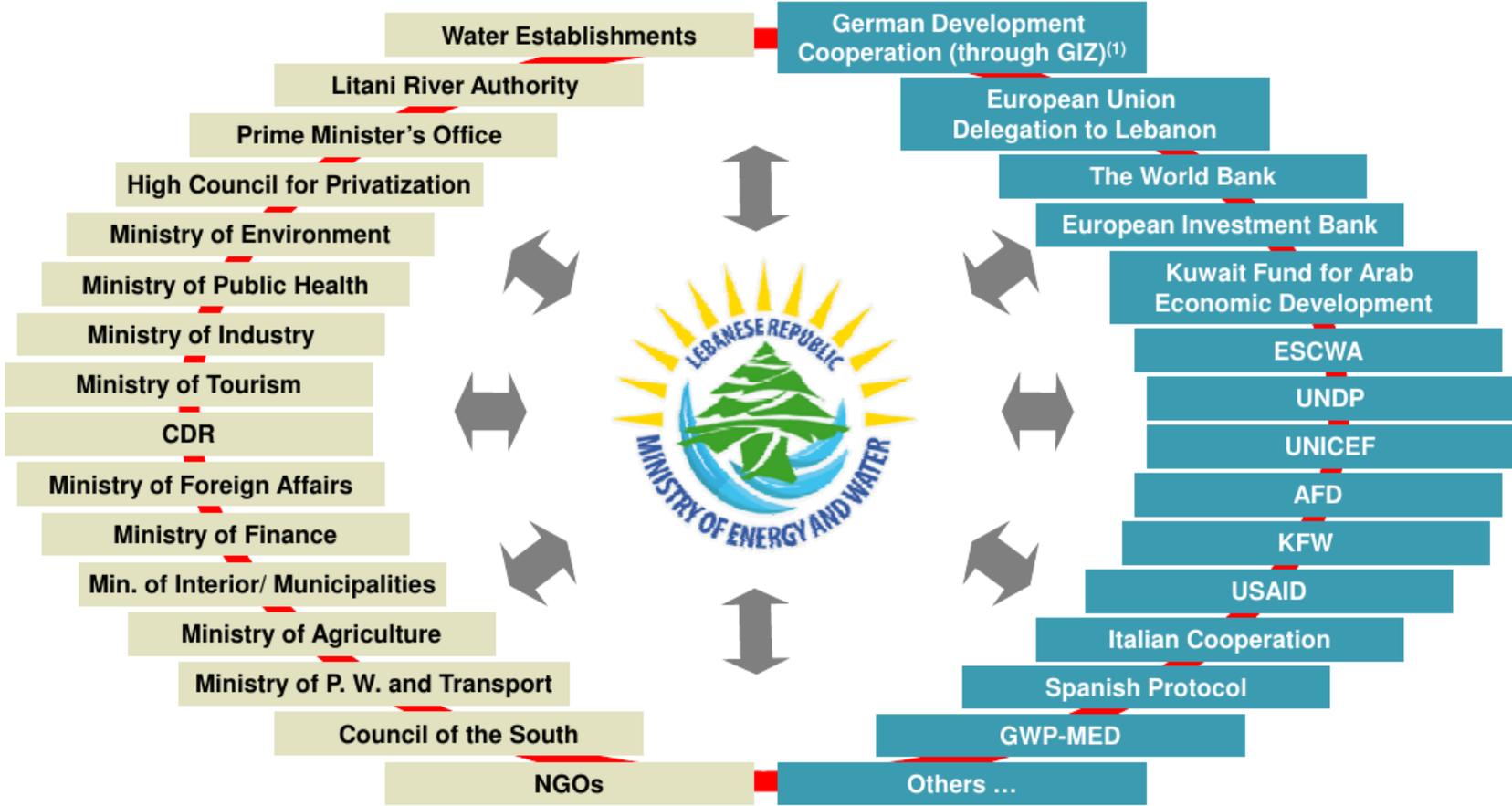
# The International Development Complex

Figure 3.1 is a copy of the first page of the National Water Sector Strategy published in late 2010 by the Lebanese Ministry of Energy and Water (MEW) and ratified by the Council of Ministers in 2012. The illustration, though not a complete enumeration of the actors involved, gives a good indication of the large number of actors influencing or affecting water resource management in Lebanon. It is an idealised depiction, like so many produced by water sector actors in Lebanon, both Lebanese and international (see Lictévout, 2010; SOGESID, 2005; World Bank, 2010d, 2012b). Where the figure suggests cooperation and coherence between Lebanese institutions only very little is present (see Chapter 2). Where it suggests symmetry between Lebanese and international actors, a stark imbalance exists. In its presentation of the numerous actors the weight of the international donors and related development agencies already becomes apparent. This chapter analyses the interaction between these two blocs: the two distinct sets of Lebanese and international actors. Building on the explanation of the Lebanese component of the water sector, the composition and function of what will be referred to as the International Development Complex (IDC) will be explained.

Before going into the details of the IDC (its water sector component) this chapter will elucidate the neoliberalisation process in Lebanon that is one of the important causal dynamics of the increasing involvement of the IDC. As Neil Brenner, Jamie Peck, and Nik Theodore suggest the neoliberalisation process is best understood as “an historically specific, unevenly developed, hybrid, patterned tendency of market-disciplinary regulatory restructuring” (Brenner, Peck & Theodore, 2010a, p. 330). From this point of view neoliberalism is a process “of market driven social and spatial transformation” (Brenner & Theodore, 2005, p. 102) that takes a path dependent trajectory. Its main characteristics are summarised by Noel Castree: State roll back or deregulation, privatisation, marketisation, market friendly reregulation, use of market proxies in the residual governmental sector, the strong encouragement of ‘flanking mechanisms’ in civil society, and the creation of ‘self-sufficient’ individuals and communities (Castree, 2010a, p. 100; see Annex B for Castree’s more detailed summary). These templates never materialise in their pure form, but partially and incompletely depending on the local context of their application. The first section will show how the increasing neoliberalisation of Lebanon gave rise to the IDC and a specific accumulation regime that has been at the centre of the drastic deterioration of state finances.

Figure 3.1: National Water Sector Strategy Acknowledgements

The NWSS has been developed by the Ministry of Energy and Water, with the participation of national stakeholders and international donors



Note: (1) through **giz** played a key role in supporting the NWSS and its launching event.

The presence and involvement of the IDC in the water sector is quasi-ubiquitous. The presence and discourse of the IDC inscribe themselves in and reproduce neoliberal ideology locally, across economic sectors, and in the water sector specifically. IWRM, the related need for private sector participation, justifications derived from the threats of climate change, and scarcity are the discourses that guide interventions in the water sector. The general agreement of IDC and Lebanese officials on and the few marginal differences in the discourse regarding problems and solutions to the ills of the water sector in Lebanon suggest a confluence of interests. Yet this unified discourse obfuscates underlying dynamics of interaction. Cooperation, or rather the characterisation of the interaction between the IDC and the Lebanese administration as such, hides the tension that defines the relationship between these two sets of actors.

### 3.1 Lebanese Neoliberalism

Having presented the political process and characteristics of the mechanism of power distribution in the last chapter, this section will analyse the structures of the economic basis of the power of the elites. Guided by neoliberal policy templates, successive governments have solidified four rent creation mechanisms that benefit the elites. These have importantly contributed to the drastic rise of government debt, which in turn has given the IDC increasing leverage and influence in development policy formulation and choice. This is true for economic policy, as well as WRM policy. The large public debt is also one of the main reasons for the sad state of infrastructure in general and water infrastructure in particular. This section lays the foundation to show the links of processes of capital accumulation with lacking infrastructure, institutional capacity, and administrative manpower.

It further shows the form that “actually existing neoliberalism” (Brenner & Theodore, 2002) takes in Lebanon. It sets the basis for a critique of the neoliberal policy templates that are promoted to solve the fiscal woes of the state and the weakness water sector administration. The application of Washington Consensus ideas in the context of Lebanon helped create problems which newer iterations of neoliberal policy and ideology claim can be solved by this same ideology. The discussion in this section will show this to be the case for economic policy and state restructuring in general. This will form the basis and background of a critique of neoliberal IWRM policies that promise to right the shortcomings of the water sector, which are in no small part linked to the larger political economic structures built through the hybridised adaption of these policy templates.

#### 3.1.1 A Vision for Reconstruction

The first post-Taef governments managed to improve the security situation in the country but were not able to produce much in terms of reconstruction efforts. Administrative and institutional paralysis, high levels of corruption, the ballooning deficit that produced very little counter-value in the form of investment in infrastructure, were important causes for the economic crisis that set in. The Central Bank withdrew its support for the Lebanese lira (LL).<sup>1</sup> The ensuing collapse of the lira and the resulting hyper-inflationary period forced the government of Rachid Karami to step down in May 1992. A new government was formed to oversee the elections in September of that

---

<sup>1</sup>Charbel Nahas (2000), Samir Makdisi (2004) and others argued that the crisis originated from a concerted speculative effort and was aimed at bringing down the government. Similarly the World Bank: “The root cause of this inflation was monetary expansion necessitated to finance the large government budget deficit and its *interaction with highly sensitive expectations and speculative capital movements, including currency substitution*. ... The large retroactive civil servant salary increase granted in late 1991 precipitated a speculative crisis and a subsequent attack on the domestic currency.” Author’s emphasis (Van Eeghan, 1993b, p. 12).

year.<sup>2</sup> Rafik Hariri was nominated Prime Minister — without having been elected to parliament before — and within days of his formation of a “Government of Economic Salvation” the Lebanese lira appreciated about 20 percent to the dollar; supposedly as result of the confidence he inspired on international markets.

In fact his peasant to billionaire history, his ascent from small contractor to owner of an impressive business empire is the stuff of neoliberal legends (see Baumann, 2012 for detailed analysis). Buoyed by his reputation, clever political manoeuvring, international backing and his wealth, he would very quickly become the dominant force in the formulation of the economic and physical reconstruction of the country. Hariri spearheaded the reconstruction, but large parts of the elite and the population shared and supported his vision for the country. Inspired by pre-war nostalgia for the “Switzerland of the Middle East”, Lebanon was to regain its position as the gateway to the Middle East. It was to retake its place as the commercial and financial hub to the Arab world. The World Bank commented:

Although presumably Lebanon’s comparative advantage still lies in international services, tourism, and high value-added light manufacturing industry and agriculture, the Government is aware that regional competition for financial services and transit trade has increased, the high regional growth associated with the petroleum boom is no longer present, and other circumstances that had contributed to the rapid growth that in the period prior to the mid-1970s are unlikely to be replicated. (World Bank, 1994, p.6)

A reproduction of the pre-war economy led by a service industry and tourism was promulgated as the way towards the future.<sup>3</sup> Opinions that questioned pre-war success and the new strategy were marginal, and even most of those opposed to Hariri’s vision were not questioning Lebanon’s “traditional” liberal order. Divergence in opinion was about the priorities of rebuilding the economy versus the rebuilding and strengthening of state institutions and the administration, but remained in the framework of an open-market economy and the sanctity of private property.<sup>4</sup>

There were those that advocated that institution building would be a first and necessary step to economic recovery (on the longer term) while the Hariri camp saw this as subsidiary to economic recovery. In a post war situation where state institutions were in tatters, and the notion of a state was hardly present in the daily operations of the populations such a line of argument seems absurd. But even the statist saw a mostly regulatory role for the state — in the liberal (or even ultra-liberal) tradition of the pre-war — and nothing like a welfarist and interventionist role in the reconstruction of the country.

In Hariri’s vision it was the “vigorous and dynamic” private sector “traditionally the country’s main asset” that was to provide the bulk of investment and lead the reconstruction. Early CDR

---

<sup>2</sup>The timing of the elections was orchestrated by Syria to coincide with the withdrawal of its troops to the Bekaa and against the wishes of numerous Lebanese leaders who preferred to postpone them to a later date. The call for boycott by the more popular Maronite political figures excluded them from the new government and instead numerous Syrian clients entered parliament. Elie Hobeika, the Minister of Hydraulic and Electrical Resources, was one such Lebanese politician. The process drew heavy criticism from Europe and the US but nevertheless earned international recognition in return for the Syrian leadership’s acceptance of Saudi-backed tycoon Rafik Hariri for premiership.

<sup>3</sup>Toufik Gaspard (2004) analysing the performance of this service and commerce economy before the war concludes that it was already not very impressive. This seems even less so when put in the regional context, where Lebanon in fact had a comparative advantage because of its openness Gaspard (2004).

<sup>4</sup>See Debié et al. (2003), for an argument that divides the political spectrum into two camps. The first propagating a “statist” vision and the second vision that saw state building as subsidiary to economic reconstruction.

reports point to the importance of a private sector that was expected to invest twice as much as the official reconstruction plan projected for government capital expenditures. The CDR progress reports since 2002 reiterated the same mantra:

The activities of CDR cover various economic sectors. However, the extent of these activities varies from sector to sector in accordance with the Government's directives and Lebanon's free enterprise economic system. The role of the State is *limited to the support and promotion of the private sector*. (Author's highlight, CDR, 2003, p.4)

This statement echos Castree's definition of the purpose of market friendly reregulation where the state "intervenes for the economy not, as it were, in it" (Castree, 2010a, p. 1729). The government was to provide the necessary context and infrastructure (with an emphasis on physical infrastructure). Where possible it would be with the involvement of the private sector in the form of Build-Operate-Transfer (BOT) arrangements, public-private partnerships, and other strategies. To quote the World Bank assistance strategy again:

Regardless of the composition of growth, the Government plans to support private sector initiatives in order to realise the country's potential. The Government is of the view that with adequate infrastructure, the traditional strengths of Lebanon's entrepreneurs, and its human resource base in general, Lebanon could exploit new opportunities that will arise in the region as the peace-process evolves. (World Bank, 1994, p. 7)

Armed with a hybrid ideology combining neoliberal ideas with the Lebanese ultra-liberal tradition, applauded by multilateral and bilateral development agencies (the IDC), and a misplaced believe in the Arab-Israeli peace process<sup>5</sup> which was hoped would solve the region's problems, the task at hand was to attract private and international investment to Lebanon. Two elements were central for the plan to turn Lebanon into the "Singapore of the Middle East" to be viable: Internal stability had to be maintained and a business friendly environment had to be created.

### 3.1.2 Hariri's Reconstruction

A lot of work had already been done by Hariri's predecessors with regards to stability. But beyond the disarming of militias, for this vision to become reality internal opposition to his plans had to be reduced. This was done by finding an appropriate way to include competing elites into the profit-making bonanza that would be sponsored and directed by Hariri's government. Hannes Baumann (Baumann, 2012) identifies four rent creation mechanisms — partially contradictory to neoliberal policy prescriptions — that served this purpose: 1) the distribution of service ministries, 2) the regulation of markets by keeping commercial monopolies and oligopolies protected,

<sup>5</sup>The Lebanese-Israeli conflict was simmering throughout the 1990s; parts of the south of the country were still occupied by the Israeli army. Violent episodes occurred regularly. In 1992 Hezbollah leader Abbas Moussawi was killed in an Israeli helicopter strike. In the summer of 1993 Israel launched "Operation Accountability" in reaction to Hezbollah operations in the occupied areas. By 1996 with "Operation Grapes of Wrath" it must have been clear that peace would remain elusive when Israel returned for a vicious air campaign against Lebanon.

3) government borrowing and over-borrowing mainly from Lebanese commercial banks, and 4) the physical reconstruction, focusing on large-scale real estate projects. The protection of the commercial monopolies and the distribution of the service ministries are the opposite of what neoliberal theory is designed to achieve. By eliminating or reducing competition the monopolies cripple the market forces rather than effect their liberation that is to produce an efficient allocation of capital. Further, the importance of the service ministries in the distribution of political power signifies not a roll back of the state but a redefinition of its role and enshrines the “inefficiencies” of the state in the form of patron-client relationships.

The first hurdle to be overcome was the distribution of ministries and administrative bodies among the political elites and their clients. Access to the ministries involved in the reconstruction of infrastructure made for good profits and is part of the “muhasassa” dealings described earlier. Hariri secured for himself those institutions important for the economy and leading the reconstruction. The other ministries with WRM responsibilities were distributed among allies and opponents. For Hariri the CDR was a deep well for dispensing favours, that could be used as bargaining chips in his quest to realise his vision for the country. Virtually all major reconstruction contracts were managed through this agency and so awarding contracts to political opponents or their clients was a useful way of gaining concessions on political issues. “Between 1992 and 1999 the CDR spent in total nearly US\$ 5.4 billion on contracts — around 80 percent of total public capital investments” (Leenders, 2004b, p. 138) illustrating the centrality of the CDR in the reconstruction process. With his hold on the MOF, the Central Bank, and the CDR, Hariri held the agencies that were strategically important in the articulation of the reconstruction, and that allowed him to shape the economy and accumulation regime of the country like no other.

### 3.1.3 Financing the Reconstruction

The vision of a business friendly environment that was at the heart of Hariri’s reconstruction strategy rested on two ingredients. One was a high end business hub, a services and tourism centre for the Middle East, that would, at least in theory, attract globalised business elites and luxury tourism from the Gulf. The second was a financial infrastructure able to handle the related capital flows in the form of local and foreign investment.

In addition, this strategy also configured WRM in very specific ways. For one, it focused the reconstruction on the services and real estate sectors with a geographical centre of gravity in Beirut and specifically its soon-to-be-rebuilt downtown. As a corollary, it created a less-than-friendly environment for productive sectors such as industry and, important for water resources, agriculture. The strategy as a whole was one of class warfare. The bias against productive sectors and especially against agriculture and a neglect of the geographical peripheries were also part of this larger class warfare programme (see Chapter 5).

After having gained control over the strategic administrative bodies, Hariri was faced with the challenge of financing his reconstruction strategy. For this he turned to Lebanese commercial banks rather than foreign funding. The Lebanese government started to auction Lebanese lira-denoted treasury bills via the central bank, justifying its actions by arguing that the government had only little access to foreign funding.

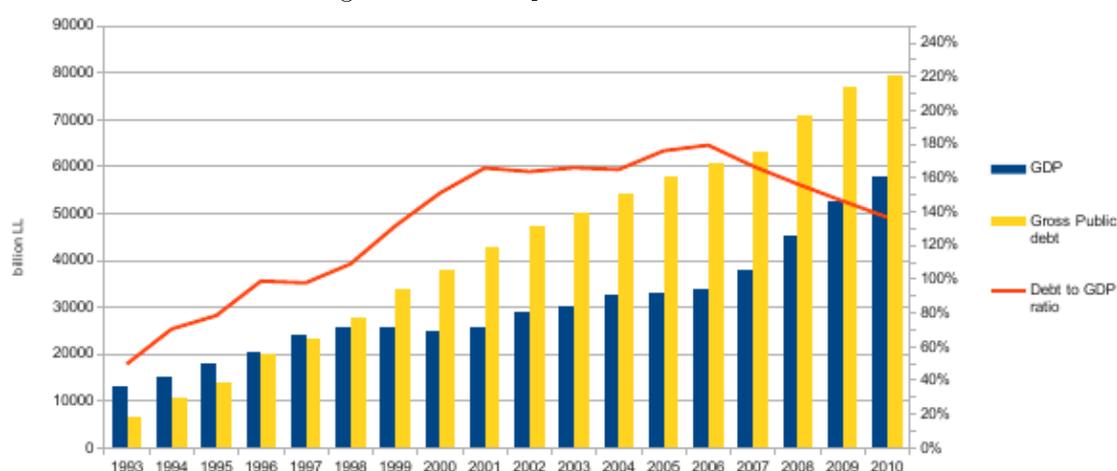
Lebanese government debt at the end of the war was low and Lebanese denoted debt decreased in dollar terms due to rapid currency depreciation between 1987 and 1992. In five years the pound fell from about 200 LL to 2,500 LL to the dollar. The government was in a relatively good fiscal position but these inflationary dynamics caused considerable pain to local banks. The banking

sector was thus in no shape to act as intermediary for the wished-for capital flows. Hariri's strategy for bankrolling the reconstruction would change this at a high cost to taxpayers and government finances (see Baumann, 2012; Najem, 2000).

When Hariri came to power government debt was under control, yet within five years government debt would rise from 50.7 percent of GDP in 1993 to 109.1 percent in 1998 when Hariri's first term as premier ended. Faced with the monumental task of rebuilding the country, an increase in expenditures and deficits was to be expected, yet the rate and magnitude were stunning. These drastic developments led the World Bank to place Lebanon on its "shortlist of states that were at high risk of bankruptcy" by the end of 1995 (Najem, 2000, p.142).

Debt would continue to grow and though attempts at reigning in budgetary deficits were made, it has remained substantial ever since. By the end of 2013 total gross public debt was around US\$ 64 billion. Spiralling debt and the constantly high budgetary deficits had become a structural feature of the Lebanese economy.

Figure 3.2: Development of debt and GDP



Source: Ministry of Finance: general debt overview 2014

### 3.1.4 The Origins of Lebanese Debt

Three reasons can be given for the high debt. One is the low tax base and the low government revenues;<sup>6</sup> another is the cost of reconstruction activity, related a percentage of waste or corruption

<sup>6</sup>Years of war had left the tax administration in a bad shape. Tax collection was inefficient due to a lack of information on tax payers, outdated methods of collection, weak tax enforcement laws, and means of enforcement and tax evasion was high (not really a surprise after 15 years of war and the congruent social changes). Again following the neoliberal play book the tax system was reformed and "the new tax system adopted at the end of 1993 introduced major tax cuts on profits to encourage investment and voluntary compliance" (Dah, Dibeh & Shahin, 1999, p. 9). An IMF mission and the Lebanese tax reform committee basically agreed on the way forward (Dah et al., 1999). The tax rate was kept at very low levels owing to the vision of a tax haven that would attract vast amounts of FDI. Corporate tax was held at 10 percent and a "special discounted rate of 5 percent applied to financial companies that build and sell residential buildings." Tax on capital accounts was also capped at 5%, taxes on salaries were bracketed with the highest bracket at 10 percent. Tax revenues increased but remained narrow and certainly could not keep up with the increasing deficit.

Government revenues, fluctuated between 12 percent of GDP in 1992 and 16.3 percent in 1997. Share of direct taxes rose from 29.4% to 35 percent of revenue. Customs duties increased from 35.7 percent to 46.2% between 1993 and 1996 (or 5.05 percent to 8 percent of GDP) because of an increase in imports. Relative share of revenues from indirect taxes declined from 30.76 percent to 24.88 percent of revenues (or 4.93 to 3.26 as percentage of GDP). These changes must not be misunderstood. They reflect mostly the improvement in revenue collection and economic growth (as compared to war levels. At the same time, the budget deficit increased from 11.4 percent of GDP to 23.48 percent of GDP.

on the specific investment activities and government expenditures in general (and excepting debt interest); a third reason can be found in the overly high interest rates on Lebanese lira-denominated treasury bills (LLTBs), as well as government over-borrowing to support an exchange-rate stability and appreciation policy.

Gaspard (2004) estimates that half of the average 18 percent weighted annual yield on LLTBs was paid in excess until the end of 2002, or about US\$ 8.5 billion. He adds to this about US\$ 1 billion stemming from high interest paid by the central bank as a result of currency support operations. Finally he adds another US\$ 7 billion representing the 20 percent waste (above normal waste) on all other government expenditures to get a total “wasteful” spending of US\$ 16 billion in the time period between 1993–2002. Public debt stood at US\$ 32 billion in 2002, half of which, according to Gaspard’s calculations, was in excess of what could have reasonably be expected and served only to enrich elites and flowed into the pockets of Lebanese and international investors.

While debt ballooned, Lebanese banks were thriving and they and their major depositors were raking in impressive profits. Tom Najem writes that:

The amount deposited into Lebanese banks during the Hariri period was staggering ... Some 15 months into Hariri’s administration, net transfers from abroad totalled US\$ 6.5 billion. At the end of 1993 total deposits in Lebanon’s commercial banks were US\$ 8.5 billion, by May 1996 deposits had grown to US\$ 16.3 billion. (Najem, 2000,p.182)

Most of which were denoted in US dollars and only a fraction in Lebanese lira. Bank profits exploded. For example by 1996 BankMed (controlled and owned by the Hariri family) became the

largest Lebanese bank. The bank recorded a profit of US\$ 19.2 millions in 1995 compared with a profit of only US\$ 1.6 million in 1993. Its assets grew from US\$ 21 million in 1992 to an impressive US\$ 2 billion in 1995. (Najem, 2000, p.182)

All of the major Lebanese banks recorded similar results. The five to six dominant banks held 78 percent of total deposits and 74 percent of loans in the system. Average annual growth of the consolidated balance sheet of the banking sector in the 1990s was estimated at 22 percent (Nahas, 2000).

The mechanism that links the two, growing bank balance sheets and profits and national debt, deserves a little more attention. The financing of the reconstruction via the Lebanese commercial banking sector served to included the competing elites in the profits of the reconstruction and to recapitalise the banking sector to ready it for its assigned task as a regional financial hub.

In order to entice Lebanese banks to buy T-bills and act as creditors to the Lebanese state the Central Bank and the government deployed a two-pronged strategy. Hariri’s government committed to a policy of currency appreciation of the Lebanese lira to the dollar (relatively stable and “almost predictable” annual average of 3.4 percent between 1993–1998 (Gaspard, 2004, p. 218)), and the Central Bank managed T-bill auctions so that interest rates would promise good returns to lenders. Coupled with interest rates that were very high, touching 38 percent for two year T-bills and around 20 percent for T-bills with shorter maturity, averaging about 18 percent for 10 year period (Gaspard, 2004, p. 219). The exchange rate-based stability policy essentially gave the

guarantee for profit as the differences in interest rates on dollar-denominated loans and LLTBs provided returns of up to 25 percent over three months (see Hakim & Andary, 1997).

As a number of observers point out the interest rate was, in all likelihood, only seemingly set in the free play of market forces. They account for this development by pointing to a “home bias” effect or specifically Lebanese “socio-political conditions” (see Helbling & Eken, 1999; Schimmelpfennig & Gardner, 2008). The high interest rate was essential to draw in funds which in turn were needed to prop up the currency. And in circular fashion the attractiveness of the high interest rates depended on the appreciation and later stability of the Lebanese lira. Baumann (2012) explains — and it is worth mentioning here because the class political aspect of the financing strategy has had a long-term effect on the economy as whole — that the key to maintaining confidence in this mechanism is found in the “depositor structure”. The depositor base that profited from the mouthwatering interest rates was and still is highly concentrated (see Chapter 2). An IMF report of 2008 shows that 36 percent of total deposits are held in accounts smaller than US\$ 150,000 while 31 percent are held in accounts of more than US\$ 1 million (Schimmelpfennig & Gardner, 2008).

The mechanism through which LLTBs were auctioned and which guaranteed foreign investors their bids without having to partake in competitive auctions, as well as the concentration in the banking sector formed a good environment for a very controlled management of interest rates. This debt finance mechanism represented a massive transfer of taxpayer money to the Lebanese elites (and diaspora) as bank owners and major depositors.

Table 3.1: Table Cumulative government expenditure by economic category 1993 - 2002

Economic Category	\$ Billions	% of Total
Interest on Public Debt	21.0	38
Wages and Salaries	16.3	29
Goods and Services	6.2	11
Transfers	3.3	6
Investment	9.2	16
Total	56.0	100

Source: Gaspard 2004

Debt servicing quickly became the one major government expenditure surpassing salaries and investment by far (see Table 3.1). A stunning 38 percent of expenditures went on debt servicing between 1993–2002 while less than half of this, only 16 percent or US\$ 9.2 billion, was spent on investment. Debt servicing has since remained the largest share of government expenditure, hovering around 40 percent.

## 3.2 Descent into Dependency

The dramatic fiscal situation would become clear to all.<sup>7</sup> Tax increases were considered, tariffs on imports were increased but some of these measures had to be rescinded due to strong popular and political opposition. The government also turned to increase foreign borrowing by issuing dollar denominated Eurobonds, increasing foreign reserves and lowering the cost of debt servicing

<sup>7</sup>Sami Baroudi writes that “by 1996, Hariri and acting Minister of Finance Fouad Saniora were beginning to show signs of concern, even alarm, at the mounting public debt and the failure to bring down the budget deficit.” (Baroudi, 2002, p. 68)

because of the lower interest rates these bonds fetched. More importantly for infrastructure, the 1996 budget already saw strongly reduced capital expenditures.

Hariri had set the path and his successor would follow as if there was no alternative. By 1998 when Hariri was forced to resign after the election of President Lahoud, the government of Salim el Hoss essentially followed the same policies, even if with less enthusiasm and conviction (see Corm, 2005; S. A. Makdisi, 2004). It prepared the introduction of a value-added-tax, but that had to wait until 2002 when Hariri after two years in office had to show his commitment to fiscal consolidation to attract bilateral and multilateral loans. Under Hoss foreign currency borrowing increased even more than during the later years of Hariri's first reign. The new government was anxious to point out that it remained committed to attracting foreign direct investment and keep the trust of its creditors.

The policies of the Hoss government did manage to slow down the run-away deficit but fiscal health was far from attained. Under the pressure of a coercive debt the government also launched the preparations for an ambitious privatisation programme (by far outdoing what Hariri had done or was able to do). The postal services, the telecommunications sector, the electricity sector, the water sector, the national air carrier, as well as the casino were to be tendered for sale according to these plans. The law regulating privatisation passed in April 2000 and Law 221 reorganising the water sector with a view to initiate privatisation passed in May 2000 were born out of this context.<sup>8</sup>

Yet not much came of these privatisation plans with the exception of the involvement of the private sector in the telecommunications sector and the privatisation of the national air carrier. In the summer of 2000 Hariri's list managed to gain a majority in the parliamentary elections and he returned to government in the latter half of the year. Baroudi (Baroudi, 2002) is right to point out that there was more continuity and similarity than difference in the successive governments. The Hoss government was not able to rein in corruption or produce a more balanced electoral law as promised on the occasion of Hariri's exit from government in 1998; as vested interests had a lot of clout with Syria but also within the elites. Similarly, unable and/or unwilling to depart meaningfully from economic orthodoxy, calls for and promises of more social justice remained just that. Thus the transfer of wealth from taxpayers to the elites via the banks continued even if at a lower rate. As was mentioned earlier policy differences and developmental strategy were and are not electoral issues. The banks and depositors on one side, and the government on the other were already locked in a relationship where one needed the other. Government default would come at huge cost to the banks and as such was to be avoided.

### 3.2.1 Donor Dependency

With his return Hariri could not evade this problem. After two years of recession and notwithstanding the efforts of the previous government the Lebanese state was still teetering on the edge of a financial collapse. In the years that followed 2001 and 2002 the Central Bank had to buy up an increasing share of LLTBs as banks were becoming more cautious.<sup>9</sup> Foreign currency denominated debt rose from 25 percent in May 2000 to almost 41 percent by October 2002 (Baumann, 2012, p.185). As an IMF analysis wonders in 2008, the picture of the financial health of the Lebanese state that emerges is baffling as it is one of the most indebted countries in the world relative to the

---

<sup>8</sup>Corm remembers this with pride, though he highlights that all efforts were made to guarantee a transparent process (Corm 2005, p.285).

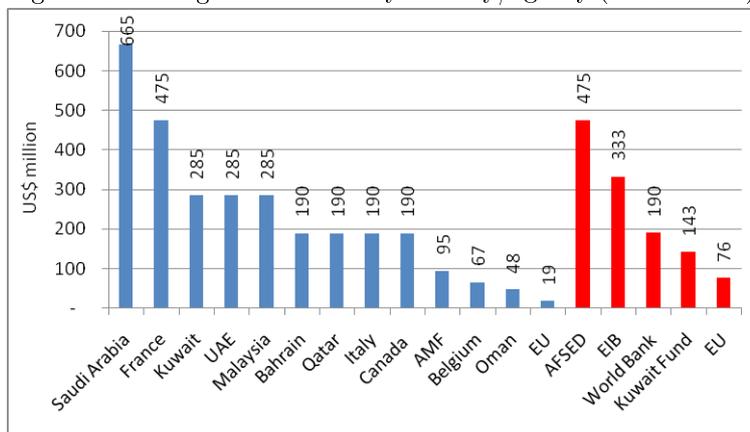
<sup>9</sup>It eventually held 25 percent of all LLTBs by June 2002 (Baumann, 2012, p.184).

size of its economy and “should have undergone a debt crisis a long time ago” (Schimmelpfennig & Gardner, 2008, p.4). According to this report Lebanon’s financial survival could only be explained by factoring in its international support, Saudi Arabia and France at the forefront.

In order to salvage the situation and keep investors in T-bills buying, Hariri turned to his international allies — his good friend French President Jacques Chirac leading the charge — for a financial fix. At a first conference in Paris in February 2001 he obtained just under US\$ 500 million dollar in concessionary loans and grants. Not a financial success, the conference nevertheless laid the foundation for a more successful donor conference in 2002. The participants<sup>10</sup> laid out their expectations for reforms before more substantial commitments could be made to the Lebanese government. By the time of the Paris II conference (2002) a VAT was implemented, the EU association agreement was initialised and cuts in customs duties were put in place (all initiatives that were already started in the previous government).

The conference was a success for Hariri, overall some US\$ 4.2 billion were pledged by donors. Of these US\$ 1.2 billion were linked to project financing and US\$ 3 billion were pledged in the form of concessionary loans. France and Saudi Arabia were the major funders and the guarantors for success. Not having any stakes in the future of the country neither the US nor the IMF committed funds, though they participated as observers to the conference (Baumann, 2012). The majority of loan pledges came from the Gulf and Saudi Arabia while Western countries and institutions pledged about US\$ 1 billion in loans or about one-third of the total loan amount. Of the funds linked to projects about half came from the European Investment Bank, the EU directly, and the World Bank.

Figure 3.3: Pledges at Paris II by country/agency (US\$ million)



Note: AMF (Arab Monetary Fund) AFSED (Arab Fund for Social and Economic Development). EU includes presidency and commission. Columns in blue denote concessionary loans as fiscal support, columns in red denote project financing. Source: Economist Intelligence Unit, Country Report: Lebanon, January 2003 (electronic version) reproduced from Baumann (2012).

According to Corm (2005, p.291) the participants bought US\$ 2.5 billion worth of treasury bills (Eurobonds) at 5 percent with 15 year maturity bringing down average interest on the debt. Saudi Arabia had already provided support to the Central Bank in 1998 with deposit of US\$ 600 million at “a lenient interest rate” but it was only after Paris II that the dependency of the Lebanese

<sup>10</sup>The EU represented by Romano Prodi and the World Bank president James Wolfensohn who had joined the French president among others.

economy on bilateral and multilateral support became obvious. Saudi Arabia with its Gulf allies in tow is the most important guarantor of Lebanese financial stability.<sup>11</sup>

But European and World Bank support were also substantial, especially regarding their funding of projects. Most of these funds were earmarked for infrastructure projects and in fact replaced Lebanese government capital expenditures that were reduced in attempts at fiscal consolidation. By the end of 2002, as a result of Paris II and the international show of support, interest rates on all types of government bonds fell and thus also for commercial loans and bank deposits. In this way, a still miserable (in absolute terms) fiscal situation was given a silver lining. The debt continued increasing but the relative weight of debt servicing (as compared to revenues and GDP) fell at least until 2005.

It was in response to the Israeli onslaught in July 2006 that Saudi Arabia and Kuwait had to demonstrate their support for the Lebanese economy again by depositing close to US\$ 2 billion with the central bank to bolster its foreign currency reserves. The end of the war and the destruction it wrought also formed the occasion for the next donor conference. In September 2006 a conference in Stockholm aimed at addressing immediate reconstruction needs produced some US\$ 3.6 billion in pledges, with more than US\$ 1 billion linked to projects. Fouad Saniora, prime minister after Hariri's assassination, took the opportunity to mobilise for a more lucrative conference which was dubbed Paris III. This time the government boasted that it received pledges for US\$ 7.6 billion of which some US\$ 4 billion were earmarked for projects. The total included the pledges made in Stockholm.

These repeated international interventions to save the Lebanese fiscal situation from going over the edge — via default and/or currency devaluation — did not turn around the debt problem. Since 2007 the debt increased from US\$ 45 billion to close to US\$ 64 billion by the end of 2013. Even though the country was mired in an ongoing political crisis, including various violent internal conflicts and numerous changes of government, confidence in the government's ability to maintain financial stability remained relatively solid. This should be attributed to the fact that the two opposing political factions (incidentally led by billionaires) essentially endorse the same economic ideologies.

International financial support kept the basic wealth transfer mechanism going, even if at a lower rate. This is true for all foreign funding and so for all loans and grants that flow to the water sector. While the debt to GDP ratio actually improved since 2007 the government still pays some US\$ 4 billion a year to service its debt in 2013 (see Figure 3.2). This nominal improvement — likely to turn out to be a mirage — is further related to structural imbalances and dynamics that have sustained a real estate boom/bubble (see Chapter 5).

### 3.2.2 The Rise of the IDC and Economic Policy

From the onset, and more so with Hariri's arrival, international development agencies were involved in the reconstruction process. The World Bank and the United Nations Development Programme (UNDP) were the two most active agencies. The depth of their influence on economic and financial policy is difficult to pinpoint at least for the initial stages of the reconstruction. Clearly, the Bank accompanied the reconstruction process from the start; a look at the publicly

---

<sup>11</sup>Saudi Arabia was among the most important backers and as Baumann writes: "viewed from the perspective of international political economy, the Eurobond purchase of April 2002 and the 'implicit guarantee' that came with it represented the end of a journey for Lebanon's political economy — a journey into financial dependency on Saudi Arabia. Only the kingdom's "implicit guarantee ensured that the merry-go-round of government borrowing would not stop" (Baumann 2012 p. 196).

available country database confirms this. The UNDP programme that was to support the administrative reforms by providing staff and expertise to ministries was born in 1992. Initially “an agreement was made between the Government of Lebanon and the UNDP to begin a joint partnership at the finance ministry, aimed at reforming the institution” (Halabi, 2010). Over the last 20 years this has morphed into a large structure managing 67 projects that has been described by Hassan Krayem, manager of the programme, as “a different executive arm that could provide policy formulation, as well as policy implementation in key ministries” (quoted in Halabi, 2010). The World Bank in its completion report for the “technical assistance for revenue enhancement and fiscal management” project dating from 1994 until 2006 mentions that:

The programme original project [sic] director was also the principal advisor to the Minister of Finance. This opened direct and open links of communication between the government and the project implementation unit. (World Bank, 2006, p. 11)

The programme was aimed at improving customs administration, cadastral and land registration procedures, as well as economic management. Its actual input on fiscal policy isn't clear but the dual responsibilities of the programme manager certainly suggests agreement and/or ideological closeness. Beyond this almost physical interconnection IMF and World Bank support were considered as crucial displays of confidence for the Lebanese economy and successive governments. Corm — finance minister between 1998 and 2000 — describes his experience as follows:

The principal reform measures that were advocated, particularly the adaption of the VAT and other fiscal measures, were discussed extensively between the minister of finance and the World Bank, as well as the European union. *It was indeed vital to obtain the endorsement of these organisations to assure the international credibility of the economic policy of the government.* (Corm, 2005, p. 282, Author's translation and highlight)

In this context the World Bank offered loans to finance a structural adjustment programme conditioned on progress in administrative reforms and privatisation efforts. Corm also recalls World Bank pressure to enter a “stand-by” agreement with the IMF that prompted him to break off said negotiations (Corm, 2005, p.282). The influence on economic policy-making resulting from the Paris I and Paris II conferences were already mentioned before. In this context Baumann quotes economic advisor to Hariri, Mazin Hanna:

And while no serious pledges were done at the time [of Paris I], at least there was an outline being provided at the time by the countries and institutions that will end up putting money into Lebanon. By drawing a [...] road-map for us, saying that: ‘If you wanted this money, this is what you should do.’ And this is when, going back, Rafik Hariri decided: ‘OK, we're going to put in a value added tax, we're going to go into the Euromed agreement, we're going to lower customs rates, we're going to prepare for privatisation, etc. etc.’ And by the time Paris II occurred, all those prior actions, if you want, were already fulfilled. (Hanna in Baumann 2012, p.191)

As will be seen later Lebanon's participation in the Barcelona process and entry into the Euromed agreement would importantly shape water management policy and the water sector. Beyond that the quote illustrates how development organisations increasingly set the policy agenda, especially regarding economic policy. Four years later for the Stockholm conference and Paris III conference after the July War in 2006 things were not dissimilar and the file prepared by the government reflected donor expectations.

This section has in some detail described how successive Lebanese governments approached the question of financing the reconstruction. They have shown a considerable amount of continuity – even if in the case of Hoss's government with some reluctance and unable or unwilling to formulate alternatives, this uniformity is reflected in the water sector.

Lebanese banks and their depositors profited greatly from the government's financing strategy. This mechanism became an essential aspect of the accumulation regime of the Lebanese elites and has become a structural component of the Lebanese economy. International funding and the "implicit guarantee" that comes with it was crucial for the survival of this wealth-transfer mechanism and the reproduction and strengthening of class power that it represents. It is also at the root of the explosion of public debt in the 1990s and its coercive force today.

Inversely, this public debt guarantees the ever growing importance of the IDC. It in fact weds the elites to international capital, importantly to Saudi Arabia and to the IDC. Saudi Arabia and the GCC countries on one hand, and Iran on the other provide overtly political funding to their respective allies, as well as loans and grants to the government. The IDC operates through the state and the government only. This increase of IDC influence, which is also a product of the neoliberalisation process, represents a rescaling of governance. Increasingly economic policy is influenced by supra national regulatory influences.

The first part of this chapter aimed at illustrating that it was not abstract market forces that produced this situation but rather the agency of elites, government actors, and international donors in specific historic regional and international context — marred with violence and destruction — that are responsible for the growing debt. In that sense this analysis serves to undermine privatisation arguments that will be encountered in the discussion of administrative reform of the water sector and that posit the inertia and inefficiency of state administration as obstacles to growth.

The weight of the debt itself, as well as the high interest rates that this borrowing mechanism entailed had important effects on the water sector. After 1996 government investment in infrastructure had to give way to fiscal consolidation necessitated by the spiralling debt. It was replaced by IDC intervention that is the subject of the next section.

### 3.3 The IDC in the Lebanese Water Sector

The choice to group international development actors under the label of the International Development Complex was explained in Chapter 1. The coming sections will illustrate this set of networked actors and justify this choice. The aim is to show that IDC actors are quasi-omnipresent in the sector and that they touch on all aspects of water resource management. In the process it will be shown that, notwithstanding the different interest of the individual actors, there is considerable cross-over, interrelation, at times cooperation, as well as varying degrees of coordination between

them, both locally and internationally. I will then show how, despite the IWRM discourse being shared, cooperation between the Lebanese and the IDC components is conditional on the perception of potential gains from specific projects. Infrastructure projects generally find approval at the level of the water sector administration, that is, the CDR and the MEW, but policy and technical assistance project tend to depend much more on the perceived gains and priorities.

There is a large number of actors that can be considered part of the IDC in the water sector. This does not include the numerous NGOs that implement smaller scale projects for the bilateral and multilateral organisations or of their own accord. This number also does not include the international companies that consult on and implement projects. All these different actors subscribe to the same discourse and forward the same very narrowly bound views with regards to development. The discourse at its highest level is one of democracy promotion, conflict resolution, and the creation of peace and prosperity. It reappears regularly in the discourse of IDC actors (see below) but it only partially explains their actions and decisions.

The neo-colonial aspects of the discourse and the civilising mission that is embedded therein has been criticised in the Post-development literature (“The Development Dictionary” edited by Wolfgang Sachs (2010) has a number of contribution that make observations in this sense). In his analysis of the World Bank’s role in creating and disseminating green neoliberal approaches to water management in order to support its pro-privatisation position Michael Goldman (2005) points to similar notions. He writes that “the third world state is typically portrayed by the Bank and its partners as stuck in ‘arrested development,’ often depicted as corrupt, inept, and politicised” (Goldman, 2005, p. 267). The now hegemonic IWRM discourse is rooted in this meta-discourse. It can be interpreted as one of its newer technical incantations, with this one focused on the water sector. The techniques it advocates for sustainable and thus (supposedly) successful development are based on neoliberal policy models. Though couched in technical language, it is deeply political. In Lebanon the neoliberal discourse with regard to the water sector gained a hegemonic status early on among Lebanese water sector experts and government officials. It evolved from early calls for outright privatisation of assets to the later calls for private sector participation as a more nuanced incarnation of the former. This discourse manifested in 2013, with the launching of the Blue Gold initiative, as also solidly rooted in the circles of the elites. They are represented by the Civil Influence Hub (CIH), an association of influential business people, that stand behind the initiative.<sup>12</sup> The report (CIH, 2013) suggests that all the ills of the water sector could be countered in only five years. A newspaper article reporting on the initiative’s opening presentation at a prestigious hotel sums it up as follows:

The Blue Gold national water plan is to be funded by international institutions and public-private partnerships to ease the burden on the indebted state Treasury and generate profits for the government from public-private partnership projects, according to CIH.

---

<sup>12</sup>A report in the English version of the newspaper *al-Akhbar* describes them as follows: “During the Blue Gold project launch event, prominent business people gave testimonials in support of the project, including Samir Hanna, group chief executive officer of Audi Saradar Group (among the five largest banks), who expressed his “faith” in the project. Other business leaders also took the podium to praise the project: Walid Raphael, general manager of Banque Libano-Francaise (among the five largest banks); Nehme Frem, head of industrial INDEVCO Group; Walid Assaf, general manager of Pepsi Cola Lebanon; Mazen Salha, manager of the Phoenicia Hotel; Marc Tabourian, from the Sannine Bottled Water Company; Dana Nakad, director of Wardiyeh petroleum products company; and Gilbert Ghostine, president of Asia Pacific, the Diageo spirits company” (Abou-Mosleh, 2013).

The private sector would be able to earn an annual profit of 12 percent from service-provider contracts, according to the proposal that allows Lebanese citizens to invest in the water sector through crowdfunding and receive a minimum annual return of 12 percent after taxes.

“Leveraging the concept of PPP in all sectors that tackle daily needs of citizens should be distanced from political tendencies and monopoly and should be influenced by science, qualification and efficiency, with the concept of involving citizens,” CIH CEO Ziad Sayegh said. (Sakr, 2013)

The financing mechanisms are not clear, but seem to propose that private investment and donor money would provide the necessary capital through some variation on the idea of a trust fund (CIH, 2013). The book that is used to promote this plan is more show than content. No details are given for projects besides quick overviews of envisioned initiatives, at their most generalised and unspecific. Yet it was announced during the public presentation that 2014 would see a massive advertising campaign rolled out to convince the public at large to accept and support the initiative which aims to:

transform water from a commodity into wealth and raise awareness ... and ... create the proper platform for the private sector and entire Lebanese population to participate in the development of the water sector (CIH, 2013, p.37).

This project can be read as an attempt to deepen the neoliberalisation of the sector and the concentrated endeavour to influence public sentiment as an attempt to strengthen the market environmentalist discourse.<sup>13</sup> This happens in a context where the IDC has played a considerable role in the promotion of the central tenets of the IWRM discourse, focusing on “Water as an economic good” and the need for “Private Sector Participation and Public Private Partnerships”.

The influence of the IDC goes beyond its inspirational role in this project to create ideological hegemony. Through its engagement at the level of infrastructure production and its influence on policy making and planning it has played an important part in shaping the hydrosocial cycle. The next section will explain how the IDC is interlinked into the water resource management process at the level of infrastructure production and the establishment of management paradigms.

The IDC actors can be divided into two categories. The first is the core; it groups the most important in terms of financial commitments, direct policy influence, and technical assistance. The second can be seen as the ideological support network. Its financial contribution is small compared to the core of the IDC. Its main functions are the spread, production and reproduction of the technical discourse, as well as being a platform for the networking of water sector experts. These networks serve the integration of Lebanese experts into transnational policy networks. Table 3.2 lists a selection of the actors, those that have been included in this analysis, and categorises them into a core group and as part of an expanded group.

---

<sup>13</sup>The Blue Gold group runs regular advertisement on TV and in newspapers, by May 2014 only one newspaper had presented critical opinion on the project, the remainder had thus far only advertised for the project. CIH also spent April 2014 lobbying at universities throughout the country.

Figure 3.4: Diagram sketching IDC interaction with the Lebanese Water Sector

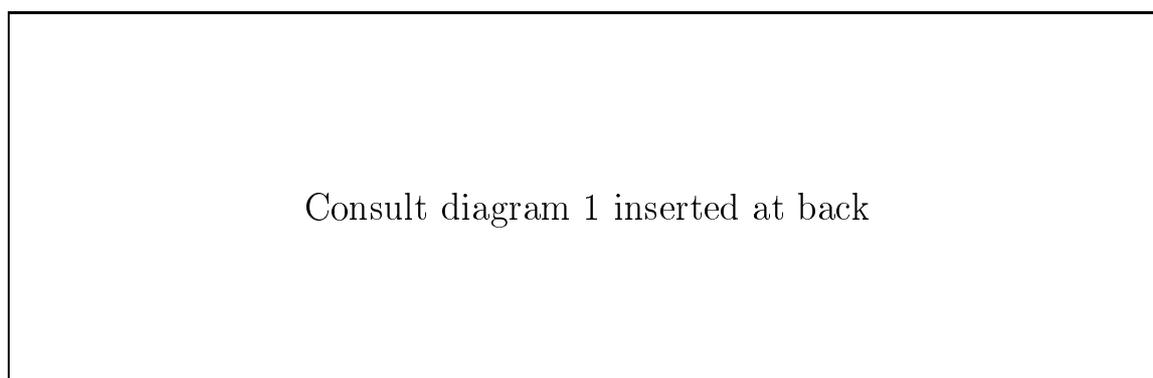


Table 3.2: IDC Actor by category (core, expanded)

Organisation	Activities	Policy influence	Category
World Bank (WB)	Funder, Project design, policy input & lobbying, activities in all sectors, infrastructure projects, technical assistance and analysis	Governmental & ministerial level policy input	Core
European Union (EU)	Influence through foreign relations instruments: European Neighbourhood Policy (ENP) and European Neighborhood Partnership Initiative (ENPI) and the EuroMed Association Agreement	Governmental level policy input. Influences policy making through European policy and EuroMed Association Agreement, UfM, Barcelona Convention, also input at ministerial level.	Core
European Investment Bank (EIB)	Funder for infrastructure (mostly)	no	Core
EU delegation in Lebanon (EUdel)	Funder, project design, Policy input & lobbying, activities in all sectors Infrastructure, technical assistance projects	Governmental level policy input. Influences policy making via projects. Goal is to provide budgetary support to sectors and move away from individual project financing. Attempts at sector coordination.	Core
European Water Initiative Mediterranean Component (EUWI Med)	Project implementation, technical assistance	Input at the subministerial level. Direct interaction with the General Director of Hydraulic and Electrical Resources of the MEW	Core

UNDP	Funder, project implementation, technical assistance	Input at the ministerial and subministerial level via projects. Finances project for creation of a water user association law.	Core
FAO	Funder, Project implementation, Technical assistance, Analysis/Research	Input at the ministerial and subministerial level, at the MoA	Core
ESCWA	Funder, Project implementation, Analysis/Research	Via international and national conferences	Core
International Fund for Agricultural Development (IFAD)	Funder & project implementation, Infrastructure	no	Core
Arab Fund for Economic and Social Development (AFESD)	Funder	no	Core
Islamic Development Bank Group (IDBG)	Funder	no	Core
Kreditanstalt für Wiederaufbau (KfW)	Funder, Infrastructure Financing,	no	Core
Gesellschaft für Internationale Zusammenarbeit (GIZ) formerly GTZ	Project implementation, Technical assistance	Input at the ministerial and subministerial level, Input to regional water establishments	Core
Bundesanstalt für Geowissenschaften und Rohstoffe (BGR)	Project implementation, technical assistance	no	Core
Japan International Cooperation Agency (JICA)	Funder, infrastructure & technical assistance	no	Core
Italian Development Cooperation (Cooperazione Italiana allo Sviluppo CIAS)	Funder, project implementation infrastructure and technical assistance	Potentially input at the ministerial level	Core
Agence Française de Développement (AFD)	Funder, project design, policy advice and lobbying most projects in water sector Infrastructure & Technical assistance	Governmental ministerial level policy input	Core

Kuwait Fund for Arab Economic Development (KFAED)	Funder & project implementation Infrastructure	no	Core
International Resources Group (IRG)	Project implementation consultant, technical assistance, works for USAID  now part of Engility Group (US defence and Government Service contractor)	potentially and limited concerning the LRA	Core
Development Alternatives Incorporated (DAI)	Project implementation consultant, technical assistance, contractor for USAID globally	Input to RWEs	Core
Valuadd	Project implementation consultant commissioned by DAI and GIZ, Technical assistance	Input to RWEs	Core
UNICEF	Projects	no	Expanded
WHO	Standards	no	Expanded
UNRWA	Infrastructure projects in Palestinian camps	no	Expanded
Arab Countries Water Utilities Association (ACWUA)	Networking, lobbying, knowledge exchange (created through support of ESCWA and GIZ)	no	Expanded
Euro-Mediterranean Information System on know-how in the Water sector (EMWIS)	Networking, lobbying, knowledge exchange (Created in framework EuroMed Process)	no	Expanded
Plan Bleu (PB)	Networking, lobbying, knowledge exchange, research	no	Expanded
Office international de l'eau (OIEAU)	Networking, lobbying, knowledge exchange, trainings	no	Expanded
Institut méditerranéen de l'eau (IME)	Networking, lobbying, knowledge exchange	no	Expanded
CORAIL	Technical assistance projects, networking, research; French association	no	Expanded
Mediterranean Network of Basin Organisations (MENBO)	Networking, lobbying, knowledge exchange	no	Expanded

Global Water Partnership Mediterranean (GWP-MED)	Networking, lobbying, knowledge exchange	no	Expanded
ICRC, NRC, IMG, ... others (Humanitarian/development)	Projects domestic supply in camps and contribution to post 2006 war reconstruction; irrigation project	no	not included
Suez Environment, Safege, Ondeo, Ondeo Liban, Lyonnaise des Eaux-Dumez, Degremont, Veolia, Hydratec,	Private sector actors: Infrastructure, management contracts, technical assistance contracts	depending on contract	not included

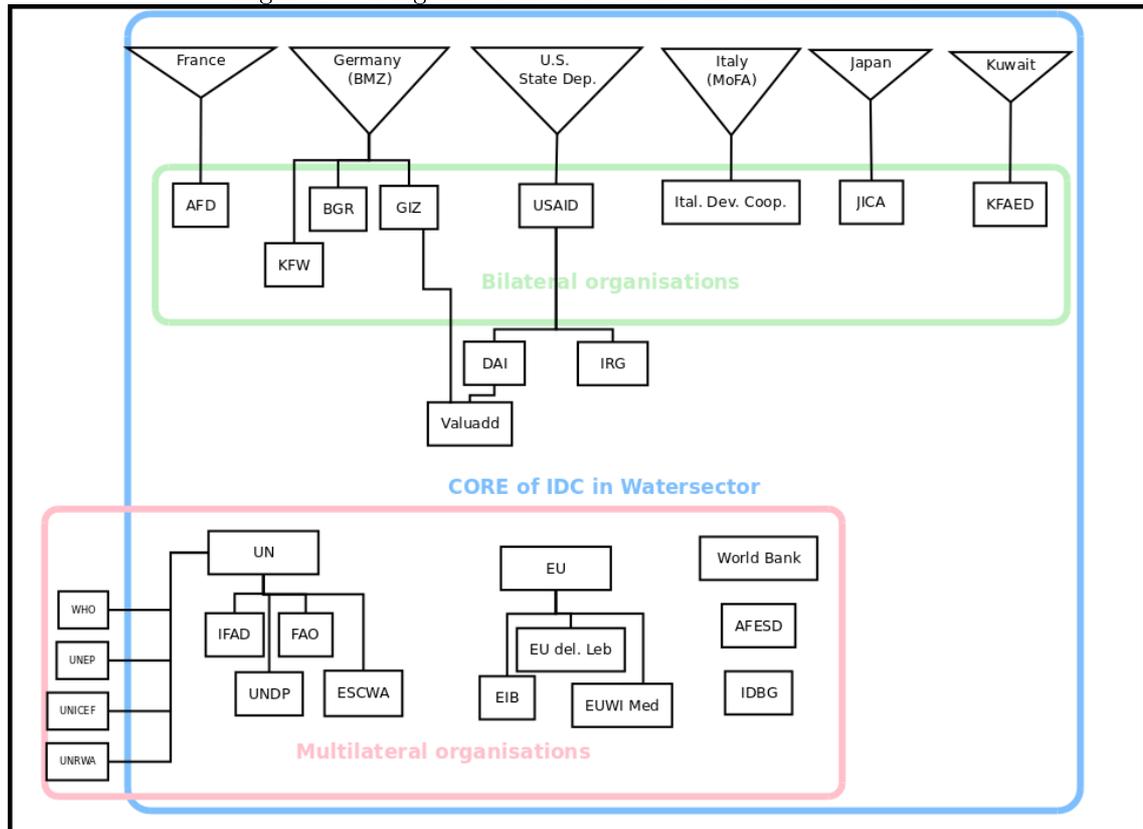
### 3.3.1 The Core of the IDC

The core of the IDC is made up of the most important bilateral and numerous multilateral agencies that are active in the sector. They are the actors whose influence is unmediated and has an important impact on the water sector. Figure 3.5 shows who these are. The bilateral agencies are grouped with the states they represent and on behalf of whom they act, as well as the agencies they subcontract to do their work.

They are the the French Development Agency (Agence Française de Développement - AFD), the Italian Development Cooperation, the three German agencies (KfW, GIZ and BGR), the American USAID, the Japanese JICA, and the Kuwait Fund for Arab Economic Development (KFAED). The multilateral agencies are represented by the World Bank, European Union agencies and programmes, and the numerous UN agencies, notably UNDP, ESCWA, the FAO and IFAD. Two multilateral agencies dominated by Arab states and especially the Gulf Cooperation Council (GCC) countries led by Saudi Arabia, are also part of the IDC. These are the Arab Fund for Economic and Social Development (AFESD) and the Islamic Development Bank Group (IDBG). Their involvement is limited to the provision of funding for projects and they do not influence policy unlike the KFAED they do not have local offices. They are included here because of the substantial amounts of funding they provide to the sector (see 3.7).

Other UN agencies such as WHO, UNICEF, UNEP and even UNRWA are set apart. Their influence on the water sector is much more limited. WHO and UNEP promote standards and policy thinking in fields that relate to the water sector but do not immediately interact with the sector. In this way they resemble the organisations presented in the second category. UNRWA is responsible for the support of Palestinian refugee camps and builds infrastructure therein. Its work in the camps, however, has no bearing on the functioning of the water sector. UNICEF has also not been classified as being part of the core because its programme in the water sector is very focused and does not affect the structural aspects of the sector.

Figure 3.5: Diagram of the core of IDC in the water sector



IFAD has been included even though its involvement is restricted to two relatively small loans of around US\$ 12 million over the last two decades. The project has an impact on on-farm infrastructure and is also designed to produce a number of hill lakes as reservoirs for irrigation water<sup>14</sup> and is thus interpreted as having an effect on the hydrosocial cycle. Other actors have been excluded completely, even though their contributions are about equal. The Saudi Fund for Development, for example, provided loans and grants worth US \$ 24 million early on in the reconstruction but has since 1994 not injected another dollar into the water sector through the CDR (CDR, 1994–CDR, 2013).

The bilateral agencies are not all structured in the same way, they are the product of processes in their home countries and subject to change. In most cases the development agencies manage all aspects of development aid. Germany is the exception with three different agencies addressing different aspects of its involvement in the water sector. The GIZ, its development arm (Agency for International Cooperation) was born out of the merger of three different development agencies, for the water sector the most notable was the GTZ (Agency for Technical Cooperation). The KfW is the government's development financing bank, and the BGR is the Federal Institute for Geosciences and Natural Resources subordinate to the German Federal Ministry of Economics and Technology. The BGR is sometimes tasked with specialised technical development missions.

AFD, JICA, or the Italian Development Cooperation combine all the aspects of development aid in one agency. USAID operates slightly differently, whereby it commissions specialised private

<sup>14</sup>The project funds the terracing of agricultural lands, paving of agricultural roads, building of on-farm reservoirs, above mentioned hill lakes, and even implementation of on-farm irrigation systems.

consultancy companies with the management of the projects it finances, DAI and IRG are two such specialised private companies.

The activities of all these actors vary. Some are responsible only for the financing of projects, others influence policy through publication of reports and analysis or through direct intervention at the government and ministerial level, and some are implicated in the direct implementation of projects. Table 3.2 sketches the activities. The activities of the actors have been divided into three main categories. These are: 1) funding of projects through loans and grants including the project selection process, 2) project implementation of either infrastructure projects or technical assistance projects, and 3) policy influence at the different levels of the water sector administration.

The following sections will show how the water resource management process is a product of the interaction between the IDC and the Lebanese water sector administration at all levels. The focus in this chapter will be on project funding and project implementation processes. The IDC's influence on policy and related administrative and legal reform will be discussed in Chapter 4.

### 3.3.1.1 IDC Interest and Project Funding

Project funding is the most obvious aspect of IDC activity and clearly shows the Lebanese water sector's dependence. Compared to local funding and in absolute terms the contribution of the IDC is large. The World Bank expenditure (World Bank, 2010d) review from 2010 states that between 1992 and 2008, 73 percent of CDR investments in the water supply sector, 56 percent of CDR investments in waste water sector, and 80 percent of CDR investment in the irrigation sector were funded through international donors. Table 3.3 shows the share of foreign funding relative to the contracts awarded by the CDR starting 1992, for years where this data was available in disaggregated form. The table also lists the foreign funding available and the value of projects under preparation.

A number of observations can be made. Foreign involvement in the sector started early. Figure 3.7 shows this clearly. The percentage of total foreign funding increased constantly until 2011 (the time period for which data was available). Even though funding in the water supply sector is already substantial compared to CDR funding in the 1990s, the COS and the CFD still invested substantially in the sector during the 1990s. As such the share of foreign funding to overall investment in the sector was substantially lower than shown in the table. With the reduced involvement of these two administrative bodies, the relative weight of CDR investment and with that of foreign funding increased until 2011.

The decrease of the percentage of foreign funding in 2012 is due to the start of a US\$ 17.1 million project financed through a treasury loan. Table 3.3 shows an increase in foreign funds of only US\$ 12.5 million which is not congruent with the detailed listings of the contracts awarded presented in the same report.<sup>15</sup> A similar situation is found for the waste water sector data, where the report lists only US\$ 5 million worth of contracts signed, all of which are foreign funded. It is not clear where the US\$ 21 million increase in contracts awarded comes from. In the irrigation sector the whole project value for the South Lebanon Irrigation Project (or Canal 800 Project)

---

<sup>15</sup> The report lists major projects started in 2012. Among these are: one project in the North funded by Saudi Arabia and the AFSED worth US\$ 13 million; another project worth US\$ 16.3 million is funded by the IDB and local funding, but the relative shares of each are not detailed. Finally, one project worth about US\$ 17 million to rehabilitate the water networks in the southeast (Chebaa, Hbariyeh and other locations in the vicinity) is funded through treasury loans.

worth approximately US\$ 330 million has been listed under the first column but only US\$ 180 million of foreign funding has been secured for the project thus far.

Table 3.3: CDR Investments in Water Sector vs Foreign Funding

Sector	contracts awarded	foreign funding	% FF	contracts completed	contracts in progress	projects in prep.	agreed, signed, & ratified FF
1992 - 1997 (31 Dec.)							
water supply	276.4	205.4	74%	52.5	223.9	349.2	343.0
waste water	121.2	22.4	18%	3.4	117.8	244.0	417.0
irrigation*	17.1	11.11	65%	3.6	13.5	25.7	55.4
1992 - 2007 (31 Dec.)							
water supply	667.5	495.7	74%	404.9	262.6	377.8	761.6
waste water	497.2	267.3	54%	288.5	208.7	1,000.1	745.1
Agriculture & irrigation	110.2	84.4	77%	91.6	18.6	302.0	210.7
1992 - 2009 (31 Dec.)							
water supply	788.2	573.0	73%	450.6	337.6	441.0	863.8
waste water	596.9	355.4	60%	253.1	343.8	469.5	794.7
agriculture & irrigation	110.2	84.4	77%	96.27	373.4		238.6
1992 - 2011 (31 Dec.)							
water Supply	832.63	603.95	73%	599.20	233.43	706.5	876.90
waste water	688.34	402.85	59%	302.91	385.43	675.5	764.4
agriculture and irrigation	114.73	87.08	76%	96.27	18.46		241.3
1992 - 2012 (31 Dec.)							
water supply	881.9	616.2	70%	636.4	262.6	862.1	1,070.5
waste water	709.4	407.1	57%	345.2	364.0	770.6	832.7
Agriculture & irrigation	469.17	275.8	59%	96.3	373.4	2.5	239.3
Total	2,060.5	1,299.2	63%	1,077.9	1,000.0	1,635.2	2,142.5
Total ws & ww	1,591.3	1,023.4	64%	981.6	626.6	1,632.7	1,903.2

Source: CDR progress reports 1993-2013 (units in millions of US\$)

\* for the following years foreign funding in irrigation could not be separated from foreign funding in agriculture (the share of CDR investment in agriculture is about US\$ 20 million).

The projects that are planned or in the process of preparation depend to an increasing degree on foreign financing as is indicated by the large amounts of funding that are “agreed, ratified and/or signed”. The difference between the foreign funding share of contracts awarded and the foreign funding available (or agreed upon) is about US\$ 450 million for the water supply sector and US\$ 430 million in the waste water sector.<sup>16</sup>

The data show that at least 70 percent of new water supply investment is funded by the IDC. In the waste water sector the share of foreign funding increased from 18 percent by the end of 1997 to 54 percent by the end of 2007 and to a still increasing share after that. A larger share

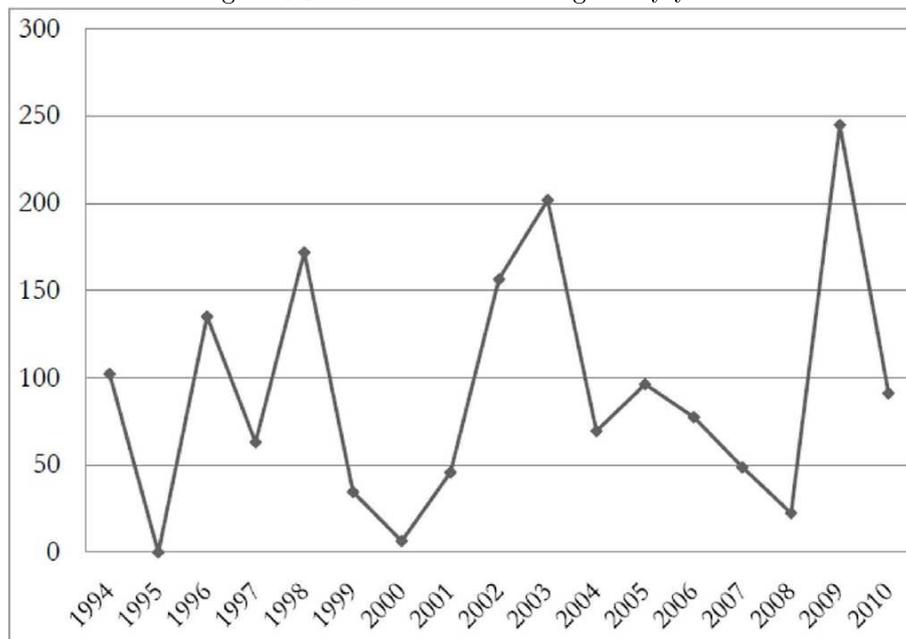
<sup>16</sup> The 2012 progress report also suggest that in agriculture more foreign funding is awarded than has actually been signed. This points to the difficulties and uncertainties related to foreign funding and to the uncertainty of the data presented by the CDR. It is not clear whether the column labelled “foreign funding” assigns the whole contract value once a project is started, or whether it lists only the disbursed amount. The analysis points to incongruities in the accounting of contracts and projects in progress that are resolved when projects are completed.

of new contracts awarded is financed by the IDC generally and points to its growing importance. This almost complete reliance on foreign funding prompts the World Bank to make the following assessment:

The CDR is highly dependent on donor funding for the financing of its investment, and cannot therefore fully control its expenditure patterns. The lumpiness of the expenditure patterns can be partially explained by the uncertainty surrounding donor funding (World Bank, 2010d, p. 38).

The report refers to the investment pattern of the CDR in the water sector. Years of high volumes of investments are followed by years of very low volumes. Roland Riachi (2013) makes the same observations for the years until 2010 but analyses all water sector expenditures. He assigns the full contract value to the years the projects have been signed (see Figure 3.6). This shows how irregularly funding agreements are reached.

Figure 3.6: Value of contracts signed by year



Investments in million US\$.  
Source: Riachi (2013), p.221.

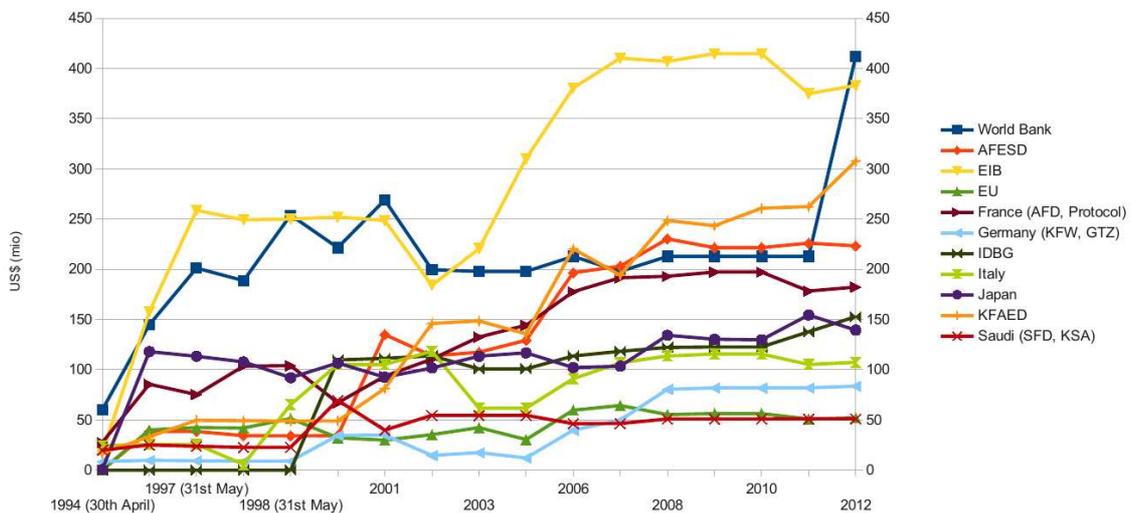
The funding peaks follow the major donor conferences: the Friends of Lebanon conference at the end of 1996; the Paris I and II conferences in 2001 and 2002; the Paris III conference in 2007. Funding for projects becomes available with a delay. After being pledged by a donor country the bilateral agencies start identifying and negotiating projects. Depending on the projects this may take more or less time. The process can entail a number of expert missions and preliminary assessments until donor requirements regarding impact, feasibility, and economic and ecological sustainability are met. When a project is identified, funding negotiations take place, usually with the CDR. As was explained in the last chapter, foreign funding requires approval from parliament and/or the Council of Ministers and is as such exposed to the vagaries of the Lebanese political process.

The delay in investment after Paris III was longer. It was due to the political stalemate that was resolved only by mid-2008. Even if projects were identified earlier, a new government needed to be formed before parliament could process loan agreements. The lulls in investment have different reasons. After 2006 both the war and immediate reconstruction necessities, logistical obstacles such as impeded transportation caused by the destruction of bridges during the war, as well as the aforementioned political deadlock, slowed down CDR investment.

It is not only local or specifically Lebanese circumstances, political impasses or wars that cause these periods of minimal investment. IDC policy or interests, as well as operating procedures and standards, were also responsible for cancelled and delayed projects. Between 1998 and 2000 it was the failure to pass the reforms that prompted the World Bank to cancel a loan agreement for the waste water sector with a value of about US\$ 50 million. Following the World Bank lead other agencies also withdrew from the larger framework project or delayed their projects.

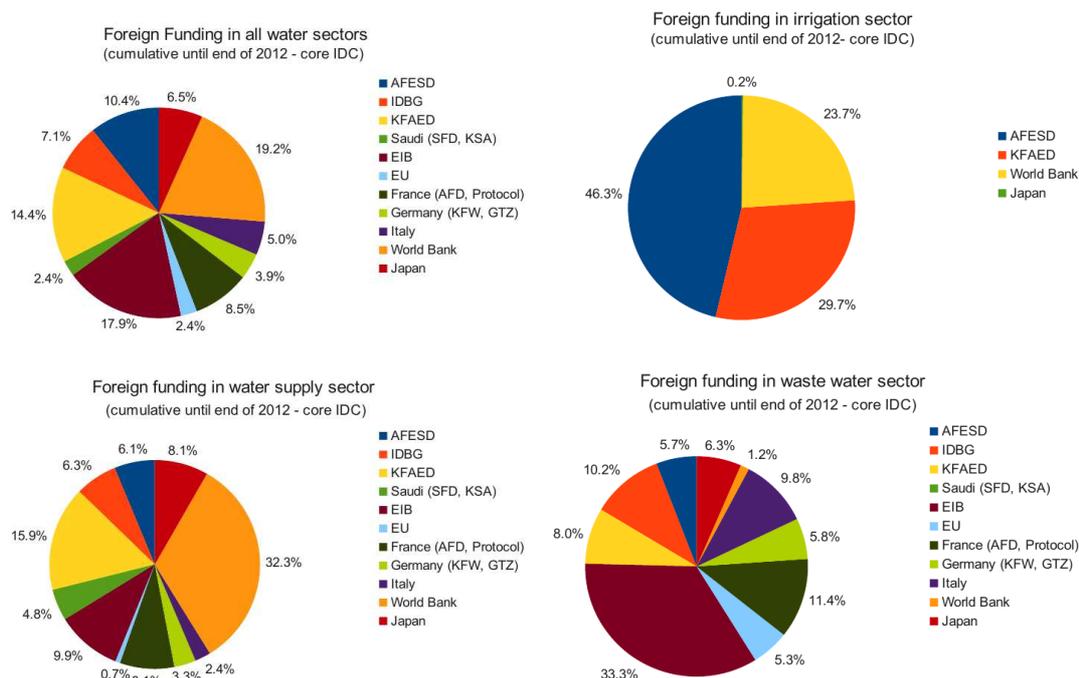
The distribution of foreign funding by sector is shown in Figure 3.8. European donors provided 37.7 percent of funding to the water sector, Arab donors 34.4 percent, the World Bank 19.2, and Japan's part is 6.5 percent. These descriptions become more interesting when analysing the distribution of funds by donor and sub-sectors. The following sections show that even though there is a rescaling of the water governance process at work this rescaling does not follow a unified logic and cannot be attributed solely to the neoliberalisation process described above. The different IDC actors have different interests for their involvement. The descriptions below show that their involvement in the Lebanese water sector and by extension their influence on the waterscape is also the result of a variety of contingent agencies. It is these different motivations that I will unpack now.

Figure 3.7: Ratified, signed and approved Foreign Funding in the Water Sector



Source: Compiled from CDR 1994 - 2013

Figure 3.8: Share of funding by IDC actor



Source: Compiled from CDR 2013

### The World Bank

The largest single donor by end of 2012 in the water sector was the World Bank with a total of US\$ 412 million cumulative support of which only about US\$ 10 million was a grant. More than 80 percent of these funds were dedicated to the water supply sector making the World Bank also the largest donor in this sub-sector.

It has financed the early national emergency reconstruction programme which focused first on repairing war-damaged infrastructure at a cost of about US\$ 90 million. It financed a water supply and waste water project in the Bekaa (US \$ 43 million), and in 2010 after the project had been shelved for a decade it made available US\$ 200 million for parts of the Greater Beirut Water Supply Project (GBWSP). It also has provided the most important funding to irrigation systems rehabilitation (US\$ 57 million).

With these projects the Bank successfully introduced itself into the centre of the restructuring of the water resource management process after the civil war. The emergency reconstruction programme and the later-cancelled coastal pollution project were central to kick off the administrative reform project (see Chapter 4). To further affirm its central position it chose to support one of the two most high profile water projects launched since the early 1990s: the Greater Beirut Water Supply Project. In all cases the choice of project is explained with the high social and economic impact of the projects. “The higher level objectives to which the project contributes” are presented as follows:

The Greater Beirut Water Supply Project is consistent with the overall GoL’s objective to reconcile economic development with *environmental and social sustainability*,

through better public services for all, *especially the poor*. The project is also aligned with the Bank's Country Partnership Strategy pillar for economic infrastructure, which concentrates on energy, water and urban transport. Finally, the project is consistent with the World Bank Water Strategy's pillars of urban water access and reform. (Author's highlight, World Bank, 2010c, p. 3.)

The World Bank's actions are consistent with its self-image to reduce poverty and "promoting shared prosperity" by working for development in cooperation with the "development community". Seen from a more critical point of view then the World Bank aims to influence the development process and shape it according to neoliberal paradigms. Bakker (2013) and Goldman (2005) have shown how the World Bank has shaped global knowledge about water resource management. This knowledge is then reintroduced in the countries it is active in. It is able to do so most efficiently when it becomes indispensable, as it is today in Lebanese development efforts. From this position it produced "a number of pieces of analytical work and just-in-time policy notes that have shaped policy debates and provided policy advice and analytical underpinning for reform" (World Bank, 2010a, p. 15) in Lebanon. Its preeminent voice in terms of policy advice, the water sector reform, and water resource management thinking/knowledge rests on a strong financial foundation, but is given legitimacy by its ability to shape policy debates (see Chapter 4 for a discussion of its role in the administrative reform).

### JICA and its Predecessor

Japanese involvement in Lebanon and specifically in the water sector dates from the mid 1990s and happened in the framework of the Oslo peace process. A loan for the water sector of about US\$ 110 million was signed by the vice president of the CDR in Tokyo in March of 1997. "Japan is interested in investing in Lebanon because its economic revival can help build stability in the Middle East. We believe there will not be true peace in the region without stability," the Japanese commercial attaché is quoted by the *Daily Star* (Daouk, 1997a). On this occasion Hariri stated:

We have brought with us projects worth \$350 million. We don't know how many of them will be approved. We know that the Japanese will study each one of them, and will examine their economic viability. (Daouk, 1997b)

But diplomatic relations between the two countries deteriorated over failed negotiations to extradite five Japanese Red Army members who were incarcerated in Lebanon in the same year. Rafik Hariri's trip to Japan in this context in late 1997 did not produce the desired results. Hariri's hope for further Japanese aid did not materialise. After 2003 when a study of Lebanese water resources produced by a Japanese consultant for JICA's predecessor caused diplomatic friction, JICA involvement in Lebanon was almost entirely stopped (Interview Catafago 2010). The original projects were continued but with the completion of the Keserwan Water Supply Project in 2012 (more than a decade after the signature of the loan agreement) Japanese direct development involvement came to an end (with exception of smaller projects through UNRWA in the Palestinian camps). This cannot be attributed to an overarching dynamic related to development or neoliberalism, but has

to be seen as historically contingent event and illustrates how fickle the Lebanese relationships to development organisations can be.

### The European Union

European Union funding surpasses World Bank funding as a total but is distributed over several agencies or EU programmes. Most of it — about US\$ 380 million — was channelled through the EIB and about US\$ 50 million was channelled through other EU mechanism.

EU interventions in Lebanon are executed almost exclusively within the framework of the Union's Mediterranean policy. The ways in which EU foreign policy is formulated have changed over the last two decades and even more since before the civil war when only the weakest outlines of what would be the EU existed. The Barcelona Convention of 1976 ratified by the Lebanese state in 1977 is an early expression of shared European foreign policy. With the evolution of the EU into a more distinguishable foreign policy actor its interest became equally more defined, and is now enshrined in the "European Neighbourhood Policy" (ENP). The EU delegation in Lebanon states:

In 2004 the EU launched a new policy as the framework for cooperation with its neighbours - the "European Neighbourhood Policy". The objective of the policy was to avoid the emergence of new dividing lines between the enlarged EU and its neighbours and instead to strengthen the prosperity, stability and security of all concerned. The ENP is based on the values of democracy, rule of law and respect of human rights. (EU, 2013)

As signatory of the Barcelona declaration and the Euro-Med partnership, Lebanon became the beneficiary of increasing aid allocations from the EU (EU, 2002, p. 13). Mainly focused on economic aspects of Euro-Med interaction, especially the creation of a Euro-Med free-trade-zone, the declaration included a recognition that:

water supply together with suitable management and development of resources are priority issues for all Mediterranean partners and that cooperation should be developed in these areas. (EU-MED\_CON, 1995,p.6).

Moreover, it highlighted the importance of pollution control of the Mediterranean, reiterating the original goal of the Barcelona Convention (1976). The EU-Lebanon Association Agreement (Euro-Mediterranean Agreement) signed by Lebanon in 2002 and ratified by EU member states in 2006 makes these provisions binding.<sup>17</sup>

---

<sup>17</sup> Reinforcing the notion that the agreement and the early declaration were focused on economic cooperation is the fact that "An Interim Agreement entailing the immediate enforcement of the economic and trade provisions of the Association Agreement entered into force 1 March 2003" (EU, 2013) three years before the actual association agreement was ratified.

These EU policies would be further enshrined in the evolution of the Barcelona process and eventually the Union for the Mediterranean (UfM) which was created in 2008. The UfM is not exactly an extension of the European Neighbourhood Policy (ENP) and its corresponding funding vehicle the ENP Instrument, but rather a parallel EU foreign policy vehicle.

EU funding to Mediterranean partners was channelled through the MEDA programme. The MEDA-water programme that emerged from this initiative spent € 40 million across the Mediterranean region between 2002–2008 “on capacity strengthening, training, information and know-how exchanges” to further regional cooperation. Further grants were channelled through the EU Delegation in Lebanon.

But more importantly as a result of the EU’s de-pollution of the Mediterranean policy most of its funding went to the waste water sector. Of the total of US\$ 434 million of water sector funding that was implemented through the CDR, US\$ 321 million was earmarked for the waste water sector and the rest for the water supply sector.<sup>18</sup> As will be seen in Chapter 5 this had important ramifications for waste water management in Lebanon because it focused investment on the coast rather than on sources of pollution that contaminate aquifers used for water supply. The point is that policy priorities of the EU are linked to its funding activities and so influence Lebanese waste water investments. The Euro-Lebanon Association Agreement thus supersedes local policy definition because it is so intimately linked to the funding that is provided by the EU and its member states.

### The EU Member States

France, Italy, and Germany as bilateral donors have about the same weight as the EIB and have provided cumulative funding of US\$ 182 million, US\$ 107 million, and US\$ 83 million respectively. Italy spent a majority of its investment on the waste water sector (US\$ 82 million) and US\$ 25 million on the water supply sector. Germany’s contribution to the water sector (through the CDR) increased from US\$ 12 million to US\$ 39 million by the end of 2006, and to US\$ 83 million by the end of 2012. US\$ 38 million were allotted to the water supply sector and US\$ 45 million to the waste water sector and no contribution was made to the irrigation sector. Of the total US\$ 54 million were grants of which about a third was funding for technical assistance projects. France has provided US\$ 85 million to the water sector and US\$ 94 million to the waste water sector. Added to these loans are US\$ 3 million as a grant for technical assistance in the water supply sector.

French and German funding is almost balanced in terms of sector distribution, with a small bias towards the waste water sector. Taken together the European funders provided (including the EU) US\$ 800 million of which about two thirds went to the waste water sector. The focus on de-polluting the Mediterranean produced results bordering on the absurd. The Tripoli treatment plant completed in 2010, after a two years delay, remained nonoperational until 2012. The same is true for the plants in Chekka finished in 2006, and in Batroun and Jbeil in 2010 (see Chapter 5).

The various bilateral development agencies put forward the same discourse about development, poverty reduction, and democracy promotion as the EU or the World Bank, but they also have their own agendas which differ from country to country. Yet a few cursory observations applicable to Lebanon can be made. Two of the largest multinational utilities corporations (MNCs) are French:

---

<sup>18</sup> EU funding for irrigation and agriculture projects started only recently and is minimal.

Veolia (formerly Vivendi) and SUEZ Environment with its range of subsidiaries. According to Goldman (2005) they controlled 70 percent of the global private water markets in 2002–2003. The SUEZ group has been very active in the Lebanese water sector through its subsidiaries. Ondeo Liban implemented the Tripoli delegated water management contract, Safege implemented a technical assistance project with the ministry. Lyonnaise des Eaux implemented technical assistance contracts in the early 1990s. Financially more beneficial than the technical assistance contracts, Degremont provides the high value-added mechanical components on a number of waste water treatment plants (Tripoli, Chekka, Batroun, and probably Keserwan in the future). Veolia provided consultancy services on the Chabrouch Dam.

The fact that the Lebanese GDP-per-capita ratio is higher than in Sub-Saharan countries, for example, opens the real possibility for profits in the water sector making Lebanon a potentially lucrative destination for these two MNCs. It is thus probably not surprising that the bulk of AFD funding in Lebanon goes to the water sector, and often enough, ultimately to French companies. This also situates French involvement more directly in the ongoing neoliberalisation process.

German involvement has different agenda. German project funding in Lebanon increased considerably after the 2006 Israeli attack on the country. It can be read as part of a “hearts and minds” operation to offset German naval deployment off the Lebanese coast. The aim of this mission was to compensate for refusing to send the army in the framework of a peacekeeping force along the Israeli border. The navy took over patrol duties along the coast line to guard against weapons deliveries to Hezbollah. German support of Israel and German Chancellor Angela Merkel’s commitment to “be unyielding in our [German] defence of Israel’s right to exist” (Benoit, 2006), was also not well received in Lebanon.<sup>19</sup> Naval deployment and civilian aid offered a good way to avoid putting German troops on the border with Israel, be seen to fulfil UN responsibilities, and avoid a public diplomatic row with the Lebanese government. The same *Financial Times* article goes to explain that Merkel:

said Germany would rather concentrate on civilian forms of assistance, for instance by helping Lebanon train its police and army and *repair its infrastructure*. (Author’s highlight, Benoit, 2006, 2007)

German involvement in Lebanon was rekindled with the war, but is coming to an end with the projects still in process in 2014 because of a reorientation of the German government’s development aid policy (Interview Scheu 2013). Unlike French involvement the basis of German involvement was of geopolitical nature, its planned termination is due to domestic political reasons.

### Arab States Related Organisations

The total European contribution compares to Arab donor support. KFAED, AFESD and the IDBG provided grants and loans amounting to US\$ 307 million, US\$ 220 million, and US\$ 153 million respectively. Together they provided about US\$ 730 million of which just under half were allotted to the water supply sector. The waste water sector was allotted US\$ 200 million and about US\$ 180 million were earmarked for irrigation (see Figures 3.8 and 3.7). The projects that the KFAED, AFESD, and IDBG finance are generally smaller in scale and value. They are also often

<sup>19</sup>See *The Daily Star* (2006): Beirut tries to ease tensions, limit implications of 1701 : “Concerning Merkel’s comment, Fneish said Beirut ‘should take a stand ... because they ... violate [UN resolution] 1701.’” See also Haaretz (2006): “UN force only protects Israel: top Shi’ite cleric.”

technically less demanding than the large projects that the European funders and the World Bank finance. Projects below US\$ 10 million are the majority of projects and those with higher values often combine many smaller works in multiple locations. The projects are also generally more on the periphery rather than in the densely populated areas where socio-economic impact per dollar spent is more important because of the economies of scale involved (more inhabitants/users serviced per dollar spent).<sup>20</sup> Many of the projects funded by Arab donors could be considered second choice in terms of the standard socio-economic impact assessments and in terms of visibility, because the populations in the areas are small.

The mechanisms through which the Arab donors get involved and their interest are opaque. With exception of the KFAED they have no offices in Beirut and no staff is based in the country. Very little is published about their activities and even the non-Arab donors remain uninformed about the AFESD's and IDGB's funding policy (Interview Scheu 2011).

Arab funding seems to be more a function of the patronage networks at an international scale, specifically in relation to Saudi Arabia as leader of the Gulf Cooperation Council (GCC) countries. Saudi Arabia is the largest shareholder of the IDBG with 23.6 percent of shares. Combined with the GCC countries it holds about 43.83 percent of IDBG shares (IDB 2013). The situation is similar for AFESD. The funding provided through these channels and for investment in the sector serves to buy allegiance from the local *zu'ama* to strengthen Arab elites' influence on the Lebanese political scene.

This assertion can be illustrated by the example of KFAED. The Fund gives priority to the water sector because "water is overwhelmingly an essential element for economic development" (Interview Saadiqi 2010). Its criteria for project funding are economic feasibility and the availability of up-to-date studies/preliminary designs, and other criteria that other development agencies study.

The more important criteria for KFAED is the priority of the project in the CDR's development programme. The Fund will initiate a project appraisal mission upon CDR (i.e. government) request. Part of the appraisal is the CDR's confirmation of the developmental priority of the project (Interview Saadiqi 2010). Given the ad-hoc nature of the implementation of master plans this is not very meaningful and suggest that there is considerable leeway in the interpretation of the notion of priority. One project manager at the fund observed "what is a priority today might not be priority tomorrow" in order to explain why the Kuwait Fund attempts to minimise the time period from CDR request to ratification of a loan agreement (Interview Saadiqi 2010). Indeed the average four to six months the process takes is very brief when compared to the time it takes with most other donors. It is probably also the reason why about a quarter of the financing it provides came in the form of grants and so was not held up in parliament.

The perception that Arab funding is linked to the ability of the political leaders to mobilise their Arab allies in order to redistribute among their clientele was expressed during interviews. An engineer who was involved in water resource management efforts in Keserwan — a majority Christian area — considered that the lack of the development in the sector in the post war era (until the late 1990s) was due to the local (Christian) leaders inability to mobilise these networks (Interview Gaby Abdelnour 2012).

Another example that illustrates this is the South Lebanon Irrigation Project which KFAED and AFESD have agreed to provided initial funding of US\$ 180 million (of total estimated cost of

---

<sup>20</sup>The projects with higher numbers make for better reading in end of year reports of the large bilateral agencies accountable to European parliaments, in need of justification of large budgets, and vying for government budgetary appropriations.

about US\$ 300–330 million) in form of loans. The project, once completed, will irrigate 14,500 ha of farm land in south Lebanon. The project is said to have succeeded because of the good relations the Lebanese Speaker of Parliament (Nabih Berri) had with the now deceased former Speaker of the Kuwaiti National Assembly Nasser al-Kharafi and billionaire owner of the MAK group (See KUNA, 2006, 2011, Interview Anonymous 2012). “The family business, the MAK Group, is one of the Middle East’s largest holding companies” according to Forbes magazine (2012) and is also one of the contracting companies on the project.

There are valid questions to be asked about whether the expected benefits of the projects for the local population will materialise in their full and projected extent. This seems unlikely. It seems more likely that it will lead to a concentration of land in the hands of the local agricultural industry channelling the benefits to only a few rather than the broader local population.<sup>21</sup> It seems more certain that the project will guarantee the continuation of local agricultural exports at dumping prices to the Gulf (see Chapter 5). Given the export dependency of the Lebanese agricultural sector on GCC markets this project resembles the land acquisition strategies of Arab monarchies in east African states (Bush, Bujra & Littlejohn, 2011; Bush, Martiniello & Mercer, 2011; Olanya, 2012). This food security strategy can be read as the equivalent of the exploitation of a virtual water source and labour at a bargain price.

This section illustrated that despite the common development discourse and approach to water sector management, individual interests also govern the choice of projects of the different IDC actors. The CDR’s lack of “control over its expenditure pattern” (World Bank, 2010d, p.38) is a function of Lebanese donor dependence, as the World Bank rightly points out (quote on p.104), and importantly the individual actors’ interests. The Lebanese government (through the CDR) did not have full control over the expenditure of nearly US\$1.3 billion.

As was mentioned earlier, planning is mostly “ad-hoc”, the CDR matches projects to donors but this process is a function of donor interest rather than defined by investment priorities set by the CDR. Either the CDR shops around for donors with a specific project in mind and the project remains on hold until funds are secured, or a donor with funds available searches for a project that fulfils its socio-environmental impact requirements and policy priorities. This entails a loss of sovereignty and represents a rescaling of governance and policy making as exemplified by the combination of the Barcelona Declaration and the EU-Lebanon Association Agreement. All this is partial and incomplete, but the combination of Lebanese dependence on foreign funding, its endorsement of the Barcelona declaration and the association agreement act to override Lebanese policy preference (or rather what some Lebanese experts think it should be and have expressed in interviews; Interview Abou Assali 2012, Abelnour 2012, see also Chapter 5).

This dynamic cannot be attributed solely to the neoliberalisation process. While the presence of the IDC finds its reason in the high debt that result from the specific variety of Lebanese

---

<sup>21</sup>To name just two reasons this project is questionable, the Canal 800 Project is in direct competition for water resources with the Greater Beirut Water Supply Project as both draw from Lake Qaraoun. Halabi (2011) proposes that the total water volume of the reservoir is not enough to supply both projects and guarantee ecological requirements of the Litani river. “The UNCWI deduces that the Awali Project [the main component of the GBWSP] is feasible from a quantitative perspective only if the Canal 800 Irrigation Project will not begin to withdraw water until 2021 and will not reach maximum value until about a decade later. . . its feasibility can only be determined in the context of a broader analysis of Lebanon’s total water resource availability.” (Halabi 2011)

A water resource management professional (Interview Hawa 2012) considered the possibility that Halabi might be wrong but suggested that there will not be enough water to also supply the unfinished Canal 900 Irrigation Project that also draws from the lake.

Halabi further points to the elevated levels of heavy metals pollution of the lake to question the suitability of the water. He interrogates only the waters suitability for domestic consumption but given the type of pollution even its suitability for irrigation remains questionable - at least in its projected volumes (Halabi 2011).

neoliberalism, its shape and form is a function of various other dynamics, some of which have been described above.

Table 3.4: Terms and conditions of existing debt finance in 2002

Facility	% of Finance	Repayment Period (Years)		Interest Rate % pa
		Term	Grace	
AFESD	20%	22	5 & 6	3% to 4.5%
EIB	10%	18 to 20	6	6.6%
France - AFD	5%	10 to 13	2 to 5	3.5%
France - Protocol				
Commercial	2.5%	10		6.6% to 8.2%
Soft	5%	25 to 30	10 to 15	0% to 1%
IBRD	17.5%	17	4	
IDB	10%	12	3	5% to 5.5%
Italy	5%	35	14 to 24	0.5%
Japan	10%	25	5	2% to 2.5%
KFAED	12.5%	20 to 25	5	2.5%
OFID	0%	17	5	3.5%
SFD	5%	25	5	2%

Source: Tariff Report Appendix I Existing debt servicing Obligations (Jacobs Gibb, 2002)

Foreign funding of the water sector has another effect worth mentioning. Table 3.4 gives an overview of the terms of the loans until 2002. The conditions for these loans tend to be very lenient and interest rates highly subsidised. In 2011 a CDR employee expressed it accordingly:

The water sector and especially the waste water sector get very good conditions for funding because they are part of the social and environmental sectors. It is about reducing the pollution in the Mediterranean. There is virtually no loan above 3 percent for the water sector. They get very good conditions ranging from 3 percent over 20 years with a five year grace period or 2.5 percent, 15 years, and a five year grace period. (Interview Charfeddine 2011)

This US\$ 1.3 billion is a small amount seen by itself and compared to a government debt reaching US\$ 64 billion in 2013. Yet these preferential loan conditions not only make the capital for water projects relatively cheap but also reduce the average interest rates for the total Lebanese government debt by a not insignificant amount.<sup>22</sup> These low interest rates contribute to the stabilisation of the accumulation regime described in the first part of this chapter, and with that the political economic structures of the country.

### 3.3.1.2 Project Implementation

Beyond the influence on planning and the choice of projects to fund, the IDC also has influence over the project implementation process. It differs depending on the type of project. Three types of projects can be distinguished: 1) the infrastructure projects managed via the CDR, 2) technical and administrative assistance projects implemented by agencies directly or sub-contracted to consultancy firms which are either specialised development consultancy firms or ordinary private sector

<sup>22</sup>It stood at about 6.5 percent in 2014 but significantly higher for most of the time since the end of the war (see Section 3.1.4).

firms, and 3) directly implemented projects with material components which can be infrastructure, other equipment, or of a socio-economic nature, or a combination of all of these.

### **Infrastructure Projects with CDR Involvement**

The loan agreements for infrastructure projects consist of two documents, a financial document and a technical document. The financial document lays out the loan conditions and the disbursement modalities. In many projects the payment of contractors is executed by the CDR, but the Kuwait Fund for example pays contractors directly. In both cases approval by the donor is required. In the earlier years of the reconstruction the supervision of projects by donor agencies seems to have been less stringent. With the IDC's increasing involvement and the mixed results of earlier projects donor oversight has become more stringent. KFW, for example, had one German engineer from a German firm posted in Lebanon to oversee work on the waste water trunk collector it financed in the north of Tripoli. For the Greater Beirut Water Supply Project of the World Bank, a Project Management Unit (PMU) was included in the project design, as has been World Bank practice for all its projects.

In general all changes to projects in progress require donor approval. These range from simple choices of material to the redesign of parts of the project. Price changes for construction material or currency fluctuations can cause shortfalls in construction budgets and alterations to project designs to exclude certain components. In the case of waste water or supply networks this can mean the exclusion of certain areas initially included in the project design, often with highly political consequences. Corruption produces similar results but usually generates less donor cooperation and diminishes the chances for complementary funding agreements.

Donor influence on infrastructure projects often starts even earlier in the design phase. The choice of location for KFW funded WWT plants in the Keserwan area benefited from the presence and involvement of the hydrologist leading a BGR project. He has been actively involved in the identification of potential locations. In this case the project benefited from the synergies of two German agencies working together. The planned EIB–AFD waste water plant for the area was initially studied by Lebanese consultancy Libanconsult in 1996-1998. The feasibility study for the new project in 2010 was also produced by Libanconsult but under the oversight of the French company Hydratec, a fact that was noted with a certain amount of dismay by the Lebanese engineer working on the study (Interview Abou Assali, Faysal 2012).

The Greater Beirut Water Supply Project was first planned in 2000 as a BOT project by the CDR and the World Bank. The project was shelved for a number of years and then renegotiated. When it was relaunched, the World Bank was central to the whole process. A group of concerned citizens tried to challenge the proposed design by suggesting alternative dam placements (based on former hydro-geological studies). They claimed that building a dam in Damour was a less costly alternative to the Bisri Dam that was suggested in the project design. It was also claimed that the alternative would produce cleaner water because it would not draw from the highly polluted Qaraoun Lake. A petition was filed to the World Bank to halt the GBWSP but it was deemed ineligible (WB 2010). Nonetheless the World Bank did commission a new feasibility study for the original project design. No updated feasibility study was done for the alternative project proposed by those opposed to the Bisri Dam. Halabi (2011b) quotes Randa Nimer, advisor to the minister, explaining the reason for the Bank's and ministry's going forward with the project despite opposition and:

despite what potential other options such as Damour might hold, the GBWSP is the only project for Beirut that is ready to go; the potential alternatives don't have a final design or funding lined up. "For Damour, the World Bank wanted a sophisticated environmental assessment, and it was not ready and would take at least a year." (Halabi, 2011b)

The project was implemented in this form because of a combination of reasons. The first was the minister's efforts to appear proactive and profile himself for political gains (see Chapter 2). It is only one, but probably the most prominent, of a number of large projects he launched during his term. The second reason was the limitations and requirements of the donor agency coupled with the potential threat of losing the funding opportunity. If in the case of the KFW project in Keserwan the involvement of the German expert was beneficial as regards the reduced ecological risks, the World Bank's involvement in the case of the GBWSP is more ambiguous.

Many more such examples for donor influence during the design and implementation phase could be found. As these three small examples illustrate the influence exists along the whole infrastructure production process. It differs from case to case and produces positive as well as negative effects, but further illustrates the loss of sovereignty, rooted in the financial dependency, in both the planning and implementation stages of the production cycle.

### **Technical Administrative Assistance**

With the end of the war the need for strengthening the water sector administration was recognised immediately. As part of the National Emergency Reconstruction Programme Sector Implementation Units (SIU) consisting of private sector consultants working for the respective ministries were created. This happened in consultation with the World Bank and UNDP who financed a number of these positions (see section 3.2.2). In the early to mid 1990s a number of assessments of the state of the water offices were made; one by the World Bank and another by the French Lyonnaise des Eaux. A study to draw up a road map for administrative reform was commissioned from a private consultancy firm. With the initiation of the reform in 2000 even more technical assistance projects were launched. In a large number of cases these were funded through grants. These types of projects are not usually managed through the CDR. They are based on cooperation agreements with the institution concerned. Table 2.2 lists a number of these projects.

Table 3.5: Partial List of Technical Administrative Assistance Projects

Project & Project Implementing Agency	Donor	Target administration & Purpose	Project Cost	Period
Lebanon Water Policy Programme LWPP-DAI Lebanon Water and Waste Water Sector Support LWSS-DAI	USAID	Water Establishments	\$ 35 million and \$ 25 million	2002–2007 & 2009–2015
Litani River Basin Management Support (LRBMS) IRG	USAID	LRA	\$ 10.5 million	2009–2014
Med EUWI /GWP Med	EU	GDHER /MEW	n/a	2008–2014
Implementation of Technical Tools for Water Management (MOTGE) - Safège	EU	GDE/ MEW	\$ 5 million	2008–2011
Plan to Integrate 21 Water Offices - Safège	EU	GDE/ MEW	n/a	?–2005
IPP water - various	EU	MEW / CDR	\$ 9 million across sectors	2002–2004
Lyonnaise des Eaux	France	MEW	n/a	1993–1995
Water Sector Support Project - GIZ	Germany	Establishments GDE	approx US\$ 12 million € 8 million	2008–2010 & 2010–2014
NERP	WB	MEW / CDR	included in the whole loan package of US\$ 225 million	1994–1998/9
LWMCC /Groundwater assessment	UNDP	MEW	approx. US\$ 2 million	
National Waste Water Sector Strategy	WB/Veolia	MEW	n/a	2011–2012
Tripoli delegated Management Contract/ Ondeo Liban	AFD	NLWE	€ 8 million	2004–2007
GBWSP	WB	BMLWE / PMU	included in project (US\$ 200 million)	2012 –

Technical assistance projects were created not only by the core actors but also in the framework of a “decentralised cooperation” mainly (if not only) between French municipalities and administrative bodies such as the Region Ile de France or the Grand Lyon. These projects finance expert missions that provide consultancy services to municipalities or water authorities but are usually less significant financially and in terms of duration.

These technical assistance projects are all central elements in the neoliberalisation process. They aim to improve water sector administrative management, either by trying to improve management practices or by supporting master planning. The GIZ and USAID projects are and have been the longest lasting projects of this type. For example:

The Lebanon Water Policy Program (LWPP), funded by USAID, is an ambitious programme working on sensitive policy and financial issues related to public private partnerships, water utility management, and tariff pricing at the national and local levels.

LWPP worked at both the national and regional levels with the Ministry of Energy and Water (MEW) and Lebanese water establishments to provide assistance in the following four areas: 1) technical assistance; 2) institutional strengthening; 3) policy making and; 4) capacity building. (DAI, 2007, p.1)

The objectives of the programme were among others:

Assist the GoL in creating a consensus for the most suitable approaches for private sector participation and related water sector reform; (DAI, 2007, p.1)

They include many components and remain very targeted attempts to help the Regional Water Establishments transform into well functioning public utilities companies. The overarching goal of IDC sector reform has been the privatisation of public services since the early 1990s (see Chapter 4). The water sector reform was originally designed to allow for and encourage private sector participation. The technical assistance project inscribe themselves in this process. The World Bank expenditure review from 1998 spells this out:

The Government of Lebanon is not yet ready to consider significant private sector participation in the WWEs in the short term due to political and legal constraints. For this reason focusing on the corporatisation and commercialisation of WWEs is the next best way of improving overall management of services while preparing the ground for increased private sector participation. (World Bank, 1998, p.16)

These projects aim to produce utilities that operate according to commercial principles. In technical terms this means the provision of water 24/7 and the installation of private consumption water meters throughout the country. In operational and financial terms this means full cost recovery. The intermediate goal is for the RWEs to cover operation and maintenance of supply and waste water management, including the ability to expand its work force, especially the skilled and educated positions. The long term goal is to create utilities in a position capable of financing their own investment.

The tools to achieve this are listed as follows:

- A strategic business plan for each WWE is needed, together with systematic introduction of demand analysis to guide development of each WWE's commercial operations.
- Accounting practices similar to those used by private commercial enterprises should be developed and implemented in each WWE.
- Billing and collection systems should be strengthened.
- Private sector participation should be considered in the form of performance management contracts, leases or concessions.
- Tariff reform needs to be part of the corporatisation programme and is essential to attract private participation and investment. (World Bank, 1998, p.16–17)

The technical assistance programmes funded by the EU, the US, German, and French agencies all work towards these goals. One outcome is the creation of “consensus on the best course of action by key stakeholders” (USAID LWPP 2007, p.7). The basic tenets of this approach are naturalised in the official and public discourse, and activities concentrate on technical aspects and the introduction of best practices.

### **Business Plans**

The core of these activities is the production of multi-year business plans with all that this entails: 1) data gathering and organisation, for example the valuation of assets, 2) the development of a benchmarking system to measure progress, 3) the standardisation of operating procedures, and 4) the introduction of management tools such as GIS software or accounting software that combines all cost and capital, namely: inventories, asset, wages, incomes, energy and the various other associated accounting necessities. Coupled to these activities are countless trainings and workshops to expand staff capacity.

One example of this, and the difficulties that can be encountered in the process, is the introduction of accounting/management software. The software programmes are complex. According to one consultant a software called X7 introduced by French companies (Safege and Ondeo) required about 40 people to run it efficiently (Interview Yazbek 2011). In Tripoli where Ondeo Liban was commissioned under a delegated management contract for a period of four years X7 was introduced. This in turn requires formation of staff which in itself is not an easy task. At least in the Bekaa Water Establishment this proved to be difficult and produced little in terms of productivity gains:

Employees are relatively old and set in their ways, often have jobs on the side, are not very motivated to go beyond what they have been doing for ages. So the training efforts produce at best mediocre results if any. Accordingly the software is not very helpful as nothing more is done with it than to input data. Employees do not care and know how to take more out of the data, no analysis. (Interview Yazbek 2011)

USAID funded projects introduced Microsoft Windows-based software for the same purpose a couple of years later. I am not aware if one software replaced the other. Whether it did or did not matters little, in the first case the efforts of previous interventions would have been nullified and in the second case it leaves the Regional Water Establishments with incompatible accounting systems. While this is not a major flaw, it is certainly unnecessary and highly inefficient, but it certainly illustrates the absence of a Lebanese policy and the independence with which the IDC actors work in this realm.

### **Master Plans**

As part of these technical assistance programmes a number of planning efforts have been financed. The EU financed the Management Support Consultant — Investment Planning Programme soon after the reform law was passed. Six years later with much of the IPP goals and recommendations still not implemented, GIZ supported the creation of the National Water Sector Strategy in the framework of which it financed the salary of one of the minister’s advisers. In parallel, and even though the NWSS included a waste water component, a separate National Strategy for the Waste Water Sector (NSWWS) was produced. The head of the German team observed:

If cooperation in the ministry would have been better then this waste water strategy would not have been necessary. But it was about egos. One advisor wanted to do the same as the other advisor and the World Bank also wanted to participate somewhere with something. Support for the waste water part of the national water strategy could have been better. (Interview Scheu 2012)

The assertions that World Bank involvement is more due to a need to be perceived as proactive rather than strategic in terms of its involvement in the sector is supported by the fact that most of its projects target the water supply sector and not the waste water sector. The final document for the waste water strategy was produced after the World Bank involvement with support from Veolia.

All the newer plans don't move far from the earlier master plans in terms of infrastructural provisions. The NWSS in general reproduces older plans in all sectors. The waste water strategy also reiterates the infrastructural requirements of earlier plans with only small alterations.<sup>23</sup> What all these plans have in common is their insistence on the principle of full cost recovery through tariffs, waste water charges, and irrigation charges. It shows that within the administration the market environmentalist discourse is accepted.

All of the projects listed have the same vision for the operation of the water supply and waste water sector. At this point it suffices to show that these efforts are substantial and though the projects do not always merge seamlessly and efficiently there is agreement among the actors as to the general aim. As was the case with their involvement in infrastructure production, these interventions are also backed by substantial amounts of money. Most of the technical assistance projects listed above are funded through grants and add up to an approximate US\$ 100 million. This includes all the cost associated with the consultancy but also includes funds for maintenance, repairs and equipment. The considerable investment this represents is used in an attempt to make the IDC's vision of water resource management a reality.

What is more important here, is the fact that the notion of full cost recovery has over the years been established as the ultimate goal in all sectors and is not questioned. Bakker (Bakker, 2003, 2005) discusses the theoretical and practical problems with the commodification of water as a resource that according to neo-classical theory requires full-cost-pricing on the example of England and Wales. The commercialisation process is but one step in the commodification process, they are not interchangeable concepts.

She defines commercialisation as:

Commercialisation entails changes in resource management practices that introduce commercial principles (such as efficiency), methods (such as cost-benefit assessment), and objectives (such as profit-maximisation). (Bakker, 2005, p. 544)

The IDC actors (GIZ, USAID through DAI and IRG, as well as the EUWI-MED) and projects, actively promote, support, and to the best of their abilities work on the commercialisation of the regional water establishments. But unlike the case of England and Wales where the utilities already had highly developed management systems, the Lebanese water authorities do not have such systems in place. They lack information about the infrastructure they manage; they have only estimates about the water volumes they produce as well as how much of this is lost in conveyance

<sup>23</sup>It is worth noting here that the waste water strategy lists the 58 USAID funded in-land treatment plants. "None of the plants worked satisfactorily" (MEW 2004) a study of the 43 plants built between 1999 - 2004 concludes, showing that this study was more a desktop exercise (see next section).

or eventually consumed. The Bekaa Water Establishment for example is incapable of managing tenders for construction and repair contracts so that DAI (funded by USAID) fully manages the process, from producing the documents to verifying and assessing the offers (Interviews Zammar 2012, Giantris 2013).

These programmes almost run as a parallel administration (at least in the case of the Bekaa and to a degree in the south) in coordination with the water establishments. In the cases where more self-generated funding is available and especially in the BMTLWE (and to a degree in the north) the cooperation with and interest in the activities of the IDC is muted bordering on disinterest (Interviews Chemali 2010, Giantris 2013).

The tools they introduce have the potential to provide much needed increases in management capacity if they prove to be sustainable. Yet as was shown in the last chapter the lack of capacity of the RWEs is rooted in the political structures of the country; the resulting inability of the directors to hire appropriate personnel when they get government approval to employ; the related hiring freeze imposed by the governments since early in the reconstruction; as well as the general lack of funds.

That skilled professionals exist in the country is evidenced by the staff that the different IDC programmes employ; incidentally increasing the competition for the administration that cannot offer comparable salaries. They provide manpower, directly through the experts they hire, and by contracting consultancy and engineering firms for works and assessments. The manpower so provided is considerable. A quick and by no means comprehensive estimation puts the staff for the programmes listed above in 2011 at anywhere between 30–40 experts (Lebanese and expatriate long-term and resident and short-term expert missions) along with young professionals, as well as a support staff of about 10–20 (if not more).

The lack of funds is also why the notion of full-cost recovery, related commercialisation, and the drive for privatisation and private sector participation finds almost universal acceptance. The private sector is viewed as the only solution to the capital needs of the sector with very few and marginal exceptions. The concept of full-cost pricing is similarly seen as the only solution to the woes of the administration and to make the regional water offices financially viable. That it is at the same time another strategy that will allow the reproduction of the accumulation regime described above is not mentioned, if at all considered.

This is a different notion from the one proposed by Bakker (2010) with regard to commodification and by other critical geographers (see Harvey, 2005; Swyngedouw, 2003, 2005) with regard to privatisation. While it does represent a move towards the enclosure of the commons — the promised profits are noticed by the Lebanese elites as expressed in the Blue Gold project — and can be seen as another attempt of accumulation by dispossession justified via the attempted imposition of a “market environmentalism” and the promise of better services. But it also serves to free the government of its obligations to the sector and its operation and shifts the burden onto the citizen. It frees funds for the perpetuation of the debt-interest sponsored accumulation mechanism, which is a different channel for capital flows to the elites.

### **Self-Implemented Projects**

A much smaller fraction of projects in the water sector are implemented by the agencies themselves. One such project is the BGR project for the Protection of the Jeita Spring. It is a small project in terms of financial commitment and does not produce infrastructure. There is

very little in terms of material results. The goal of the project was the demarcation of a water resource protection area for the Jeita Spring (see Chapter 5).

The Jeita Spring is located in the Keserwan area north of Beirut and is the main source of the water supply for Beirut. The dense population and the lack of waste water infrastructure in the catchment causes substantial pollution to the waters of the spring. The project was designed to study the hydro-geology of the area to understand the limits of the groundwater catchment of the spring. Initially the project did not receive much attention from the water establishment or the ministry. Lebanese experts, such as the director general of hydraulic and electrical water resources (Fadi Comair), assumed that the project would not generate any value added because the catchment was already known.<sup>24</sup> Because the BGR refused to associate with a university research centre<sup>25</sup> of which Comair is the director he further lost interest.<sup>26</sup>

In the course of the investigations of the German hydrogeologists it was found that the surface and groundwater catchment do not overlap (see Chapter 5). Rather the German experts suspected that the adjacent watershed (the basin of the Nahr Ibrahim; Nahr: Arabic for river) also contributed about 30–35 percent of the flows of the spring. These findings had political implications. The infiltration area for these flows was assumed to be within the reservoir area of a dam project (the Jannah Dam) on the Nahr Ibrahim. The results of the German work put into question the economic feasibility of the dam project. It suggested that high infiltration rates would undermine the dam's intended purpose to store water and that attempts to seal off the infiltration area would affect the Jeita Spring (Margane, 2012c).

The general director of hydraulic and electrical resources, who has been at odds with the minister since the latter was appointed, found a renewed interest in the BGR project and asked the German expert to review the plans and specifically the hydrogeological studies for the dam.<sup>27</sup> The German report on the dam project–study questioned its analysis and showed that the area under question towards the upper end of the reservoir was not sufficiently studied in the project proposal (Margane, 2012c).<sup>28</sup> Unsatisfied with the outcome of the German review the ministry commissioned a second study from the French company Safege, which supported the view that further study was needed. In addition a Lebanese company was tasked to conduct a tracer test. The one test that was done could not confirm an interconnection, but given the complex hydro-geology of the area (see Chapter 5) one infiltration well would not have been enough to rule out a connection, and accordingly the test report did not rule out the possibility (ELARD, 2013).<sup>29</sup> It was the consultancy firm that had originally produced the dam study that claimed that no interconnection between the Jeita Spring and Nahr Ibrahim existed basing itself on the results of this one test (Khatib and Alami, 2013).

<sup>24</sup>The German expert explains how he did not receive support from the CDR or other agencies to release equipment from the Lebanese customs who held it for more than two months because nobody considered themselves responsible.

<sup>25</sup>The centre was established with funds from the Italian Development Cooperation and is associated with the Lebanese Notre Dame University which has its main campus in the area.

<sup>26</sup>The head of the BGR project consciously chose to remain independent of the director general (Interview Margane 2010).

<sup>27</sup>Comair also had to provide the study by the engineering consultancy firm (Khatib el Alame) because the Beirut Mount Lebanon Water Establishment had refused to do so earlier.

<sup>28</sup>This was confirmed in an interview with a Lebanese engineer who had consulted for Khatib el Alame on the project (Interview Abdelnour 2012).

<sup>29</sup>According to the German expert the Lebanese author of the report resisted requests by the minister's advisor and Khatib el Alame to rule out the interconnection (Interview Margane 2014).

The German expert suggested that an investment of less than US\$ 200,000 would have been sufficient to clarify the situation (Interview Margane 2014).<sup>30</sup> It is telling that the ministry did not commission an in-depth study of the area considering that the dam project including the electro-mechanical equipment of an associated hydro-power plant is to cost about US\$ 250–300 million.

In any case, the arguments of the BGR report and the Safege report provided the base for political opponents of the minister to attack him publicly and question his competence. Mohammad Qabbani, president of the parliamentary committee for water and energy, published an open letter to the president, the prime minister, and the speaker of parliament recommending that the project be cancelled (The Daily Star, 2013b, Interview Qabbani 2012).

On the other hand the minister and his advisor supported by the reports of their consultant, reacted by discrediting the BGR study (Interview Zakhrouf 2012). The project was important for the minister because it was based in his home district, one of the few areas that is contested during election time. In answer to the questions regarding the dam the minister's advisor "fiercely rejected the project's conclusions, findings and overall methodology", and went on to state publicly that:

"Mr. Margane has no proof on what he is proposing, ... All the tests we are doing right now show the water is not going to Jeita ... The implication at the end of the day is if he is totally wrong in his theory, since he didn't wait to see the result of the test, if we find that he is wrong, and everything is wrong [then] we can say thanks and goodbye and BGR can go out." (Dockery, 2013)

This smaller case study showed that projects are instrumentalised by the Lebanese decision makers; the director general at the ministry discovered his interest in the project only when it became political serving to further fuel his conflict with the minister. Conversely, an MP from Keserwan (Farid el Khazen)<sup>31</sup> that has advocated and promoted waste water projects for the area and this specific German project as well, turned against the German team when it started questioning the project of the minister, his political boss.<sup>32</sup> The findings of the project were ignored by the parties with a political interest to do so, while they were promoted by those with an opposed political interest. Eventually, the dam project was launched and construction started, simultaneously opposition to the project went dormant. As was mentioned earlier and is confirmed by this case, the fate of development projects in the sector is strongly correlated with the political and material interest of the Lebanese elites or the administrations involved.

<sup>30</sup>The drilling of three or four infiltration wells could have covered an area sufficiently large to give a more scientifically robust result. He also saw the possibility to build a small earth dam just below the suspected infiltration area and directly measure if any infiltration actually happens (Interview Margane 2014).

<sup>31</sup>The el Khazen family is a notable family in the Christian areas of el Metn and Keserwan. As a family it crosses political divides. The Farid el Khazen mentioned here is allied to Aoun's Free Patriotic Movement and is member of the March 8 alliance. His cousin, also named Farid el Khazen, is member of the March 14 bloc and also an MP representing Keserwan.

<sup>32</sup>He attempted to censor the presentation of the German experts before a conference his development association organised. Representatives from the CDR, the German embassy, as well as the Italian and French development agencies participated. The conference was targeted at an audience from the Keserwan area, including members of NGOs and numerous municipal councils in order to promote the work of the minister and the CDR. It attempted to promote the waste water management plans and especially the treatment facilities to be built to local constituencies. Khazen explicitly requested that Nahr Ibrahim not be mentioned at all. Yet because the German team presented their findings which showed the extent of the catchment, to Khazen's intense displeasure, followed by the threat that he withdraw his blessings for the BGR project.

### 3.3.2 Observation on the Networked Nature of the Expanded IDC: Networking, Knowledge Production and Hegemony

The section above highlighted the varied interests that shape the actors' involvement in the Lebanese water sector and the financial means that are mobilised to materialise a relatively specific view of how the sector should function. While discussing the individual actors, they were always treated as part of a bloc, the International Development Complex. The following sections will now reinforce this notion and illustrate the networked nature of the IDC further. It highlights that efforts to shape the Lebanese water sector according to the market driven discourse are concerted and that tremendous effort goes into the reproduction and adaptation of this discourse beyond the projects that aim to change the administration directly. This section will show that the IDC's increasing dominance of the WRM process is not based only on its financial means, but also on the efforts that go into the establishment and maintenance of the hegemony of the justifying discourse.

#### 3.3.2.1 The Water Sector Coordination Meeting

In the two decades after the war the coordination between water sector actors increased. It did so in response to the muted success and often ambiguous outcomes of projects and the still worrying state of water resources in 2014. Many of the infrastructure projects went over schedule, did not produce the expected results, or stood idle for long periods of time (see Chapter 5). The administrative and legal reform process, pushed by the IDC, similarly did not produce the desired outcome (see Chapter 4).

In 2008 the EU instituted sector working groups that brought together the European donors in the different sectors to coordinate their efforts. This approach followed earlier attempts, such as the IPP that attempted to lay out sector and investment strategies, and aimed to improve sector administrative capacity with the goal to move from project support to sector budgetary support.

This concern is not new for the EC. It has been for many years at the forefront of efforts to make aid more effective by harmonising its efforts with other donors, and by aligning aid with partner-country strategies and systems. It is EC policy to use general and Sector Budget Support as the favoured financial modality for its assistance whenever conditions are favourable. This is part of a broader commitment to the principles of Programme Based Approaches (PBAs): one of the Paris Declaration targets is to increase the proportion of all aid delivered as PBAs to 66 percent by 2010 (EC, 2007, p.7).

Within the framework of this directive the "EU Coordination Group for the Water Sector in Lebanon" was created. Its initial intent was to coordinate EU member states' donor aid in the water sector. The scope was defined as including the water supply sector and the waste water sector but was extended to include water resource management (GTZ/GIZ, 2008a). The first meeting included only two representatives from the EU Delegation in Lebanon: one from AFD, two from the Italian Development Cooperation, the head of the GTZ mission, and a representative from the German embassy (GTZ/GIZ, 2008a). The participant and guest list was soon expanded to include representatives from the World Bank, EIB, USAID, UNICEF, and later the Kuwait Fund as the only representative of the Arab state donors.

Inclusion and participation of the Lebanese water sector administration was discussed early on but the first time representatives of the Lebanese water sector were present was a year later in

the framework of a discussion about the state of the waste water sector (GTZ/GIZ, 2009). The expansion of the coordination group to fully include Lebanese authorities had to wait for a EC directive. Eventually in 2010 the meetings were moved from the premises of the EU delegation to the Ministry of Energy and Water. Initially this forum served to share information about project progress and plans with the goal to coordinate aid efforts:

Priorities are to (1) develop common sector strategies of EU states (2) involve non EU agencies in coordination groups and (3) involve Lebanese sector institutions (GTZ/GIZ, 2008b).

A review of the minutes of meetings suggests that a fruitful exchange of information occurred and that development efforts in the sector profited from the improved coordination. A number of initiatives and/or issues were addressed, sector analysis was exchanged, and the perception and understanding of sector problems harmonised, at least to a degree. Altogether this seems to have served to unify the voice of development agencies. At the very least the discussions show that all the individual participants have the same discourse with regard to the requirements for an improvement of the water sector. For example, one concern that was repeatedly brought up was the issue of the sustainability of waste water treatment projects in the absence of waste water charges to guarantee that continued operations and maintenance funding is available. The guiding logic suggested that because the state can't pay for it the citizens shall. This issue was repeatedly impressed upon Lebanese stakeholders (GTZ/GIZ, 2008b, 2008c).

The sector coordination meeting can be interpreted as the localised focal point of IDC in Lebanon. It brings together the most important actors and serves to strengthen its presence in Lebanon. It is one site of production of a unified discourse for a small audience of Lebanese technocrats.

### **3.3.2.2 The Lobbying and Discourse Reinforcing Network: the Expanded IDC in the Water Sector**

Another site in which the mainstream discourse is reproduced, and the work of assuring its hegemony takes place is the global network of water policy expertise. Goldman (2005) shows how the World Bank's professional training activities were central to the dissemination of development knowledge. One result was the emergence of a transnational policy network on water. Among them he identifies the World Commission on Water, the World Water Council, the Global Water Partnership which emerged from a cooperation of influential politicians, the World Bank, UN agencies, and/or multinational corporations (MNC). It is also from these institutions that a large part if not the majority of the board members of these bodies originate. Goldman groups with these the World Business Council for Sustainable Development, which is a grouping of the worlds largest MNCs active in the energy water and waste management sector, and global NGOs such WaterAid. He shows how this network has been instrumental to the proliferation of water expertise that treats water as an economic good and advocates private sector operation of water supply. (Goldman, 2005, p. 221–247)

A subset of this network exists centred on the Mediterranean Basin.<sup>33</sup> A large number of organisations concerned with some aspects of water resource management around the Mediterranean

<sup>33</sup>Another network, younger than the one described above, was formed with the creation of the Arab Countries Water Utilities Association (ACWUA). It is the result of a joint GIZ (GTZ)–ESCWA project. It was first initiated

— ranging from agriculture and irrigation, wetlands management, urban water management, and development on a more general level — are networked to exchange and publicise expertise. Figure 3.4 shows only a selection of those actors active in Lebanon, their interconnection and how they relate to the Lebanese WRM process.

In many cases these associations are linked to the Euro-Mediterranean project, the Barcelona Process, and the UfM. The main function of this network, seen from a local perspective — that is from Lebanon — is the reproduction of the IWRM discourse coupled with the mainstream discourses about scarcity and climate change. It also serves as a site for the networking of experts and the lobbying of business interest. This sub-network will be discussed here with its links to Lebanon and specifically Fadi Comair, the General Director of Hydraulic and Electrical Resources at the MEW. His prominent position in the water resource management process makes him the appropriate example. He is among the most prolific public speakers and is often cited in local newspapers. Others with a less prominent public profile exist but the sociological research to expand this analysis was outside of the scope of this thesis.

The network in question finds its origins in the Euro-Mediterranean process and by extension the European Union. In a publication by the “Institut de Prospective Economique du Monde Mediterranee” (IPEMED),<sup>34</sup> Comair and three experts with close professional relations to him, make the case for a Mediterranean water agency. In their article they describe some of the actors of this network and its origins:

Water has been at the heart of the Euro-Mediterranean cooperation’s concerns since the Barcelona Convention in 1976. Integrated water resource management is one of the priorities of the Mediterranean Commission for Sustainable Development created in 1996. Several international conventions regulate this cooperation, covering for example, operating aquifers in North Africa (Sahara Sahel Observatory), the common strategic debate on the Nile basin (Nile Basin Initiative), and the protection of the Danube, etc. A number of tools have successively been put in place to further the cooperation’s operational side: EMWIS, Plan Bleu, Unep-Map, International Office for Water, Mediterranean Water Institute, GWP-Med, the Mediterranean component of the European Water Initiative, Euro-Mediterranean Network of Basin Organisations, etc. They are currently small and scattered, and have produced few tangible results. (Comair, Donzier, Lainé & Mino, 2010, p.2)

Most of these actors have also implemented small projects in Lebanon. Plan Bleu commissioned studies concerning the water and environmental sector. The International Office for Water (OIeau) has provided training and consultancy services at a small scale. GWP-Med runs the EUWI-Med intervention in Lebanon which has a cooperation agreement with the ministry and specifically works with Comair’s department. This does not occur by accident, but stems from his involvement in the water expert group of the Barcelona process and later the Union for the Mediterranean. Plan Bleu, IME, and the Mediterranean Network of Basin Organisations (MENBO) of which Comair was president, are members of GWP-Med administrative council.

Representatives from these organisations, and often the same persons are networked through conferences and projects. The earliest reference found in the context of this research is the

---

in 2006 and eventually launched in 2009. It organises the Arab Water Week which brings together technocrats and private sector actors from across the Arabic speaking region.

<sup>34</sup>It formulates its goals thus: “IPEMED aims to bring the two sides of the Mediterranean closer together using economics, and to make a concrete contribution to building an integrated, sustainable and socially responsible Euro-Mediterranean area.” (IPEMED 2009)

attendance list of the “Conference of Water Directors of the Euro-Mediterranean and southeastern European Countries” in Athens in November 2006. The list includes Jean F. Donzier, director of OIeau, Walter Mazitti, president of the steering committee of EMWIS, treasurer of the Mediterranean Water Institute (IME), and European negotiator during the Wazzani incident in 2002,<sup>35</sup> and a number of other names. These speakers and experts, or at least a core group of them (of which the above named are certainly part) meet regularly at the numerous conferences taking place around the Mediterranean.

The two transnational corporations dominating the water sector in the region, Veolia and SUEZ Environment are also present in this network. SUEZ Environment is member of IME and partner of GWP. SUEZ and its subsidiary Safege and Ondeo, as well as Veolia, have representatives in the board and the administrative committee of OIeau (OIEAU, 2012).

AFD also backs a number of these Mediterranean institutions, for example it has a representative on the board of OIEAU and is a member of the Plan Bleu. IPEMED, which is concerned more with economic integration, is purely a lobbying group of the private sector. Yet, water governance issues are on its agenda. For example, it supported efforts to create a Mediterranean Water Knowledge Hub and was involved in discussions to this end since at least 2008. The project was aimed at the creation of a “Knowledge Hub” collecting and disseminating expertise, as well as form professionals (OIEAU, 2008). IPEMED has considerable political clout. The founding members include Blom Bank, Byblos Bank, and other Lebanese businesses alongside SUEZ Environment, Air France, AFD and other companies and organisations. The CEOs of Blom Bank, SUEZ, Rothschild Bank, and the President of Partenariat Français pour l’Eau (French Partnership for Water) are on the board of directors. Its political sponsorship committee contains political heavyweights such as Xavier Solana (former NATO secretary general and EU Minister of Foreign Affairs), Romano Prodi (former Head of the EU), Alain Juppe (former President of France) and Jean Pierre Raffarin (former Prime Minister of France), while the Lebanese representative is former Minister of Finance Georges Corm (IPEMED, 2012).

In Lebanon the main venue for these actors is the Beirut Water Week, organised through the ministry by Comair. The EUWI–Med project through GWP–Med provides technical assistance to his directorate and takes some of the organisational and financial burden (Interview Thomassini 2011). The representatives of the member organisations listed above of the Mediterranean policy network are usually present at the Beirut Water Week, as are private sector actors such as SUEZ. But other conferences in Lebanon invite many of the same faces. Lebanese and international academics also participate. The topics of these conferences are very similar. They promote and reproduce the mantra of private sector participation, full-cost pricing (in domestic as well as irrigation water supply), IWRM, climate change and the related scarcity crisis, as well as hydrodiplomacy (BWW 2010, BWW 2012).

It is thus not only the core of the IDC in Lebanon that works on the production and reproduction of the dominant discourse but it is supported by transnational policy networks as the one just described; itself backed by a considerable amount of resources, as well as political and knowledge capital. Tremendous effort is expended in an attempt to make the market environmentalist discourse hegemonic in Lebanon. This work happens in different sites, the water sector coordination meetings, through the technical assistance project (though their work goes further and is

---

<sup>35</sup>In 2002 Israel threatened to go to war over Lebanese plans to build a small pumping station on the Wazzani Spring. The Wazzani Spring feeds the Hasbani river and is part of the Upper Jordan river that runs south into Occupied Palestine. The issue was resolved through US and EU mediation and Lebanon went on to build the pumping station (Zeitoun et al., 2012a).

concerned with the implementation of these governance techniques), as well as in the work of the Mediterranean policy network. These efforts are targeted at the Lebanese water sector technocrats, and an audience of academics, NGO professionals and also to the public via these conferences.

### 3.3.2.3 The IDC as Site for the Reproduction of a Transnational Policy Expertise

This reproduction of expertise does not stop with the dissemination of the discourse but is extended to the reproduction of the transnational policy experts. To continue the example of Comair, apart from the EUWI–Med project that gives Comair’s department technical assistance, for him this network serves as a means to increase his political profile. His position as president of the Mediterranean Network of Basin Organisations (MENBO), vice president of EMWIS,<sup>36</sup> and his membership of the Water Expert Group of the UfM also serve this purpose.

It is also through his connections to SUEZ Environment and specifically its vice president of Corporate Security Franck Galland that he was nominated to and received into the French National Order of Merit with the rank of knight.

The ceremony was held at the French Embassy in Beirut in November 2010. This excerpt from the French ambassador’s speech gives an indication of the reasons for the award:

Dear Fadi, you entertain excellent relations with the offices of the French Embassy, particularly with the Beirut regional economic office and the French Development Agency. You collaborate with both in support of French companies, which allows the latter to realise more projects in Lebanon in the framework of private public partnerships for delegated management of water in the city of Tripoli, in associating with the Lyonnaise des Eaux, that lead to the rehabilitation of the water supply network in the Jezzine region. With SUEZ Environment and Veolia, you equally participated in the creation of waste water treatment plants. (Comair, 2010a)

The picture that is painted is that of an official working with the commercial mission and a development agency in support of the private sector. It is only one facet of his functions, but this characterisation shows resemblance to one of categories of Leslie Sklair’s (Sklair, 2005) definition of the transnational capitalist class (TCC). For the purpose of this study only the state and the technical faction are of interest. The state faction made up of the globalising politicians and bureaucrats and the technical faction consisting of globalising professionals and experts. These globalising politicians and bureaucrats are the ones “who actually decide what gets built where, and how changes to the built environment are regulated.” The globalising professionals include the “leading technicians centrally involved in the structural features” of the systems that are built (Sklair, 2005).<sup>37</sup> In this definition the TCC not only controls money capital but other forms of capital, referring to Pierre Bourdieu he lists “political, organisational, cultural and knowledge capital” (Sklair, 2002, p.17). Instead of following Sklair’s argument I propose a category of transnational policy experts as agents of the neoliberalisation of water governance.

This categorisation can be extend to the IDC experts working in Lebanon. For example, two of the water experts working for DAI have extensive experience with the privatisation of

<sup>36</sup>Euro-Mediterranean Information System on know-how in the Water sector founded in the framework of the Euromed process.

<sup>37</sup>He goes on to include “those responsible for the education of students and the public in architecture” in the technical fraction. This also resonates with observations from Lebanon, whereby the same university professors are also invited to the local conferences, and promote the same IWRM and PSP discourse. As was mentioned earlier Comair also heads a research centre at a local university.

utilities around the world. The head of the programme explains that he was involved in the first privatisation of water utilities in the US in the early 1980s (Interview Coxon 2012). One EU Delegation expert explains that he sold his company, a venture capitalist firm, and doesn't need to work anymore but wants to use his experience for another purpose (Interview Christiaens 2011). The team leader of the USAID sponsored IRG project at the LRA, has worked in development for most of his career. He has worked on design and implementation of development projects for the World Bank, EU, AFD, but also has experience in the private sector (Interview Viala 2011).

The work expended by the numerous agencies and accordingly by the experts that represent them has effects beyond the mere reproduction of the dominant discourse with regards to water resource management. In Comair's case it is his political and organisational capital that is enriched through his participation and membership of the different organisations and his being knighted. Comair's evolution from a local state technocrat into a transnational policy expert illustrates a reproduction of this category of actors. The Mediterranean expert network formed with the support of European foreign policy was instrumental for this transformation. There are other examples, none are as important in their influence on the sector and as prolific abroad as Comair but more research would be needed to understand how the IDC reproduces locally and how this affects the Lebanese administration and water sector.

But the example of Comair allows to connect the work done by the IDC and the Mediterranean policy network to reproduce the dominant discourse among Lebanese experts to the Blue Gold project. He has emerged as a vocal and public advocate of the project, supported by the political and organisational capital he gained. This closes the circle between the marketing campaign to promote the project with its radical market environmentalist discourse, the elites that stand behind the project, and the IDC.

This chapter started by explaining the evolution of neoliberalism in Lebanon. It detailed the Lebanese descent into economic crisis and the related dramatic rise in public debt. At the root of this debt is the main pillar of the Lebanese accumulation regime, a wealth transfer mechanism that shifts government revenues to Lebanese banks and by extension to the elites. With the increasing debt burden the IDC was progressively integrated into all aspects of Lebanese development politics.

In the water sector the IDC has become a structural feature of which the Lebanese state and its water sector administration have become dependent. I have shown that without IDC funds the development of the sector could not happen, and given the fiscal situation of the state will not happen for the foreseeable future. The capital that is provided and transformed into infrastructure underpins the IDC influence on the sector. It is increasingly involved in all aspects of water resource management. Planning, infrastructure production, and operation and maintenance are all heavily influenced by the IDC. This reflects a loss of sovereignty by the Lebanese state and administration. The infrastructure and technical assistance projects often produce ambiguous results, while IDC intervention always supports the reproduction of the economic base of the Lebanese elites.

In parallel and related, the IDC in Lebanon (what I have called the Core) and the support network of associations and NGOs work tirelessly to reinforce the hegemony of the market environmentalist discourse that guides IDC intervention. The imposition and reproduction of the discourse was and still is necessary because, as will be shown in the next chapter, the administrative reform efforts have not generated the promised improvements.

## Chapter 4

# Water Sector Reform

This chapter discusses the transformations of the water sector administration in the post-war era. The central aspect of this chapter is the reform process that was initiated with the reconstruction and that has been ongoing since. The reform process was driven by a neoliberal ideology and its best practice template for the water sector as described by Bakker (2003; 2005; 2010). The main ingredients of which are the commercialisation of the administration, full cost recovery, and user-pays principles, all leading to the privatisation of the water sector utilities. The IDC, with the World Bank in the lead, was the driver of this reform and pressured the Lebanese state into the process. These early efforts culminated in Law 221 of May 2000 that restructured the 21 water offices and some 200 water commissions into four regional water establishments. The chapter shows how the conflicting interests of Lebanese elites and the IDC have affected the reform process and therein reproduced the central structural features preventing it from operating and improving water resources effectively. This will be shown in three examples, the administrative reform process, the attempted reform of the legal framework governing water resource use and management, and technical assistance project aimed at commercialisation. In these example the chapter shows how the reform process is constantly subverted by the elites to assure their channels of power into and through the administration, and while the distribution of power among the elites can change in the process, the principal patron-client mechanisms remain intact. As a result the commercialisation and the opening of the sector to private sector participation and PPPs are remoulded and disrupted.

This process extends to the scalar politics involved in the reform. The last section analyses how the new geographical boundaries of Regional Water Establishments took form, taking account of the political dynamics as well as the geographical features and the historical processes that contribute.

In this chapter I show the limits of the power of the IDC to impose its policy preferences and ideology and at the same time point to a contradiction internal to this ideology. The depoliticised reading of the shortcomings of the Lebanese administration makes an engagement with the structural features governing its operation virtually impossible. The exclusion of the politics from the analysis of the sector does not make the division of power mechanisms disappear, but rather makes interventions blind to them. The proposed solutions cannot but fail to change these dynamics, allowing them to reproduce, and thus the “inefficiencies” of the sector and the water management process to continue.

## 4.1 Water Sector Transformation after the Civil War

The second half of the 19th century can be viewed as the origins of current water resource management structures. The earliest codification of water law stems from the 1870s publication of the Ottoman legal code known as the “Medjelle”. It enshrines water use and property laws based on customary laws, the Sharia, and the Napoleonic code (Mallat, 2003, p. 228). At around the same time the first concession to supply potable water to Beirut from Nahr el Kalb was granted by the Ottoman rulers to a French engineer, other concessions would follow.

After the First World War the French administration introduced wide ranging legal reforms during the time of the mandate starting in 1920. Laws regulating water resources were among the priorities according to Hyam Mallat (2003). The most important are the decree 144 from 10 June 1925 which defines the public domain, and in a subsection, the waters included therein; and decree 320 from 26 May 1926 which regulates the protection and use of public water. With some amendments these laws are still in effect and articles from the Medjelle remain applicable to issues of irrigation, groundwater use, and usu-fruct water rights (Mallat, 2003, p. 228; see also Ghiotti & Riachi, 2013).

Water supply management was left largely unregulated and in the hands of private entities by way of the numerous concessions for exploitation of water resources. It was only after independence, in the 1950s, that public administrative bodies charged with aspects of water resource management were created. The Beirut Water Office was the first to be created when the private concession ran out in 1951. Other concessions were bought up by the government and local water offices were created in the following years (Mallat, 2003, p.229; Catafago, 2005, p. 76).

In 1954 the Litani River Authority was founded to take charge of the development of the Litani basin and of the development of water resources in the whole country (Catafago, 2005, p.86). This followed the plans of Albert Naccache and Ibrahim Abd el Al who both promoted modern infrastructure centred visions of resource development and water development specifically (AFIAL, n.d.; Gemayel, 1951; Naccache, 1936).

The Office of Hydrology, under the authority of the French High Commissioner, became the General Direction of Hydraulic and Electrical Affairs in the Ministry of Public Works after independence, but it was not until 1966 (based on a decree from 1959) that the Ministry of Hydraulic and Electrical Resources was legally and effectively instituted. An attempt at reforming the water offices and the water sector administration was undertaken in 1972. Its aim was the consolidation of the already numerous and disjointed water offices into five regional water establishments. This was not to be, but articles regarding the management of the water establishments from this law project would be passed six month later. These would govern the functioning of the local water offices until the reform of 2000.

### 4.1.1 Post-War Reconstruction of the Water Sector

The development of the water sector administration was still in its early stages when the war started in 1975. In the phases when the war ebbed and governments and parliament were active new laws were passed, so that a few water offices received legal decrees and were integrated into the water administration. The same occurred with local water committees and water user associations. No law project of substance regarding water use and regulation was implemented during the war (Mallat, 1997, 238–275). At the dawn of the war the water administration was in a shambles,

neither the ministry nor the water offices were fully operational, quite the contrary. Adding to the considerable physical destruction and damages, the lack of administrative capabilities was a further obstacle to reconstruction, operation and maintenance.

#### 4.1.1.1 Assessments without Data

Numerous assessments of the state of the post-war water sector were executed. The first assessment and reconstruction plan, the “Emergency Recovery Program” (ERP) was produced for the CDR by Rafik Hariri’s Oger International. It would later feed in the Horizon 2000 plan of the government and the National Emergency Reconstruction Program (NERP) support by the World Bank. The World Bank published the results of its and the government’s assessments in a report from 1993. Lyonnaise des Eaux Dumez (LED) — (which would later become SUEZ) — in the framework of a technical assistance contract with the Lebanese government funded through the French economic cooperation protocol, produced an assessment report in 1994. It analyses the water offices and their capacities, the water committees, and the infrastructure under the responsibility of either.

These three reports pointed to the difficulties obtaining accurate data. Regarding the infrastructure the Oger report had the following to say:

- The consultants faced great difficulties finding plan, maps, and technical studies in the archives of the different services (Water office, Ministry...[sic]).
- Only a few documents are updated regarding executed works and maintenance. No as-built drawings and completion reports are archived.
- Standard Practice Documents, concerning choice and quality of material, necessary for all installations, do not exist. A study must be commissioned in order to establish the technical specification valid on the national scale with the goal to unify installations and facilitate maintenance management. (Author’s translation, Oger International, 1992, p.3)

The same situation was found in relation to administrative and operational aspects of water resource management. Only limited data regarding the users and connections existed, accounting was also noted to be rudimentary and patchy. Some offices could only estimate the number of connections they served (Lyonnaise des Eaux Dumez, 1994a, p.3).

Based on the information provided by the water offices the three assessments presented different numbers: Oger at 5.3 million and LED at 7.1 million inhabitants. Both these reports acknowledge that these numbers were grossly exaggerated. But even three to four years later a World Bank funded assessment obtained a total of 5.7 million inhabitants based on the numbers provided by the water offices. This needs to be contrasted with the numbers produced by the Central Administration of Statistics that estimates that the country had about 3.7 million inhabitants in 2007 not counting about 250,000 Palestinian refugees.

The ERP was not a damage assessment per se, its aim was the “immediate start of rehabilitation works of all existing installations” (Oger International, 1992, p.2). Networks including all production, treatment, and storage infrastructure had suffered not only direct damages but also from lack of maintenance. The NERP was planned over three years from 1993–1996 and projected investments of US\$ 187 million in the water supply sector and US\$ 111 million in the waste water sector (Oger International, 1992; Van Eeghan, 1993a p. 31).

Of this US\$ 130 million was provided through the Emergency Reconstruction and Rehabilitation project (ERRP) led by the World Bank to support the NERP. This project was expanded with a

US\$ 50 million loan from the Bank in 1996 after the Israeli attacks in the spring of the same year. It was completed in 2002 (WB 2002, p.1) — six years later than initially planned. With regards to the ERRP the World Bank writes:

the successful implementation is tarnished by the long implementation process which can be attributed to the inaccuracies in the original damage assessment estimates and fresh damages caused from external hostilities during implementation; *this was quite unanticipated*. Some of the repairs were from damages incurred as late as in 2000, indicating the continued relevance of emergency rehabilitation in Lebanon. (Author's highlight, World Bank, 2002, p.6)

The damages were larger than the originally estimated US \$ 300 million proposed in the ERP from 1992. However, the assessment of required investments is as much a function of the destruction as of the expectations and normative visions of the planners. These are expressed in the definition of rehabilitation needs, as well as the levels of quality and technical standards. This vision is necessarily rooted in planners' outlook for the future. The ERP and the NERP were designed to kick-start economic growth as soon as possible, and according to the general neoliberal vision for the country (see Chapters 3 and 5). This happened at the expense of more thorough assessments of the actual investments needed and/or possible.

The effects of this underestimation of damages was amplified by the misreading of the geopolitical situation as was mentioned earlier. The idealised (and unrealistic) expectations of future growth and development did not allow for other-than-peace scenarios in a similar manner as the market driven templates depoliticised the analysis of the sector.

#### 4.1.1.2 The State of Water Infrastructure after the Civil War

The water sector was in a state of dilapidation. A 1990 assessment of water quality showed that 80% of collected water samples were contaminated. Four years later the LED assessment found that all the samples taken were contaminated. Water towers were destroyed and damaged, as were pumping stations and public wells. Networks suffered from infiltration because of the lack of pressure as well as regular service interruptions. The larger part of the “production equipment were in a critical state. Conceived mostly in the 1960s no automation systems were present” (Lyonnaise des Eaux Dumez, 1994a, p.13). All treatment plants were damaged and were thus operating at reduced levels. “Out of 120 chlorinators, only 12 were still in operation” (Van Eeghan, 1993a, p.26). The waste water infrastructure fared the same. Damaged networks could only operate below capacity and caused “increased health hazards through overflowing and ponding of raw sewage in residential and commercial areas” (Van Eeghan, 1993a, p.27). This report describes the state of the few waste water treatment projects as follows:

The two existing treatment plants (in Hammana and Marjayoun) were hit by shelling; raw sewage has been diverted for irrigation use. Two other plants Bikfaya and Ghadir were never completed; equipment for Ghadir has been delivered but never installed. (Van Eeghan, 1993a, p.27)

The important power requirements for pumping and other electro-mechanical equipment could not be met due to the state of disrepair of the power sector, with power outages occurring regularly and often throughout the country. Only a minority of production wells were equipped with back-up generators by end of 1993 (Lyonnaise des Eaux Dumez, 1994a, p. 13).

Water quantities were insufficient because of high losses in the network. Unaccounted-for-water was estimated to exceed 40 percent but could not be measured due to the lack of metering throughout the network. Neither the produced quantities nor the losses through leakage could be ascertained, even more so because records of subscriptions were faulty and no numbers for unregistered connections could be produced.

#### 4.1.1.3 The State of the Water Sector Administration after the Civil War

The water sector administration and organisations as a whole had not developed much beyond their state at the beginning of the war. While new water offices, committees and associations were formed during the war the hierarchy of the sector remained unchanged. The water offices and the Ministry of Hydraulic and Electrical Resources (MHER) had suffered from the effects of the war. Successive periods of hyperinflation and a legally binding limit on the prices of water supply put them in a dreadful financial state. The cost of 1 m<sup>3</sup>/day annual subscription was fixed at LL 60,000 by the ministry for social reasons and by 1993 LL 100,000 for 1 m<sup>3</sup>/day in Beirut, but a study had shown the price of production to be about US\$ 100 ( LL 150,000 in 1997). In most cases operating expenses and revenues did not balance, and none of the offices had much surplus for investments or repairs. But even where a positive balance existed operation was hampered by the need for approval from the ministry.

The limits set on expenses that did not need approval from the ministry varied between LL 150,000 and LL 1,000,000 depending on the offices (Lyonnaise des Eaux Dumez, 1994c). In dollar terms this would amount to between US\$ 75 and US\$ 500 in 1993 and US\$ 100 and US\$ 660 in 1997 when the Lebanese Lira was coupled to the dollar at LL 1,500 per US\$ 1. These sums were not enough to implement the smallest repairs on the network or procure the most basic materials. The LED report comments on the Zahleh water office illustrate the problem this made for works:

The director does not wish to renew his mandate because the inertia of the administration discourages him. Example: It takes seven months to obtain the approval from the tutelage bodies to buy chlorine... The director takes the initiative to resolve the problem in an "illegal manner". (Author's translation, Lyonnaise des Eaux Dumez, 1994b, p. 4)

The municipalities who were responsible for waste water collection and networks similarly had only minimal funds and were in any case severely handicapped by the lack of planning and technical personnel.

The water offices and commissions had no coherent or updated organigram or management structure. In many cases responsibilities were not clearly defined. Management committees were staffed more according to local social and political considerations and not based on skills and expertise according to Lyonnaise des Eaux (Lyonnaise des Eaux Dumez, 1994a, p.10). The offices and the ministry were both overstaffed and understaffed, sometimes both, lacking engineering, technical, accounting, and other necessary expertise that could not be made up for by the large number of labourers and administrative assistants who swelled the work pool of the least trained. According to the LED assessment 18 water offices had a combined 22 engineers (five to six of whom were in Beirut) and eight accountants (Lyonnaise des Eaux Dumez, 1994a, p.18).

One cause was the complicated employment process for public servants that is under the tutelage of the Public Recruitment Council, the Ministry of Finance and the MHER, who all have a say in the number of new employments, the contract details, and even on the choice of candidate

(Lyonnaise des Eaux Dumez, 1994a, p.17). Another cause was the salary level that was very low ranging from LL 130,000 to LL 300,000 in 1994 (between US\$ 60 and US\$ 150–200). As a result severe shortages of qualified personnel could not be made up by the large numbers of contractual and/or daily labour that were not public servants.

Table 4.1 shows a summary of the state of the water offices in 1993 based on the LED report as well as the investments projected per water office based on the ERP. A couple of observations are worth making regarding this table. The reservations regarding the data mentioned above apply. The table nevertheless serves to show the regional differences.

All the major cities and the areas of Mount Lebanon have a very high connection density, whereas the Bekaa has on average the lowest. In most cases a subscription is made for 1m<sup>3</sup> fixed volume per day. Water use was never metered but provided by way of a fixed diameter gauge that limits the flow. In nine cases the water offices did not produce enough to provide the 1m<sup>3</sup> equivalent to the subscription, the Kesrwan-Ftough and Zahleh water offices had the lowest ratios, with about 0.40m<sup>3</sup> per subscription. The others could have been able to provide 1m<sup>3</sup>/subscription according to this data, but experience had shown this to be wrong in Beirut and varyingly across the regions (Lyonnaise des Eaux Dumez, 1994a). In part this was due to the damages and leaks estimated at more than 50 percent as for example in the Barouk area, and in part it was due to the uncertainty regarding the number of connections, illegal connections, and tampering with the gauges. Yet the report considers that for ratios larger than one it should not be a priority to increase production volumes, but improve delivery efficiency.

The budgets listed in Table 4.1 do not reflect cost accurately because they do not account for electricity consumption which was subsidised entirely by the ministry. The accounts the office presented also did not include amortisation and replacement cost (with exception of the Beirut water office.) In general the accounting methods were found to be unadapted to needs and consisted in most cases of revenues versus expenses accounting, with investments and other unexpected expenses filed under extra-budgetary items. No analytic or management accounting systems were in place suggesting that planning was almost wholly absent. The salaries absorbed a considerable portion of the expenses in most areas and took ridiculous proportions in the Bekaa area. Measured on a per employee basis these were highest in Beirut with LL 5.7 million per employee (about US\$ 3,200 / year in 1994), followed by Tripoli and Tyre at around LL 4.5 million. On the lower end Qobbayat water office in the far north and Chamsine water office in the south east Bekaa had the lowest expenses per employee.

In 1994 the French company found that:

the ills from which the offices suffer are not new and the events only accelerated a degradation process which observers had already noted in the beginning of the 1970s. The Charfeddine report from 1971 noted “*that the offices manifest a deficit of 15 percent and the level of leakage oscillated between 45 percent and 65 percent and that the salary expenditures were excessive*”. (Author’s highlight, Lyonnaise des Eaux Dumez, 1994c, p.34)

The offices were not only dependent on the ministry for employment but also for investments. What was conceived as posterior budget control in the legal text had progressively evolved into a situation where all spending had to be preapproved by the general department of exploitation. The institutional coordination between the offices and the central authorities was also absent. This

Table 4.1: Summary of state of Water Offices and water supply

Name of Office	Regional Water Establishment (after 2000)	Connections	Surface	Inhabitants	Revenues ('92 in 000 LL)	Expenses ('92 in 000 LL)	Employees	Production (m3 / day)	m3/day/per connection	Expense /m3 / day	% Salaries	Connections / km2	ERP projected investments US\$ water supply sector
Batroun	NLWE	8,700	156	110,000	550,000	644,000	52		0.00			56	5,815,650
Tripoli		46,000	373	500,000	2,253,517	1,792,000	66	58,000	1.26	106	13	123	12,414,850
Nabaa el Ghar		10,000	198	200,000			29	6,500	0.65			50	6,518,200
Qobbayat		2,500	295	500,000	215,347	110,102	55	3,350	1.34	176	8	8	8,771,400
Nabaa el Kadi		3,500	122	25,000	123,500	79,500	11	5,600	1.60	60	39	29	4,030,550
Jbeil	BMTLWE	18,000	418	70,000	1,800,000	2,000,000	84	10,000	0.56	493	17	43	4,230,950
Keserwan Ftouh		38,200	387	500,000	1,900,000	2,000,000	117	15,400	0.40	338	13	99	5,356,500
Metn		35,000	225	175,000	1,069,000	2,019,000	56	24,000	0.69	122	17	156	3,091,400
Braouk		52,000	778	750,000	985,000	1,082,000	200	60,000	1.15	45	49	67	24,291,000
Beirut		150,000	60	1,250,000	5,532,000	10,000,000	493	200,000	1.33	76	51	2,500	25,306,000
Ain el Delbe		70,000	91	700,000	954,311	894,473	136	42,500	0.61	62	34	769	11,070,000
Saida	SLWE	17,000	13	400,000	509,000	1,086,000	52	25,000	1.47	56	26	1,307	1,695,500
Nabaa el Tasse		42,000	873	500,000	1,230,000	1,715,000	127	60,000	1.43	56	22	48	22,379,450
Tyre		12,200	450	200,000	471,000	498,000	56	19,000	1.56	68	51	27	14,536,340
Jabal Amel		20,000	525	250,000	585,000	784,000	74	14,000	0.70	114	27	38	9,897,650
Baalbeck - Hermel	BWE	23,000	1,898	550,000	1,250,000	400,000	255	18,000	0.78	190	72	12	11,912,560
Chamsine		18,000	1,320	250,000	33,481	295,869	82	15,000	0.83	61	65	14	3,026,000
Zahleh		35,000	480	200,000	459,000	918,000	90	14,000	0.40	90	56	73	7,327,000
Total		601,100	8,662	7,130,000	20,220,156	26,317,944	2,035	590,350	1.02				181,671,000
Average		33,394	481	396,111	1,189,421	1,548,114	113	34,726	1.04	132		69	

Reproduced from: Lyonnaise des Eaux Dumez, 1994a; Oger International, 1992

was seen to be of particular importance with regard to infrastructure projects and medium and long term planning. To quote from the LED report one last time:

Nobody has a medium term vision of the projects to be realised in one office. It is indispensable to determine investment guidelines for the coming year and starting from this master plan all actors act following the same objectives. (Lyonnaise des Eaux Dumez, 1994c, p. 31)

## 4.2 The Water Sector Reform

After the event which ravaged Lebanon, it appeared necessary to reorganise the water sector and update the laws and regulations that governed it ... the government was not able to continue subsidising the necessary investments in equipment.

This coincided with the objectives of the World Bank and other donors who were concerned that facilities and equipment they funded be managed and maintained in a manner assuring their reliability and sustainability. This is why a restructuring of the sector was necessary and the publication of law 221 happened in this framework. It defined the new tasks of the ministry and regrouped the 21 offices and some 200 water committees in four public water establishments covering all the Lebanese territories. (Catafago & Jaber, 2001a, p.26; Author's translation)

### 4.2.1 The Vision Driving the Reform

The theory and ideology behind the reform efforts in Lebanon conformed to the globally hegemonic discourse at the time. The ERP mentions the need for reorganisation of the administration more in passing, other reports, by government consultants and members of the IDC, point clearly towards the need for private sector involvement (see Lyonnaise des Eaux Dumez, 1994a; Van Eeghan, 1993a, 1993b; World Bank, 1991). The private sector potential was to be taken "into full account". The argument for this was based on the economic and social importance of the water sector and the failure of the administration.

Present sector organisations cannot cope with the present situation and cannot satisfactorily be made responsive to future needs. A sector reorganisation, with participation from the private sector, is urgently required to ensure sustainable operation and maintenance of rehabilitated assets.

Any sustainable development will be contingent upon satisfactory cost recovery. The dependency on budget allocations cannot be continued. Tariffs will have to be raised in pace with improved services to ensure adequate internal cash generation.

(Van Eeghan, 1993a, p. 23)

Private sector involvement and privatisation were presented as the logical solution. The World Bank suggested that consolidation of offices into regional entities and combining operational responsibility over water supply and sanitation was needed. Coupled with the commercialisation of these offices and the adoption of cost recovery principles, reforms would bring rehabilitation.<sup>1</sup>

<sup>1</sup>What is meant here is cost recovery from users — not through taxes — which cost are or need to be recovered and how much capital needs to be set aside for new investment, salary scales and other cost related issues, are not

The consolidation of offices was to “enable specialisation” and “ensure close attachments to the local level”.

Moreover the regional establishments “should be given a significant degree of autonomy and be required to operate on a commercial basis.” Management contracts was one aspect of private sector participation and while privatisation is not explicitly mentioned in the 1993 World Bank report the “policy approach on sector development” was to gauge “the scope for privatisation” (World Bank, 1991). These policy prescriptions corresponded with global and hegemonic neoliberal ideology of which the World Bank was and still is a main promoter. Especially during the 1990s the full privatisation (transfer of assets) of the sector was still a goal. The Lebanese experts and officials would echo this discourse.<sup>2</sup>

Very little effort, in fact virtually none, was expended in the various reports to explain why the policy prescriptions were actually suited for the specific context. Rather these were appended onto a chain of arguments about development and public health standards without causal or logical links made.

The chain of argument started with the inclusion of the water sector into the ERP because “the creation of satisfactory sanitary conditions are prerequisites for promoting economic development and for maintaining an acceptable public health standard”, (World Bank, 1991, p. 26). In the post war situation, with water related services being deficient, the poor would suffer most. As such “they would also benefit from proposed developments” (World Bank, 1991, p. 26). The root of this deficiency were overlapping responsibilities of the different agencies, the fragmentation of responsibilities for different aspects of water and waste water management, lack of funds and expertise, and other issues related to the dysfunctional state of the water administration and institutions (see Chapter 2). This argument posited the reforms geared towards privatisation as being beneficial for economic development and for the poor. The state’s incapability was the source of the sorry state of the sector, but why the answer to these problems was to be found in the outsourcing of service provision was never explained. The symptoms are accurately identified but no convincing diagnosis and even less an argument and causal link for a solution was presented. Neoliberal ideology is substituted for more empirical and rational analysis. Simply writing that more private sector involvement will be beneficial for economic development, for the poor, and for public health, does not make it so. What is presented as a logical argumentative sequence is essentially an ideological slight of hand.

As was shown earlier, what was missing from these accounts was an analysis of the reasons for the failure of the administration beyond the listing of inefficiencies. Why the administration and “present sector organisation” could not “satisfactorily be made responsive to future needs” (World Bank 1991) was not elaborated. In the same vein, no possible alternative approaches to water resource management were considered or even thought possible. As such there was no alternative (or rather seemed not to be).

---

addressed yet these are essential aspects of the cost and operating capabilities of the offices. The social impact of such an approach was simply assumed to be beneficial, but not assessed until 2002 in an unpublished report and in 2009 in a World Bank study (see Chapter 5).

<sup>2</sup>A 1998 conference at the University of Kaslik brought together a number of Lebanese experts among them one of the authors of the first reform proposal (Hyam Mallat), Director General of the Exploitation Department (Bassam Jaber), the director of the Litani River Authority at the time (Fadi Comair) and the Minister (Elie Hobeika). All endorsed the approach (see USEK, 1998).

## 4.2.2 Water Sector Administrative Reform

The need for reform was seen by all the major policy setting actors alike. The situation — where purportedly no collective and coherent management of water supply, waste water disposal, and even irrigation was possible — was untenable. Administrative reform that would allow the market to drive water resource management was seen as the only way to fix the water sector, certainly for the World Bank. The Lebanese actors were more interested in the rehabilitation of infrastructure. This was true for the reconstruction in general and also in the water sector.

### 4.2.2.1 The Beginnings of the Reform

A series of decrees was passed in the years 1993–1994 to regularise the ministry’s relationship to water committees and the commissions that formed during the war. The water commissions of the north received decrees making them water offices and thus binding them to the ministry’s oversight. The water offices for Akkar and Koura were decreed and replaced the commissions that had been under the tutelage of the Tripoli water office. The commissions responsible for Batroun, Bcharre, and Zgharta were also made water offices (see Figure 4.1). In effect, this was an uncontested consolidation of state power and as such a rescaling of water governance because these had now to abide by the ministry’s budgetary control.

The groundwork for sector restructuring was laid with “the ERRP which initiated reforms in almost all the sectors through studies. These have resulted in enactment of appropriate laws in the respective sectors” (World Bank, 2002, p.5). The more substantial reform aimed at restructuring the whole administration was initiated in 1994 when the CDR, with funds from the World Bank, commissioned a Lebanese consultant to prepare a water management master plan. The outcome of this project would be a proposal for a reform of the sector administration. As Catafago and Jaber (2001b) describe in the quote above, the reform was the result of the interaction between the Lebanese and international development actors led by the World Bank. The reform process and negotiations leading to the law had started early on and included a number of failed attempts and consequent rewritings of the law proposal. The sector structure that was to be framed by the new law had to be redesigned to find the approval of the Lebanese parliament and the elites it represents.

### 4.2.2.2 Administrative Reform Imposed

All interviewees asked about the subject agreed unequivocally that the World Bank was driving the reform. The World Bank’s threat to withdraw its support and the associated loan for the “Coastal Pollution Control and Water Supply Project” served to pressure parliament into the ratification of the proposed reforms. When the law encountered opposition in parliament and ratification was delayed the World Bank eventually withdrew its loan offer. As a consequence the related EIB loan was cancelled and associated Japanese-funded project delayed. Of the total project volume only the Japanese component survived, overall about US\$ 180 million of project financing was withdrawn because of the failure of parliament to approve the law.

Figure 4.1: Water Offices



### Administrative Boundaries of the Water Offices before 2000

The World Bank's actions had the support of the aid and development actors. The *Daily Star* points to one EU official as saying the reform of the bureaucracy “was a prerequisite for the various donor banks to hand out the money”. The same official is on the record as pointing out the importance of the World Bank: “Proceeding without the World Bank is not viable: one cannot build half treatment works. Other organisations follow the lead of the World Bank. If the bank is happy, they're happy” (The Daily Star, 1998a).

The conditions were in concordance with the wishes and conditions proposed by the other donors, write Catafago and Jaber (Catafago & Jaber, 2001a). They follow up with a list that groups and exemplifies the weight of the most important donors in the water sector, and name those that were classified as being part of the core of the IDC. Like so many of the experts interviewed, Catafago and Jaber express their understanding and justification for the actions and procedures of the international development actors. “This is understandable”, they write, “as all the donors wish that the equipment (infrastructure) they would finance be well maintained and managed to assure their sustainability” (Catafago & Jaber, 2001a, p. 42).

Minister of State for Finances, Fouad Saniora, expressed the government’s view about the issue, quoted in the *Daily Star* (The Daily Star, 1998a): “We can reapply for the loan but it will take a lot of time. We’ve already compromised our credibility.” Like Catafago and Jaber (2001a) he expresses an acceptance of the actions, preconditions and procedures of the international development actors and the importance to remain credible by meeting their requirements. This acceptance of conditionalities, procedures and oversight dictated by the IDC shows that the pressure applied by the World Bank did show a considerable measure of success. It is also a crucial element in the construction of the hegemony of the market environmentalist discourse. As for the Lebanese, eventually it was felt that there was no alternative but to give in to the Bank’s demands.

The World Bank disciplined the Lebanese government and parliament by withdrawing its loan and, with that, its support for the coastal pollution project in an attempt to impose reform after the first reform draft was not approved by parliament in time. Under the coercive pressure of the rapidly rising debt the new government relaunched reform efforts. The World Bank had made clear that reform was not circumventable if Bank support was to be maintained. As I argue below, the result was that the draft reform law was reduced to the lowest common denominator that the different actors could agree on. This in turn shows the limits of the World Bank’s and development community’s coercive power: The reform was not implemented as envisioned and advocated. Instead it was born out of the cross-breeding of neoliberal policy templates and local political considerations.

#### 4.2.2.3 A Chronology of the Reform

In 1996 reform efforts began to become more concrete. In March of this year the Ministry of Hydraulic and Electrical Resources and the Office of Administrative Reform had agreed on the major lines of the reform during consultations which included the World Bank and other international donors (Catafago & Jaber, 2001b). It was agreed that administrative reform was more important than legal reform. “This would give the tools to manage the sector” (Interview Mallat 2012) as only then would it be useful to worry about the legal reform. The Israeli aggression in April and May 1996 and subsequent parliamentary elections delayed the process until December 1996 when decrees 9626–9631 were passed legally creating five regional water authorities and reducing the role of the Litani River Authority.

In early 1997 plans for a large international donor-funded project started taking shape. The World Bank negotiated a loan agreement for the Lebanese Coastal Pollution Control and Water Supply project with the Lebanese government. The World Bank loan of about US\$ 53 million complemented loans by the European Investment Bank (about US\$ 62 million), the European Union (US\$ 17 million) and the largest share from Japan (US\$ 123 million). The Lebanese government was set to contribute US\$ 53 million or about 17 percent of a total of US\$ 308 million.

The project contained a number of components, the most cost intensive was waste water and water supply infrastructure. Less cost intensive but seen as equally important were the technical assistance, management, and technical training, as well as the sector reform components, even though these were less tangible. The loan by the World Bank and with that the whole project was conditioned on the presentation of the draft law for the sector reform to parliament (World Bank 2001).

The draft was approved by the Council of Ministers in the summer of 1998 (Catafago and Jaber 2001a) but it was not presented to parliament for ratification. As a result the World Bank — followed by the EIB — made good on its threat and withdrew its loan due to the delays. With the election of a new president the government changed, interrupting the law-making process. Subsequently this first law proposal was opposed within the parliamentary committees to delay it even further. It took the new government of Salim el Hoss until October 1999 to forward a new proposal to parliament.

Law 221 was passed in May of 2000 and would form the beginning of the reform. It was amended in August of the same year reducing the number of regional water establishments from originally five to four (Law 241/2000). Law 247 integrated the Ministry of Hydraulic and Electrical Resources (MHER) with the Ministry for Petroleum into the Ministry of Energy and Water (MEW) and restructured its internal organisation. One year later Law 377 delegated the responsibility for waste water management to the ministry and the regional water establishments. With this the administrative reform was concluded in terms of legislation and needed to be instituted.

The regional water establishment started up their operations, from the merger of the water offices in the years that followed. The integration of the water offices was made effective by late 2001/early 2002. Interim directors were nominated for three of four water establishments by 2002 but it wasn't until 2005 that the four Establishments received their official by-laws, decreed by the Council of Ministers in 2005. The position of director of the Bekaa Water Establishment (BWE) changed often because of political wrangling over the nomination. Of those appointed none were in office for very long until 2011 when the position was filled after a long vacancy.

With the by-laws ratified by the government, reform efforts focused on the commercialisation of the utilities. The Israeli attack in 2006 delayed these efforts anew. The priorities and energies of the political establishment shifted to the political fallout from the war and the damages incurred. Damages to water infrastructure alone were in the range of US\$ 100 million (see Zeitoun et al. 2012a). Especially the South Lebanon Water Establishment (SLWE) had to deal with extensive damages to its infrastructure, some 50 water towers were destroyed or damaged, transmission lines were broken and electricity was lacking due to the extensive damages to transformers and the transmission network (SLWE 2007). The SLWE personnel and its director would operate in crisis mode for the remainder of the year and into 2007 (Interview Nizzam 2011).

The war did not only affect the SLWE but also the other establishments. Much of the southern suburbs of Beirut were destroyed. Throughout the country transportation infrastructure was destroyed and electricity blackouts were common. But the war also inaugurated a new period in the reform process. Donor conferences subsequent to the war brought an increase in international donor and development agencies involvement in the water sector. GTZ and USAID, but also the European Union through various organisations funded technical assistance projects that aimed at improving management structures in the ministry and the regional water establishments (see Chapter 3).

### 4.2.3 Water Sector Legal Reform: a new Water Law?

The legal reform was launched almost a decade after the administrative reform efforts began, when AFD funded a trial public private partnership project for the (assisted) management of the Tripoli water office (not the regional water establishment of the north). In 2003 Ondeo-Liban, a subsidiary of Ondeo who in turn is part of the SUEZ Environment Group was commissioned to operate and reform/commercialise the Tripoli water authority and improve water supply services in the city. Two narratives exist about this first trial at larger-scale private-sector involvement in water supply services. The Lebanese officials tend to laud it as a resounding success (see Comair, 2010b) while the private company Ondeo and the French development agency AFD have a more qualified and negative outlook on the contract outcome. Ondeo was fined for delays that according to the CEO of the company were due to the Lebanese administration's inefficiencies and bureaucratic red tape (Interview Yabroudi 2010). Whatever the case, an option to renew the contract and extend the area of operation was declined by the private company (Yousfi, 2011, p.223-240). The problems with this cooperation showed early on and became glaringly obvious by the end of the contract period in 2007. For all involved in the water sector, but especially the international donors, it highlighted the need for successful legal reform, specifically with the view to regulate the various forms of private and public partnerships.

This aspect of the reform project focused on legal issues and laws regulating surface and groundwater use and protection, water rights, and related issues. It was important to the IDC because its goal was the regularisation of private sector involvement. With the successful passage of Law 221 and the promise of improvements in the administration AFD pushed the legal reform and funded a project to that end which brought together Lebanese and French experts.

A first draft of the "Code de l'eau" was produced in 2005, but like the administrative reform process, it got bogged down by the events that followed. The war and the subsequent political confrontation delayed the legislative process in general, thus, like so many other law projects, the "Code de l'eau" project remained dormant until late 2011. AFD reinvigorated the project when it conditioned a loan (of US\$ 70 million coupled to a EIB loan of about the same amount) for the Keserwan waste water project to the presentation of a draft legal reform law to the Council of Ministers and later the parliament. It borders on irony that the Keserwan waste water project was now used again as a lever to implement the wishes of international development organisations. AFD in this case deployed the same disciplining tactics that were used to make the administrative reform happen.

As a result a revised version of this law was presented to the COM in early 2013. The proposal was rejected without much fanfare. The process was kept quiet on purpose; the proposed law was kept secret and circulated only among a few experts (Interview Freiha 2012). Nothing was mentioned in the media. With the resignation of the prime minister and the dissolution of his cabinet in May of 2013 (acting in an interim function in the time that followed until the formation of a new government), and the political deadlock over the formation of a new government, the law project was put on hold again. The legal code governing the water sector and water use thus remains based on the framework laid with the Medjelle, the French mandate, and the laws passed before the war, with only minor amendments during the post-war period.

#### 4.2.4 The Reform between the IDC and the Lebanese State : a Juxtaposition of an early Draft and Law 221

The reform did not bring the results desired by the World Bank. What started as an attempt to decentralise the water resource management process and to promote the entry of the private sector into the process ended up changing very little in terms of decision making structures. It reduced the number of water offices to five and then four establishments which de-facto remain virtually as dependent on the ministry and the government as the water offices were before them. The political elite used the political process to change the proposed law draft so that the decision-making mechanisms and the related channels of power remained nearly unchanged, the reform was largely neutralised before the law was passed. Its implementation as noted by the authors of the NWSS (see section below) was still incomplete in 2012 and it failed to bring the desired improvements to the water sector. This is not to say that if fully implemented the reform could have succeeded, much rather the failure to fully take into consideration Lebanese politics and modes of power division in the design of the reform is at the core of its failure.

The reform process and the structure it produced can be understood by examining an earlier draft law and how it was changed and negotiated to result in Law 221 and its later amendments (Law 221 and the draft law from 1998 are presented in Annex 2 and 3). This analysis reveals the different logics according to which the various actors operate. On the one hand the neoliberal logic is propagated by international development actors and versions of it are repeated by Lebanese experts. On the other hand, the elites and their representatives in the administrations take a pragmatic approach, in part with a view to transboundary issues with the Israeli state and more importantly to conserve their power, which in this case translates in the control or influence over the diverse parts/components of the water sector.

##### 4.2.4.1 Global Best Practices and Good Governance versus the Concentration of Decision-making

One of the major goals of the law was the administrative decentralisation of the water sector at least for the international development agencies. It was initially designed, as one interviewee called it, to be a “three-pillar system. But that never happened here” (Interview Giantris 2013). The three-pillar system the consultant refers to is the separation of oversight and regulation, legislation, and operation. Instead “they play a game here where everything is run through the Council of Ministers” making it instead a “one pillar system” (Interview Giantris 2013).

The first drafts of the reform law were modelled on global best practices. The Lebanese consultant recalls how his team “read all the water laws in the world, travelled to the US, to Germany, and to England to learn about the restructuring of the water sector” (Interview Majdelani 2012). In the first iteration of the law proposal, the consultant had included an oversight body inspired by the British Office of Water Services. Referred to as “the watchdog”, the water services regulation authority was created in 1989 “when the water and sewerage industry in England and Wales was privatised” (OFWAT, 2010). This body was to be independent of both government and the water establishments. Its role was the auditing, regulation and control of the autonomous water establishments that were to be created. The water establishments would submit business plans for review and approval. Within these parameters they would be free to set tariffs and define their own personnel policy, meaning they would be free to hire and fire as they saw fit. They would also be required to do the necessary studies and take up planning responsibilities with regards to

the extension of infrastructure within the framework of the national water resource management policy set by the ministry.

The aim of this oversight body was to “cut the political relations, the influence of the politicians on the water sector” (Interview Majdelani 2012) or as Kunigk (1999) quotes the same consultant 15 years earlier, “the point of the reform is to get politics out of the system” (p.19). The oversight body was one important aspect of this attempt at curtailing political influence over the water authorities. But the proposal was already altered in an early draft from 1998 (World Bank, 1998); in this version the oversight board was integrated into the ministry. It was subject to the ministry’s control and supervision and thus robbed of its independent character. The consultant attributed this to the interference of politicians and their parliamentary representatives that feared the loss of influence in the water administration (Interview Majdelani 2012).

Law 221 discusses the responsibilities of the MHER in the second article directly, these are summed up in 14 paragraphs compared to 27 in the earlier law proposal (World Bank, 1998). The new law combines some of the paragraphs of the 1998 draft regarding management of water resources and it omits all mention of flood protection. It explicitly mentions that investment heavy “large water installations” such as dams, tunnels and even water networks shall be designed, studied, implemented and, very importantly, operated by the MHER. Like the elimination of the three-pillar system, this change is an attempt to retain power at the ministry. It secures (or at least attempts to secure) control over large projects and associated funds for the ministry, and with that the minister and general directors at the ministry. Dams for example always require costly maintenance, and convey a certain amount of prestige. Dams are named after politicians for a reason, as the dam in Keserwan is named after and was inaugurated by former president Emile Lahoud.

#### 4.2.4.2 The Waste Water Sector and Local Politics

The juxtaposition of this earlier draft and Law 221 from the year 2000 shows other important alterations. After the formation of the new government in late 1998 the law project was reexamined and approved by the Council of Ministers in October 1999 and submitted to parliament. One major alteration introduced by the government of Salim el Hoss was the deletion of the proposed transfer of waste water management responsibilities from the municipalities to the new regional water establishments (Catafago & Jaber, 2001a; Interview Karam 2012). This was in line with the new government’s attempt to strengthen municipalities; local government, it was hoped, would render the political process more accountable. The government which was formed of numerous politicians that had disagreed and opposed Rafik Hariri’s vision of the primacy of economic reconstruction were eager to strengthen state structures at the base. The municipalities, which had in 1998 seen their first elections in over 30 years, seemed to be promising candidates to begin the reconstruction of the state administration. The municipalities would not keep this responsibility for very long. As they continued to suffer from a lack of funds and expertise the situation was “redressed” in 2001 by the new Hariri government and waste water management was made the purview of the ministry and the RWEs with Law 377.<sup>3</sup>

---

<sup>3</sup>A later consultation by the Ministry of Justice (2003) clarifies the ownership over existing collector networks, accordingly these remain the municipalities ownership but are operated by the RWEs.

#### 4.2.4.3 Delaying Decisions as Strategy

Discussions and negotiations in the parliamentary committees brought numerous other changes to the project. One of these changes would have long-lasting effects. Unlike in the draft law from 1998 in law 221 the RWEs were not subjected to commercial law but were charged to define their own by-laws that would later be approved by the COM (Catafago & Jaber, 2001a). At the time this served to delay final decision on the organisation and management of the RWEs and the water offices that were to be incorporated. The questions about the relationships between old offices and the RWEs were not answered. It was relatively clear that these would become subsidiary offices but the new positions of the employees, managers, and directors of the water offices in the hierarchy of the RWEs and other considerations defining actual operations and management on the ground remained open for further negotiations. The directors of the RWEs were appointed almost two years after the law was passed and only as interim directors.

Insecurity regarding changes in employment structures among the staff remained high. On numerous occasions water services were interrupted for short periods, or employees of the water offices went on strike. In part the reason was the arrears on salaries and the bad working conditions but the planned restructuring of the sector and privatisation plans also created insecurity among the workers. Fears of mass layoffs, especially of contracted staff (the majority of the staff in most offices) who had no job security beyond the guarantees of their local *Zu'ama* was certainly one aspect fuelling the recurring strikes of the water offices' employees in 1999. The strikes were not surprisingly lead by the Bekaa water workers union which was the office with the highest number of employees (see Honeine, 2000; L'Orient le Jour, 2001a, 2001b; The Daily Star, 1999a, 1999b, 1999c, 2000b, 2001, 2002). Delaying such crucial decisions for a later date reduced opposition to the reform on all levels and bought time for negotiations. Describing the dynamics before the implementation of the reform, one consultant explained how the work force increased rapidly in some water committees in the Bekaa and the Bekaa-Hermel water office only a short time before the integration of the offices and water committees into the BWE in 2001–2002 (Interview Yazbek 2011).

#### 4.2.4.4 The Private Sector Expelled

The notion of privatisation and private sector participation, one of the driving motives of the reform, would be watered down drastically in Law 221. All references to the private sector were erased (Catafago & Jaber, 2001a). For example, the second article of the 1998 draft defining the general water resource management principles guiding this law was omitted. The article contained two paragraphs framing the economic nature of the law:

- Article 2 paragraph 2 of the 1998 draft read: Stressing the concept of economic return relative to the protection, development, allocation, and distribution of water resources in accordance with the needs of society and economic activity.
- Article 2 paragraph 4 of the 1998 draft read: Strengthening and encouraging private sector participation in the provision of services.

Of seven (short) paragraphs only two were directly concerned with economic aspects of management, related to the economic value of water and private sector participation, the other five established ecological concerns, quality of service and institutional change. Other articles defining

the role of the new water establishments and emphasising the potential involvement of the private sector in their operations were also deleted (see Annex 2 and 3).

There were two reasons for these deletions. One was that a law governing issues and procedures regarding privatisation was being prepared in parallel to the water reform law. Privatisation was envisioned for numerous sectors so that it made sense to produce a framework law for privatisation. Such a law, Law 228, was signed only two days after Law 221 on May 31, 2000. Rendering the issue of privatisation more abstract and generic was a convenient way to displace the issue of privatisation in the water sector specifically and avoid public discussion of it for this sector. But even the privatisation law saw notable resistance. It was unsuccessfully challenged in the constitutional council (The Daily Star, 2000a). According to Verdeil (2006) writing on the electricity sector the disputes about privatisation did not follow the lines of political divisions, but were more complex and related to the interest of the individual *Zu'ama* and what they had to lose in this reorganisation. Notwithstanding, the final form of the law, privatisation and commercialisation remained the primary objective of the reform under Hoss's government.

The minister at the time, Sleiman Traboulsi, stated the importance of privatisation and private sector participation in a presentation at a Lebanese engineering faculty conference, as did a number of Lebanese water experts from the administration and from the private sector (USJ, 2000). The same was true for the new government after the election of 2000. This is confirmed by the fact that a joint venture including one of the country's largest banks, the Société Générale de Banque au Liban (SGBL) was charged to study the potential for privatisation in the sector in 2001.

#### 4.2.4.5 Transboundary Water Security and the Changes to the Law

The second reason being forwarded against privatisation was related to security and transboundary issues. One of the consultants puts privatisation in the context of Israeli designs for south Lebanon:

There is this apprehension that if the private sector is to be integrated ferocious controls would be needed to avoid foreign companies coming and slowly taking over control of the water sector in Lebanon. Given all that happens in the Middle East and given that water is a strategic resource in this battle, it is to prevent a foreign appropriation of water resources by way of these companies. One has to recognise that one of the essential points of the negotiations in the Middle East is the question of water. It needs to be addressed by Lebanon, Palestine, Syria, Jordan and Israel. If no solution to this question is found it could be said that the negotiations are not likely to succeed.”  
(Interview Mallat 2012)

The transboundary issue with Israel remains important and was very present at the time of the negotiations regarding the reform. Israel still occupied the south and the Hasbani from its source. The Litani and Israel designs for it, past and present, as well as fears and rumours of Israeli theft of Lebanese water appeared in the newspapers regularly (see Al Mashnouk, 1995; Andraos, 1998; Annahar, 1996, 2002; Assafir, 2002; Ayyash, 1996; Haddad, 1995 for some examples). Though the theft narrative was often confused, and as concerns the Litani baseless, Israel had indeed captured all of the flows from the Hasbani since 1978 (Zeitoun et al. 2012a). Water was and remains linked to security and becomes a topic that holds political significance. The World Bank was part of the controversy. It was seen as colluding with Israel because it encouraged ideas that Lebanon should sell water to its neighbours including Israel (Ayyash, 1996).

A World Bank source uncovered details of the position taken by the manager of the Middle East agriculture and water resource management unit, John Hayward, where he called on Lebanon to sell its “wasted” waters to its neighbours including Israel. In the details was the fact that this was advised by the World Bank’s CEO James Wolfenson. (Author’s translation, Ayyash, 1996)

At the very least the article shows how the issue was perceived in Lebanon. Kunigk (1999) lays this controversy out with a little more detail. She writes that former minister Elie Hobeika believed that the World Bank would require international sharing of water as a condition for financing dams. The World Bank on the other hand denied any such conditionalities were linked to the Greater Beirut Water Supply Project.<sup>4</sup> Once the issue of Israeli designs for water was linked to the question of privatisation it certainly became a topic that politicians would rather not be associated with. “Any other policy would prove to be political suicide,” Kunigk assesses, perhaps a little too uncritically (1999, p.25).

The transboundary issue remains a politically sensitive topic and the question of water in the south is often linked to security issues. Despite the importance that is given to transboundary water issues very little strategic efforts have been deployed by successive governments and the water sector administration to address the unfair and highly unequal use of the waters of the Upper Jordan.<sup>5</sup> An important indicator of the priorities of successive governments is the failure to produce robust hydrogeological data in general and specifically regarding transboundary flows to the south. And though this would have proven to be difficult before the Israeli retreat in 2000, the fact that at least two project proposals that could have helped the government produce some data were rejected (Interview Salame 2011), and that the government itself has made no effort in this regard, indicates that the issue was not considered especially important.

This in turn suggests that under the mantle of transboundary security concerns the changes to the law also served other considerations. As was suggested above, the opposition to privatisation was not a reflection of the political camps and the reservations voiced under the mantle of transboundary water security, though earnest (at least by some of the advocates) this argument also served as opportunity to voice opposition without putting too much strain on political alliances.

Furthermore, the transboundary issue can (with the benefit of hindsight) also be looked at as a convenient way to shroud the water sector (or at least aspects of it) in secrecy. An important and obvious change that was introduced in Law 221 as compared to the earlier proposal was the omission of the requirement to publish hydrogeological and hydrometric data (See Annex 2 and 3). Where three paragraphs were concerned with the publication of data and the provision of information

---

<sup>4</sup>The project was already under discussion since the mid 1990s. Plans existed from before the war, but it took another 15 years for one version of the project to be launched in 2011. Earlier versions were experimenting with Build-Operate-Transfer designs in the hope that the private sector could carry the cost of the project, but the risks associated with the project and the water sector seem to have detracted investors from bidding.

<sup>5</sup>The 2002 Wazzani incident that had Israel threaten to go to war over Lebanese plans to build a pumping station and withdraw water from the liberated Wazzani Springs does not run counter to this argument. It in fact reinforces it. While the incident showed the importance of the transboundary water issue with Israel and it did evoke a diplomatic response from the Lebanese government, which built the pumping station, no efforts were made to determine and eventually secure its reasonable and equitable share according to International water law: 1) Action never went beyond the reports produced in this context, the government or the administration never attempted to put in place a more broad based strategy, that involves a legal strategy, a public relations strategy, and a diplomatic strategy based on robust hydrogeological investigations to challenge Israeli hegemony in the basin; 2) the Lebanese were not prepared for an Israeli reaction when the project was initiated; 3. Israeli threats were aimed less at preventing the building of the pumping station but served to establish limits to Lebanese action and especially unilateral Lebanese development of these waters. (See Zeitoun, Eid-Sabbagh, Dajani & Talhami, 2012b and Maternowski, 2006 for a more detailed argument) 4) The Wazzani pumping station still operates at reduced capacity since and its potential was never fully used.

regarding projects and laws by the ministry in the draft of 1998, the new law reduced this to one paragraph regarding public relations and the provision of “necessary” information concerning water resources and “adequate orientation toward rational usage” (Law 221 Annex 2) and information remains very difficult to obtain.

As with the issue of privatisation, the resistance to give access to information and hydrogeological and hydrometric data is often explained with reference to the transboundary problems and the danger of Israeli designs on Lebanese water resources. Yet the spuriousness of these arguments are glaring because the quality of Israeli information on water resources along the Jordan valley are by far superior than the available Lebanese data (see Zeitoun et al., 2012a). It is not difficult to imagine that the extensive Israeli intelligence network in Lebanon would have been able to obtain data from the administration.<sup>6</sup> Thus another interpretation is that access and control over data was seen as a resource from which to draw power, and if that was not intentional, the omission of any duty to publish data in the final law certainly made it a power resource. Power not necessarily in relation to the RWEs but to the public and other bodies of the Lebanese state’s administration. Access to data and reports from the ministry and the RWEs in 2013 remains difficult as they are treated as valued commodity.<sup>7</sup> The Jannah Dam controversy described earlier (see Section 3.3.1.2) is a good example, the only information available was put online by the BGR while the reports it produced for distribution by the CDR gather dust in an office (Interview Margane 2014). Similarly, the ministry has not published any of its findings or reports regarding the issue, even as (or because) it flaunts their superiority in public (see p. 122). Transboundary security issues turn out to be only one reason why this secrecy is maintained, internal political issues also play an important role.

#### 4.2.5 Legal Reform Attempts

It has been established that the final administrative reform law turned out different than expected by the international development actors. A number of the desired outcomes were not achieved, accountability remained elusive, as did transparency. Considerations regarding the competition over power, control, and access to the water offices and establishments were important in producing the final administrative reform law. A similar consideration can be observed when comparing the different versions of the drafts of the “code de l’eau”.

A first draft was produced in French and brings together best practices and Lebanese specificities. The lead was taken by a French team which consisted of legal experts with international experience producing water laws. Lebanese representatives included a law professor, a lawyer

---

<sup>6</sup>Reports that were supposedly treated as secret and not accessible to the public were still obtained by some academics (Alles (2007); K. Makdisi (2007); Zeitoun et al. (2012a)) and could be found at the library of a research institute, but requests for information to the Office of the Prime Minister were denied on the basis of the supposed sensitivity of the data. Data regarding the flow of the Hasbani (the river crossing into Israel) were difficult to obtain and then contained only a data set for six years of measurement, whereas data collected by the Hydrological Survey of Israel regarding Hasbani flows after the border that is 22 km after its source date back to the 1940s and are continuous since.

Regarding Israeli intelligence capacity, between 2009 and 2013 some 200 inhabitants of Lebanon acting as Israeli agents providing intelligence to Israeli security services were uncovered by Lebanese internal security services. It is also known that Israel had an extensive information network during the war that enabled it to assassinate political and military targets.

<sup>7</sup>In his PhD thesis modelling the flows of the Hasbani basin the son of Fadi Comair the General Director of the Department for Hydraulic and Electrical Resources comments on the difficulties of obtaining data from the Litani River Authority (Comair 2012, p. 155–156). This is from a person that could not be much better connected in terms of the water sector administration in Lebanon.

and former director of the Beirut water office, as well as other officials from the administration (Interview Mahmoud Baroud 2013).

The French draft was the basis for a next draft in Arabic. This draft saw numerous smaller changes but was structured exactly as the first French draft. The authors also included officials from the Lebanese administration, some of them the same as before — still under guidance from French experts and still financed by AFD.

The last draft which was forwarded to the COM in early 2013 departed more substantially from the earlier French and the Arabic drafts in content and structure. Its author was contracted by the ministry, on behalf of the minister himself, and reflects the vision of the minister who commissioned it (Gebran Bassil), while the other drafts reflect a more anodyne expert approach and vision.

The water law resuscitates the idea of a National Water Council (NWC), though with a different function than originally envisioned for the administrative reform, depending on the draft the responsibilities of this body would vary. Two important changes related to the NWC in the various drafts illustrate the same struggle for access to and control over administrative resources and thus power. These relate to the composition of the council and its responsibilities. Regarding the changes in the law proposed in 2013 one informed observer points to the power dynamics and commented that minister Bassil “wants to have the ministry for himself forever” (Interview Abd el Al 2013). The comment was made in reference to the draft law the minister submitted to the Council of Ministers in reaction to French conditions attached to loan for the Keserwan waste water management project. It reflects the minister’s intentions behind the changes that were introduced and the fact that the ministry has become a coveted administrative assets with gas reserves confirmed off the coast and promising substantial revenues.

Table 4.2 presents the articles regarding the NWC in the different drafts. With regard to the law this concentration of power becomes visible in the first paragraph of Article 2.1.1 in the French version as compared to Article 16 in the Arabic version and Article 15–17 in the last version. In both the French and the Arabic the NWC is to be presided by the President of the COM (the Prime Minister). It is made up of the ministers concerned by matters of water resources, the directors of the water establishments, and qualified persons, municipality representatives, professionals, NGO representatives, and civil society representatives. Specific decision making mechanisms were not suggested and would need to be agreed and ratified by decree of the COM. The logic behind this article is to make water policy a national issue and broaden it beyond the ministry and its experts.

In the last draft the council is presided over by the Minister of Water and Energy; the Prime Minister is nowhere mentioned. The council is made up only of members that are lower in rank than the minister. Half come from the water sector, the others are general directors from different ministries. Effectively the council becomes a tool of the ministry and the minister. Articles 17 and 18 define decision making functions in the council and stipulate that decisions are made by vote with an absolute majority sufficient for decisions to be taken. With half of the council members being subordinates of the minister, power becomes concentrated in the person of the minister.<sup>8</sup> It is reasonable to further assume that any outside expert would be vetted by the ministry in order to potentially cement the minister’s power in the council.

---

<sup>8</sup>Even where general directors are loyal to political leaders opposed to the minister’s faction, defying the minister would in all likelihood produce a political crisis. The balance of power at the larger political level would have to be strongly against the minister for such a scenario to take place.

Such a dynamic was observed when Interior Minister Ziad Baroud saw his requests to the General of the ISF denied on numerous occasions. This was possible because said security official had the unwavering support of the March 14 factions while the Interior Minister was part of the faction of the President, who did not have the power to back his minister.

Table 4.2: Comparison of Water Law Drafts

French Draft of 10/12/2005	Arabic Draft (funded by AFD)	Draft proposed in 2013
<p>Section 2.1.1</p> <p>The National Water Council A National Water Council is created attached to the Presidency of the Council of Ministers.</p> <p>The NWC is presided by the President of the Council of Ministers and is composed by the ministers concerned by water, the general directors of the Public Water Establishments, qualified persons and representatives of the municipalities as well as representatives of the professions, including NGO representatives, related to water.</p> <p>The NWC contributes to the definitions of the general objectives and orientations of national water policy. It is consulted namely on:</p> <p>The priorities for the objectives and implement the guidelines following: The general master plan for water and basin master plans; planning and water division and re-partition projects of national or regional importance; the orientations and principal decision related to the public services of water supply and waste water treatment;</p>	<p>Article 13</p> <p>The National Water Council A National Water Council is created attached to the Presidency of the Council of Ministers.</p> <p>The NWC is presided by the President of the Council of Ministers and is composed by the ministers concerned by water, the general directors of the Public Water Establishments, qualified persons and representatives of the municipalities as well as representatives of the professions, including NGO representatives, related to water.</p> <p>The NWC contributes to the definitions of the general objectives and orientations of national water policy. It is consulted namely on:</p> <p>The priorities for the objectives and implement the guidelines following: The general master plan for water and basin master plans; planning and water division and re-partition projects of national or regional importance;</p> <p>the issues mentioned in article 63 of the present law;</p>	<p>Article 15</p> <p>The National Water Council a) this law stipulates the creation of a body named the “National Water Council” it has the status of a moral person and consists of: The Minister of Energy and Water – president General Director of Energy and Hydraulic Resources from the MEW– member General Directors/Presidents of the boards of the Public Water Establishments – members President of the board of the LRA – member General Director of the Ministry of Agriculture – member General Director form the MOF – member General Director of the MPH – member</p> <p>General Director of the MOE – member General Director of Urban Planning of the MPW – member</p> <p>b) The NWC shall choose from among its members a vice president and a secretary.</p> <p>c) It can select representatives from civil society that deal with hydraulic tasks on the basis of expertise and competence and efficiency in this area and are appointed under a decree issued by the council of ministers.</p> <p>d) Non governmental representatives serve a two year term that can be renewed once.</p> <p>Article 16</p> <p>The National Water Council participates in the following subjects:</p>

Table 4.2: Comparison of Water Law Drafts

French Draft of 10/12/2005	Arabic Draft (funded by AFD)	Draft proposed in 2013
<p>tariffs for water supply and distribution tax projects and contributions of any kind related to water resource management or potentially having a direct impact on this management;</p> <p>law and regulation projects related to water resource management;</p> <p>the issues mentioned in article 5.7.2 of the present law;</p> <p>The strategies and measures envisioned by the public authorities in the domains of environmental protection, forest management, agricultural and pastoral activities, fishery, industry, energy, urban planning, tourism, telecommunications infrastructure, when they are likely to affect water resource management;</p> <p>all question concerning water that the President of the Council of Ministers or the minister charged with water deem useful and submit to the NWC, this not being the case on the demand of another minister.</p> <p>On the request of the President of the Council of Ministers or the Minister of Energy and Water the NWC may formulate proposals</p>	<p>the strategies and measures envisioned by the public authorities in the domains of environmental protection, forest management, agricultural and pastoral activities, fishery, industry, energy, urban planning, tourism, telecommunications infrastructure, when they are likely to affect water resource management;</p> <p>All question concerning water that the President of the Council of Ministers or the minister charged with water deem useful and submit to the NWC, this not being the case on the demand of another minister;</p> <p>On the request of the President of the Council of Ministers or the Minister of Energy and Water the NWC may formulate proposals relating to research, teaching, training and information in the field of water and, in a general manner, all proposals that may improve or facilitate the management of this resource.</p> <p>A decree taken by the council of ministers upon the request of the President of the NWC will define the modalities, the composition, the organisation and the functioning of the national water council.</p>	<ol style="list-style-type: none"> <li>1. Setting a comprehensive plan to benefit/use water resources in all Lebanese regions.</li> <li>2. Decide on a policy to develop and use the water resources in all different usages.</li> <li>3. Decide on plan and programs aiming to regulate the use of water and prohibit its waste and minimise consumption.</li> <li>4. Projects regulating the distribution of water of national or regional importance.</li> <li>5. Making sure that the state is capable of financing the plans and projects and setting the financing program and defining the sources from the treasury or from outside.</li> <li>6. Orientations and decisions that are chosen by the public authorities in the course of environmental protection, tourism, industry, energy, management of forestry, and agricultural activities, pastoral, fishery, urban planning, and roads when those affect the management of water resources.</li> <li>7. Define the priorities of projects and their regional distribution.</li> <li>8. All subjects concerning water and the minister of energy and water considers beneficial to suggest to the council will be addressed.</li> <li>9. Regulating periodical reports on the activities of the council and the progress of work therein. Upon the request of the minister of energy and water the NWC may prepare suggestions relating research, education, training, information in the field of water and in general all suggestion that may improve or facilitate the management of this resource.</li> </ol>

Table 4.2: Comparison of Water Law Drafts

French Draft of 10/12/2005	Arabic Draft (funded by AFD)	Draft proposed in 2013
<p>relating to research, teaching, training and information in the field of water and, in a general manner, all suggestions/proposals that may improve or facilitate the management of this resource. A decree taken by the Council of Ministers upon the request of the President of the NWC will define the modalities, the composition, the organisation and the functioning of the NWC.</p>		<p>10. The modalities for running regulating activities of the national water council by a decree taken in the council of ministers upon the suggestion of the Minister of Energy and Water.</p> <p>Article 17 The NWC meets upon an invitation of its president, once every six month at least and it is possible to organise urgent meetings when necessary upon the request of the president of the council, the president presides the session or his deputy in his absence.</p> <p>Article 18 For the meeting of the council to be regular and accepted it is conditional of the presence of 2/3 of its members including the president or his deputy. The decision of the council are issued by the majority of the present members in case of equality the vote of the president breaks the tie.</p>

Depending on the draft the same article defines the responsibilities of the NWC. These differ in all three drafts. In the French version it needs to be consulted on “tax projects and contributions of any nature related to water management or susceptible to have a direct effect on its management” (AFD-ROL 2005). The aim here is to assure coherence in policy and its implementation. Since the council is created attached to the Council of Ministers decision making can theoretically be harmonised with the budgetary process.

In the Arabic draft all mention of monetary issues are deleted. Its input on tariffication is deleted because it is regulated in Law 221. The other aspects are omitted because they are seen to be part of the normal budgetary process. The changes reflect the expert approach to the creation of the draft. As water and legal experts the authors are preoccupied with a logically coherent process and local considerations of power are not in the foreground (Interview Baroud 2013). They do not work on the law on behest of one politician or political faction with specific interest but in the framework of the AFD project that promotes good governance. The expert approach to this is exemplified by the description of one official that was involved: “They sent us to France on workshops. They taught us how to write laws correctly” (Interview Baroud 2013). In both the French and the Arabic draft it is not local power politics that influence the writing and decisions

about what to include or not, but rather more abstract visions of ideal state functioning focused on private sector participation.

The 2013 draft changes the intended function of the NWC. The minister's powers are enhanced through the council as it gains competences to assure funding through the treasury and foreign sources. These powers are not clearly defined in relation to the budgetary process or the process to negotiate foreign loans. Practically and legally it is the CDR that is tasked with negotiations concerning projects and associated loans. With the mandate to assure funding the NWC would compete with the CDR in this realm. The commentary on the minister's intentions quoted above point to these dynamics. The law drafting project became an opportunity to concentrate his hold on power and was used as such by the minister. The opportunity to pass a law to his advantage emerged from AFD's conditioning of financing for the Keserwan waste water project (about US\$ 70 million coupled to a loan of about the same size from the EIB) to the presentation of the law to the COM. The last draft attempted to expand the competencies of the minister by putting him in a position to bypass the budgetary process. The council was conceived as having the ability and responsibility to secure funds for planned projects and plans. In this case the minister's gamble was unsuccessful but had no consequences, because the conditions for the loan concerning the Keserwan waste water project were met. The director of AFD is well aware of the slow and often interrupted parliamentary process (Interview Cassat 2012) and it is thus very possible that the conditions were designed not to make the project fail.

The 2013 draft was rejected by the COM when it was presented in early in the year — even afterwards the draft was analysed in detail and criticised to uphold this opposition. The changes show very clearly how the distribution of power among the decision makers is a point of intense contention. This also supports the observations made in the discussion of the administrative reform efforts, where intentions of the donors and development agencies are subverted in an attempt to use the projects for the extension or preservation of political influence and power. It also shows that IDC's power to influence the reform process is limited. The neoliberalisation process is in this case resisted by the elites in the defence of the sectarian patron-client social relations.

#### **4.2.6 Reforming Utilities: Technical Assistance and Private Sector Management**

Section 3.3.1.2 of the last chapter elaborated on the technical assistance programmes that support the different administrative bodies. Considerable effort is expended with the goal to commercialise the RWEs and the sector as a whole. This process suffers from the same conflict of interest and is hampered by the competing logics of the IDC and the Lebanese elites. Chapter 2 gave an example of hiring practices in the Bekaa Water Establishment and how the Lebanese elites interfered in the employment process. As a result, the workforce and salary expenses of the establishment swell without producing an equivalent improvement in productivity and thus water services. On the contrary it creates a financial burden on the establishment. Attempts at commercialising the water establishment are largely nullified by this employment dynamic. The World Bank-funded Baalbeck Water Supply and Waste Water Project provides other examples from the BWE. The project, approved in 2002 and launched in 2003, aimed at:

- 1) Strengthening the capacity of the BWE which merged the Baalbeck Hermel Water (BHWIA) and Irrigation Water Authority, Zahleh Water Authority and Chamsine

Water Authority; 2) improving access of BHWIA customers to satisfactory water supply and waste water services through house connections and extension of network; and 3) improving efficiency by involving the private sector in operation and maintenance (O&M) through a Service Contract. (World Bank, 2012a, p.3)

Like most World Bank projects it combined both an infrastructure component with a technical assistance and capacity building component. The physical work of the project was completed early. The project lasted from 2003 to 2012. It was extended a number of times from its original planned completion date in 2006 in an attempted to achieve the objectives of the project. The infrastructure component and the capacity building components were connected in so far as the implementation of a water metering strategy (the physical installation of meters) and the introduction of tariffs was to eventually help the BWE improve its financial situation. According to the project completion report it did not achieve its goals. Not even half of the expected number of meters were installed. But even those that were are not read by the BWE because no tariff law was passed by the government, contrary to what was expected at the time the project was conceived. “Of the 73,640 individuals receiving water through the project (i.e. 14,728 households), the BWE estimates that only 9,793 households are legally subscribed with the remainder illegally connected or benefiting from the improved network without paying” (World Bank, 2012a, p. v). In the report the operation of the BWE was estimated to be equally dependent on subsidies from the central government or other external sources as before. The reasons for this are well captured in the report itself and illustrate the dynamics discussed above:

The appraisal team may have avoided mention of the political dynamics of the region for country relationship reasons. While understandable, they underestimated the influence that local politics might play in delaying local development plans and in influencing household decision making. This became particularly evident in two ways: first, a standoff at the Iaat Treatment Plant as a result of farmers opposed to the redirecting of untreated waste water from their fields to the treatment plant and second, the lag in subscriptions where households benefiting from the water but not paying found political protection against non-payment penalties. (World Bank, 2012a, p. 12)

Other components were judged equally unsuccessful. The institutional development component which relied on the creation of a “comprehensive five year” business plan to provide the guidance and planning to improve the establishment “fell short of boosting the institutional capacity of the BWE given the delay in appointing permanent leadership and the weakness of enabling environment” (World Bank, 2012a, p. 16). As a consultant on the project commented: “The business plan is not the problem, people know what needs to be done. It is the implementation that is much more problematic. The political will is missing” (Interview Yazbek 2011).

The project shows how the interference of political patrons in order to maintain their ties to their constituency prevented the BWE from increasing its revenue. The dynamic described here is one where the political patron guarantees subsidies from the government to his client base. The project design threatened these dynamics. It ultimately failed to transform the establishment into a commercially operating utility because it did not take these dynamics into account and was not able to sever the links between client and patron.

Christel Alles makes a similar argument in her analysis of the effects of the private management contract for the Tripoli water office (2012). She shows how the existing clientelist networks “showed a remarkable resilience” and that the attempted commercialisation of the office did not displace the

influence of the patrons. The clientelist networks were reshaped in part because leadership in the city was being contested at the time and in part because the private company (Ondeo) introduced new management techniques that required adaptation from the political leaders. She writes that one “aim of the private firm was to establish a new relationship between the water authority and the customers. Indeed, some of the actions of the private firm could be understood as an attempt to turn the clients of a patron into the customers of a firm” (Alles, 2012, p. 401). The political implications are the same as in the case of the World Bank project in the Bekaa. These efforts did not remain uncontested. The company was not always able to resist overtures by the varying patrons who attempted to influence its hiring practices and attempted to provide protection for non-paying users. The efforts of Ondeo were also met by resistance from within the water office who drew on its contractual rights and subjected the company to a lengthy internal audit in an attempt to establish its position vis-a-vis the company (Alles, 2012). The uncertainty in the legal framework for public/private partnerships did not protect it from the influence of political powers nor the slow political process that it viewed as the source of its problems. Thus after losses and contractual penalties of about US\$ 600,000 or about 5 percent of the contract value the company decided not to renew the contract (Interview Yabroudi 2010).

### 4.3 The State of the Water Sector after 20 Years of Reforms

The goal of the reform processes described above was the improvement of the water resource management processes. The reform did not turn out as hoped for by the IDC. A look at the state of the water sector after 20 years of reform will further indicate how successful or not these were. The extraordinary circumstances of the immediate post-war period set the baseline very low with which to compare the efforts of the last 20 years. Improvements were virtually inevitable, but the pace of physical improvement of infrastructure systems and the resilience of the structural problems of the sector suggest that the results of twenty years of reform are rather poor.

Water supply has improved over the period of study, areas in Keserwan that suffered from severe shortages for example now have regular and more dependable water after the construction of the Chabrouch Dam and the distribution network. In Tripoli water supply improved as well and during the operations of Ondeo even reached a point where many areas received water continuously by the end of the contract period. Quality of service though deteriorated slightly afterwards. Saida also saw improvements and many parts of the city have a constant water supply. Waste water management also saw improvements though at a much slower rate. In 2011 waste water treatment efficiency in Lebanon was estimated at below 8 percent (MEW, 2010a). The national water sector strategy published in 2010 finds following issues with the infrastructure:

- Inefficient and poorly maintained systems and networks, leading to high losses and supply interruptions, with a limited focus on demand management.
- Low coverage of waste water networks and severe shortage in treatment efficiency.

Infrastructure rehabilitation, network extension, and improvements started very early but projects experienced delays almost immediately. To this day, infrastructure projects fall prey to the political wrangling of competing elites and as a result tend to experience serious delays, cost overruns, and other problems.

The administrative situation contributes to difficulties with the production of infrastructure. Quality and maintenance are important aspects of this but contractual issues come into play as

well. In general the RWEs suffer from very similar problems as the 21 water offices before them. None of the water establishments are in a position to fulfil their mission; they operate water supply services, but do not have the capacities to manage irrigation, nor to manage waste water operations. They do not have enough qualified staff and usually have very high numbers of unqualified staff. The MEW has a vacancy rate of 87 percent for qualified staff such as engineers and accountants, according to one of the authors of the NWSS (Interview Tayar 2012). It also focuses more on operation and maintenance of infrastructure than strategic planning as it should according to Law 221.

The improvements that can be named are at the level of accounting (at least for most RWE) where modern accounting methods were introduced with the necessary IT infrastructure and software. Similarly, inventories of existing infrastructure were updated and digitised using GIS systems. In both cases a lot of the staff responsible for these operation is financed via contracting companies. Nevertheless full-time employment levels in all RWEs have improved. In the SLWE for example employment levels of permanent full-time staff had reached 218 in 2008 compared to 681 total staff raising the ratio to 32 percent from a disturbingly low level of 12 percent in 2005. It was set to reach a level of 41 percent or 327 employees by 2011 and maintain these work force levels. The SLWE also outsourced “Finance/Accounting, as well as the Billing and Collection functions” (DAI - Development Alternatives, Inc., 2008, p. 20). These improvements are not to be overlooked and represent important increases in operational and management capacity — even with all the caveats about the qualifications of employees and the client-patron nature of the employment process. In this sense the efforts of GIZ and DAI-USAID and the commercialisation they push forward need to be understood as a success and even as a positive outcome of the neoliberalisation process. There is clearly an urgent need for the utilities to operate more efficiently, whether then full-cost recovery principles need to be implemented and what kind of subsidisation can mediate the impact on more vulnerable parts of society is a different question. The involvement of the IDC helps prevent a more drastic deterioration of water resource management.

Of the water establishments only the Beirut Mount Lebanon Water Establishment fully covers its maintenance and operations cost. The northern establishment is also reasonably balanced regarding its operation and maintenance cost. The southern and the especially the Bekaa establishments are in worse shape financially. None of the offices are capable of financing their own investments. UfW averages around 50 percent, and is at the same levels as at the end of the war. Not all the water is lost in the network, this is also importantly related to the low user-fee-collection rates that range from 18 percent in the Bekaa to 62 percent in the BMTLWE (MEW, 2010b, p. 10). A significant part of the water produced is not accounted for because nobody pays for it.

One of the more glaring failures of the last two decades is the failure to create a continuously up-to-date database regarding water resources. The extensive network of weather stations that was built before the war was virtually non-existent by its end. A very few stations were still measuring precipitation, Kunigk writes that “Lebanon does not have a large number of rainfall stations and of its 140 stations only seven have data sets that cover the last 30 years” (Kunigk, 1999, p.13) By the end of the 1990s no more than 12 across the country were in place and by 2013 the number had risen to a maximum of 24 (see Shaban, 2009). Of 89 discharge measuring station on rivers installed before the war only 17 were operational in 1998–1999 (Kunigk, 1999).<sup>9</sup> The LRA has

---

<sup>9</sup>Observations on the ground though suggest that even at least some of those that were considered operational were only sufficient to measure an order of magnitude. Untrained and uninterested personnel are another factor of uncertainty regarding the measurements available (Interview Renck 2011).

with support from USAID installed a number on the Litani and the Hasbani.

It is only with the funding of the Italian government through the UNDP that a project for the assessment of groundwater and a water database was launched in 2011. This project is limited due to the lack of funds, no monitoring wells were drilled and installed but rather testing and measuring (with little renovation) of public wells substituted for a more extensive and in-depth program (Interview Khayat 2012). Most experts agree that the quality of the available data is poor. The models that are produced are at best questionable because they use data of dubious quality. Given the US\$ 2 billion estimated capital investment by the state in the sector it seems bordering on the absurd that no funds were diverted for up-to-date hydrogeological studies, a network of limnigraphs and weather stations, and other necessary investigations to produce reliable and reasonably accurate data concerning water resources. The price tag of such an operation is variable and depends on the level of accuracy and the volume and the up-to-dateness of the data points. But it is clear that reasonably robust data and a monitoring system could have been produced at a minuscule fraction of the money spent and wasted in the sector.

At least this would have improved the negotiating positions with regard to transboundary water courses, in the north the rivers shared with Syria and Turkey and in the south the Hasbani flowing into what is currently Israel, and more importantly groundwater flowing south. It would certainly have contributed to an improvement in infrastructure planning and had the potential to avoid the risks associated with investments such as the Jannah Dam.

Sector performance has improved, but upon deeper analysis this statement proves to be vacuous because of the very low baseline from which sector redevelopment/rehabilitation started. The structural problems with the administration and with the management of water resources in general remain. To quote the NWSS again:

- The implementation of the reform law has been initiated but not fully concluded;
- The transfer of functions to the four WEs has been subject to several delays;
- The WEs are not yet empowered to act with full administrative and financial autonomy;
- The legal text to organise the work of MEW, has not been developed yet;
- MEW's efforts are still dedicated to capital projects and operation and maintenance;
- WEs suffer from a shortage of funds and technical staff.

(MEW, 2010b, p.15)

The list reads similar to the listings from the assessments of the early 1990s. As I have shown in the two previous chapters it was both earlier rounds of neoliberalisation and the Lebanese socio-political power structures that are at the root of this state of affairs. The reform did not bring about the promised improvement, and the reason, as it was 20 years ago, is the lack of private sector participation and encouragement according to the authors of the NWSS and the IDC. The same ideology is mobilised as solutions to solve the problems that were in no small part created by its earlier application.

## 4.4 Geographical Reconfiguration

Yet the reform did produce changes. The most obvious result of Law 221 was the geographical re-organisation of the sector. This rescaling of governance in itself is a substantial change. It also

represents an important alteration of the division of power in the sector, even if the RWEs territorial control is not complete. In all four a number of water committees keep operating outside of the control of the RWEs. Fnaydeq, a little village in the north (Alles and Puig 2011), and Arsal, a town (Riachi, 2013) in the eastern Bekaa, are two such examples. Interviewees have reported similar incidences in all four regions and RWEs. The reform law decentralised the water sector on paper. Theoretically and legally the RWEs are autonomous from the MEW, subject only to budgetary oversight. This was supposed to represent a rescaling from the central control that the MEW had over the 21 water offices. But the mechanisms of access to and control over the administration, as a power resource, were maintained despite the reform. While legally water management has been decentralised the new geographical division of the administrative boundaries represents a concentration of that power in fewer political leaders.

#### 4.4.1 Topography and History: Boundary defining elements

The specific geographical division of the RWEs originates not solely from political considerations but reflects the shape of the early water offices and their service areas (see Figures 4.3 and 4.2). It is related to administrative boundaries and the topographical, even hydrogeological properties of the landscape. The Lyonnaise des Eaux report of 1994 attempts a categorisation of the water offices' service areas. It divides the territories of the offices into those that result from historic circumstances such as the purchase of older concessions and existing supply systems, those that result from the superposition with administrative boundaries of cazas and mohafazaat (Arabic: governorates), and some that are a product of the two. Administrative boundaries are equally the result of the interaction of social forces (history), but in the report the difference is made between infrastructure projects linked to specific concessions, and purely administrative boundaries (Lyonnaise des Eaux Dumez, 1994a, p. 33).

Table 4.3: Summary of Typology of Offices

Administrative	Atypical	Hydrological
Bcharre	Qobbayat	Nabaa el Kadi
Batroun	Saida	Nabaa el Tasseh
Nabaa el Ghar	Zahleh	Chamsine
Jbeil	Tripoli	
Keserwan Ftouh	Ain el Delbe	
Beirut	Beirut	
Baalbeck-Hermel	Metn	
Barouk		
Jabal Aamel		
Sour		

Source: Reproduced from Lyonnaise des Eaux Dumez, 1994c, p. 33.

Figure 4.2: Watershed, Administrative boundaries and Rivers



**Water Offices related to Watersheds and Rivers**

- Rivers and Lakes**
- Permanent River
  - - - Seasonal Stream
  - Lake

- Administrative Boundaries**
- Caza
  - Mohafaza
  - - - International Boundary

□ Watershed boundary

Source: National Physical Master Plan for the Lebanese Territory (2004)

The report continues its description of the offices and their areas of responsibilities with examples of what it calls incoherences that “necessitate the readjustments of the perimeters”. For example, the water offices of Beirut and Ain el Delbe were supplying the same streets on the border of their perimeters, so did the offices in Saida and Nabaa el Tasseh. The Zahleh office was singled out for its particularly atypical geographical extension. The report noted that its “baroque form renders its management acrobatic” (Lyonnaise des Eaux Dumez, 1994a, p.33). The area was considered large, but its limit did not correspond to either the boundaries of the *caza* or the watershed, it followed the municipal boundaries. The Chamsine water office also did not follow either *caza* or watershed boundaries. The boundary shared with the Zahleh water office runs along the Litani river for the most part, but deviates to the east and the west occasionally (see Figure 4.2).

The report does not spend much time on the analysis of the geographic extension of the offices, and misses the overlap between administrative boundaries and rivers. Municipal boundaries generally, with few exceptions, run along rivers. The administrative boundaries divide watersheds into left and right banks. Conversely, in a majority of cases municipal boundaries do not follow watershed limits but rather incorporate them, with exception of the larger east-west divide along the peaks of the Mount Lebanon range where administrative boundaries are largely congruent with the mountain crest. These divisions translate to larger scale administrative boundaries and the limits of the *cazas* and *mohafazaat* often follow rivers. Figure 4.2 shows that with the exception of the upper Litani and the northern Bekaa, as well as the boundary between the *cazas* Saida and Nabatieh, this holds true for the whole territorial administrative division.

The historic dynamics are alluded to by Kaufman (2006). Analysing the Chebaa Farms border dispute<sup>10</sup> he explains that the French colonial experts who delineated the border to Syria were trained to view watersheds as natural boundaries. Thus in delineating the border in the south they disregarded local ownership claims, farming practices, and related water use patterns. The border was delineated along the ridge instead of along the stream further south in the valley. While he is concerned with the border region only, the local practices he describes seem to apply throughout the country. The delineation of communal lands according to such a logic allowed access to streams and rivers to left and right riparian communities.

A look at the topography supports the argument. Most of the Lebanese waterways, especially the coastal rivers, run in deep ravines with extremely steep slopes that are the result of the erosion of karstic rock formations. In many cases villages are built on or just under the ridges with considerable vertical distance to the rivers. But even in the Bekaa where the land is relatively flat, very little is built immediately on any river and usually also at a safe elevation away from it.

#### 4.4.2 New Administrative Boundaries

The topography and the historical formation of the administrative boundaries thus determined the exact course of the boundaries of the 21 water offices. Law 221 would regroup these 21 offices into first five and then four Regional Water Establishments. This process was governed by two factors. The first was the territorial politics of the country, related to the sectarian and clientelist power considerations that are so central to the Lebanese political economy. The second was the search for

---

<sup>10</sup>The Chebaa Farms is still occupied by Israel. The Israeli government claims that the area is Syrian and thus it does not need to be returned to Lebanon. Based on this view it considers that it has returned all Lebanese lands formerly under occupation. The Lebanese and Syrian governments present a different view. Transboundary water issues are part of this dispute. For an in-depth discussion of the water issues between Israel and Lebanon (see Zeitoun et al., 2012a).

efficiency gains through economies of scale with a view towards planned privatisation. The RWEs thus also needed a large enough user base to offer the possibility to generate sufficient revenues and by extension profits.

A law from 1972 created five RWEs — Beirut, Mount Lebanon, North, South, and the Bekaa — along the administrative boundaries of the mohafazaat. The law was never enacted, in all likelihood because of the onset of the war. When the post-war reform project was launched the first laws restructuring the sector — ratified in 1996 but never instituted — produced a different five-fold division of the water establishments. Beirut was integrated with Mount Lebanon, the Bekaa was divided into North Bekaa and South Bekaa, and the North and South RWEs remained as proposed in the 1972 law. Ghiotti (Ghiotti, 2004) mentions discussions about divisions into two larger territories in the period between 1998 and 1999 but these came to nothing.<sup>11</sup> Law 221/2000 initially inherited the five fold division but was in the same year amended to regroup the two establishments of the Bekaa into one (see Annex 2).

#### 4.4.2.1 The Beirut Mount Lebanon Water Establishment

That the Beirut Mount Lebanon Water Establishment would have the highest population density was inevitable. To separate Beirut from its immediate surroundings would have been technically impractical considering that the Beirut water office (WO) (see Figure 4.3) with about 1,250,000 inhabitants had about 181,000 subscriptions, and drew water from the surrounding mountains as far away as Keserwan in the north, Damour in the south, and the Metn in the east (Fayad, Mallat, Freiha & Khoury, 1996). It also provided water to parts of the suburbs that were legally under the purview of the Ain el Delbe water office. The BMTLWE was thus at least partially welded together by the existing infrastructure (in this sense the infrastructure certainly had some agency). To this arrangement of four water offices the Jbeil Water Office and Barouk Water Commission were added.

The Barouk WO was large in surface area and compared to the other offices (except Beirut) also rather populous, with around 55,000 - 57,000 connections (and up to 400,000–500,000 inhabitants). It was also, with Beirut, one of the very few financially viable operations. The Barouk WO serves the cazas Aley and the Shouf two areas that are the Druze heartland and it certainly had this sectarian affiliation. Its integration into the BMTLWE is also the reason why Walid Joumblat, as the most prominent Druze leader, was opposed to and questioned the necessity of the reform (Kunigk, 1999). He did not have anything to gain and certainly lost influence,<sup>12</sup> as other leaders were more likely to be able to place their lieutenants in a leadership position in this establishment. According to a number of interviewees the director and president of the board is an ally to Michel Murr, long time Minister of the Interior and an important Maronite Christian Za'im in the Metn area.

---

<sup>11</sup>One version was a division into east and west with the water divide along the Mount Lebanon range being the limit and another option was north and south divided. He does not provide a reference for this, and though he provides a discussion of the reason these proposal failed — essentially the impossibility to even give a semblance of regional balance — it seems unlikely that these were ever more than negotiation strategies (Ghiotti, 2004).

<sup>12</sup>Though political forces still manage to have water intended for domestic use in Zahleh (in the Bekaa) sourced in the Barouk be deviated in substantial amounts for use in irrigation along the way (Interview Majdelani 2012).

Figure 4.3: Administrative boundaries of the water sector before and after 2000



**Old and New Administrative Boundaries of the Water**

**Rivers and Lakes**

- Permanent River
- - - Seasonal Stream
- Lake

**Administrative Boundaries of the Water Sector**

- Water Establishments (after 2000)
- Water Authorities (until 2000)
- Litani River Authority

Source: National Physical Master Plan for the Lebanese Territory (2004)

The Ain el Delbe WO was the second largest office in terms of subscriptions and population

served (Lyonnaise des Eaux Dumez, 1994a). The area with a majority Shi'a population was politically dominated by Hezbollah and the Amal party. Its integration was politically balanced by appointing its director to the same position in the South Lebanon Water Establishment (SLWE).

#### 4.4.2.2 The South Lebanon Water Establishment

The SLWE includes the Mohafazaat Saida, Nabatieh, and Sour. It oversees a strategic area for Hezbollah and its ally Amal.<sup>13</sup> The Shi'a sect also forms the largest sectarian group in this area. Its largest city and the seat of the SLWE's main office is a majority Sunni area which was at the time politically dominated by the Hariri family (Sunni). Nevertheless, in order to maintain the sectarian balance the SLWE was put under the political control of Nabih Berri, Shi'a and leader of the Amal party. With the Council of the South and the Litani River Authority the SLWE complemented the administrative influence which the speaker of parliament yields over the south of Lebanon.

The example of the SLWE allows to show what is (or can be) at stake in these political divisions. The war of 2006 was concentrated on the south. The destruction in general and to the water infrastructure was considerable; many villages were without water or had a very limited supply at the end of the war. The situation was made worse by the very limited power supply that reduced pumping capabilities.<sup>14</sup> Basic rehabilitation and reconstruction had a certain urgency, but the director's request for reconstruction funds was rebuffed by the March 14 controlled government. In an attempt to shift the political burden of the war onto Hezbollah and Amal by delaying the reconstruction the government channelled funds through other administrative bodies. The SLWE had to rely on the Council of the South, itself without large funds but better staffed than the establishment, as well as on the humanitarian agencies and international donors in order to rehabilitate service in the area (see Alles, 2010; Zeitoun et al., 2012a, 2014, Interview Ahmad Nizzam 2011).

#### 4.4.2.3 The Bekaa Water Establishment

The combination of what was to be the north and south Bekaa establishments brought together the water offices of Baalbeck-Hermel, Zahleh, and Chamsine. In the original five-fold configuration of Law 221/2000, the water office of Baalbeck-Hermel — which manages a majority Shi'a area with a strong presence of Hezbollah, as well as a strong influence by the local clans and families — would have been transformed into a standalone establishment. Its situation was already very bad before the reform and it would have remained the most dysfunctional operation, technically and economically. In order to make it viable (or more viable), financially and in terms of expertise, it was joined to the Zahleh and Chamsine water offices, both of which generated revenues above expenses (Lyonnaise des Eaux Dumez 1994a). The main office is situated in the regional capital Zahleh and the director is said to be allied to Elias Skaff, local Christian Melkite Za'im, and owner of the largest agricultural land holdings in the Bekaa (more than 3,000 ha according to one agricultural engineer (Interview Ghadban 2011)). This political division of the area also goes a long way in explaining why the director's position was only occupied by 2010.

The fact that the number of employees of the water commissions in the Bekaa rose drastically between 2000 and 2005 — “commissions with 12 employees all of a sudden had 30” (interview Yazbek

<sup>13</sup>The formerly occupied south is an area in which Hezbollah has a strong armed presence and network of hidden military bases.

<sup>14</sup>(see Zeitoun et al., 2012b, 2014 for a more detailed description of the damages to water systems)

2011), in turn can be interpreted as the indemnification to parties that lost some of their influence in this reorganisation.

#### 4.4.2.4 The North Lebanon Water Establishment

The North Lebanon Water Establishment regrouped eight water offices. Of these three were responsible for Christian dominated areas (Bcharre, Batroun, and Zgharta) the other five and the capital of the north Tripoli are majority Sunni areas. Accordingly, it remained under the influence of Sunni notables from Tripoli. With that the required sectarian balance across the four RWEs was established, the largest Christian and Muslim sects each retained one establishment. In Tripoli the creation of the water establishment coincided with the waning of the influence of the Karami political dynasty. In this case it allowed the replacement of the old director with one allied to a different patron (Alles 2012). The restructuring of the water sector opened the door for a reconfiguration of territorial influence at a local level.

The restructuring of the water sector thus did produce changes in the distribution of power. With the control over the offices comes the ability to prioritise repair and to a much more limited degree invest in projects, as well as to grant favours. The establishments also provide a pool of job opportunities in certain areas that can be distributed according to the Zu'ama's needs when the opportunity arises. But control over the establishments is not total and varies with the political strength of the respective political leaders, such as in the Bekaa for example. "Some water commission are still operating and not integrated into the water establishment and these collect fees while the establishment does all the infrastructure and exploitation work" (Interview Yazbek 2011). Alles (2012) points to similar dynamics in the case of Tripoli where the changing political landscape at the national level gives the different political elites also some modicum of influence. In general the negotiations are often more dynamic and occur across sectors. A community with political protection can limit an establishment's power to act without necessarily having inroads into the establishment, as was the case with the Baalbeck Water and Waste Water Project where farmers repeatedly broke the waste water collector to continue irrigation of their fields.

Finally, in a similar manner to the legal and administrative aspects of the reform, the specific geographical reorganisation of the sector reflects the Lebanese consideration of sectarian balance and related power struggles. Only two of the RWEs created could potentially attract investors, whereas the BWE and the SLWE do not offer the necessary opportunities for profit. The SGBL study to assess the possibility for private sector involvement, commissioned by the High Council of Privatisation and published in 2003, proposed a strategy that divided the country into one or two zones. The consultant recommended the former, but proposed as a second strategy for spatial organisation a division in a northern and a southern zone that would see the division of the BMTLWE to make each zone financially viable (Freiha, 2009, p.13). There is technically no reason why a territory the size of Lebanon could not be managed by one single administrative unit responsible for the whole territory except for the political considerations of the elite. The division of the water sector administration into four utilities is a compromise between the logic of privatisation and the necessary economics of scale related to improvements in efficiency, and the Lebanese logic of division of power. But as suggested by the results of the SGBL study, this compromise of Lebanese political requirements undermined the pro-privatisation designs of the reform efforts.

## Chapter 5

# A Political Ecological of the Reconstruction of the Water Sector

In this final chapter I complete the analysis of the Lebanese hydrosocial cycle. I elaborate on the interaction of bio-physical processes with socio-economic and infrastructure development processes. The analysis will show how actually existing neoliberalism shaped the economy, focused it on the tertiary sector — services, trade, banking and real estate — and structured it against the productive sectors, specifically agriculture. Spatially this manifested as a perpetuation of an uneven geographical development that was already a feature of the pre-war era. Spatially development centred on urban areas and especially Beirut while rural areas remained neglected.

I will describe how these dynamics affected water use patterns in the domestic and agricultural water sector to the advantage of the wealthier classes, while on average and depending on the location the more underprivileged sections of the populations struggle to secure water for domestic use and are less likely to have access to irrigation. The process that emerged produced severe ecological degradation and is socially unjust. With this in mind I will demonstrate that the IDC-financed infrastructure projects did not manage to mitigate the continued pollution and over-abstraction of the resource.

### 5.1 Uneven Development

The physical centre-piece of Hariri's reconstruction strategy was the Beirut Central District project Solidere. Ideas and dreams of a new downtown, "an ancient city for the future", were not new; Hariri already had drawn up plans and models of his vision for Beirut in the early 1980s (Baumann, 2012; Verdeil, 2002). The continuation of the war put these plans on hold. But when in the early 1990s peace was finally achieved, the project was to be the jewel in the crown of the tax haven that Lebanon was to become. It would be the space where the global elites would manage capital flows to the Arab world and wealthy tourists would come to spend their summers and their money; at least in theory and in terms of marketing. As a project it meant expropriating owners, against often meagre compensation, by transferring ownership rights to a private company (Summer, 2005). This company managed the development of the Beirut Central District. This type of development was not unique, much rather it was fully in line with neoliberal practices of city building. Scholars (Brenner & Theodore, 2005; Smyth, 2013) have described how processes of neoliberalisation have

seen the mushrooming of urban flagship projects around the globe, advertised by local and national governments with the proclaimed aim to profit from global financial flows.

In Lebanon this project served two purposes. On the one hand it produced large rents for Hariri and parts of the governing elite — as a prime example of accumulation by dispossession (see Baumann, 2012; Leenders, 2004a; S. Makdisi, 1997). On the other hand it acted as a prism to focus reconstruction efforts. As a project it was part of the larger vision for Lebanon according to which, and as a priority, the country and the capital had to be brought back onto the map as a destination. While the project did face some local opposition, it carried the torch of hope for a return to wealth and fame. In fact, it symbolises the whole reconstruction: run by a former contractor, geographically centred on Beirut and economically embracing the real estate and banking sectors. It became the island of high-end development and consumption, and its social exclusiveness reflects the class character of the reconstruction process.

### 5.1.1 The Lebanese Economy

This vision guiding reconstruction was inspired by a neoliberal ideology of open markets and free capital flows. How the financial sector was revitalised and what this meant for government finances was explained in Chapter 3. This section will analyse how this development strategy translated and shaped the other sectors of the economy.

One of the central aspects of the accumulation regime and of the economic development strategy was the exchange rate-based stability mechanism to attract capital inflows from abroad. This had effects on the structure of the economy. Charbel Nahas (2009) writes that:

Lebanon shows, with some particular modalities, a severe case of what economists call the “Dutch disease”. This generic name applies to a situation where massive inflows of funds, generally but not necessarily related to very large exports of raw materials, lead, paradoxically, to a severe and lasting deterioration of the sectors that produce internationally tradable goods.<sup>1</sup> (Nahas, 2009, p.127)

In Lebanon it is continuous emigration that has produced a sizeable expatriate population which generates large amounts of capital flows from abroad. Foreign aid and FDI complement remittances and the repatriation of profits from Lebanese abroad to balance the current account deficit. This deficit is also a structural feature of the Lebanese economy and is related to the import of consumer goods. As a percentage of GDP the current account deficit was estimated at 33 percent in 1997, it dropped to 18.8 percent in 2002 but rose again and has been in the range of 25 percent to 30 percent in the years from 2007–2010 (Kasparian, 2011, p. 71).

The high interest rates that were to entice capital to find its way to Lebanon also directed investment away from productive sectors into banking, real estate, and trade. The economy was structured with the tertiary sector at the centre.

This is reflected in the break-down of the national accounts and represented in GDP numbers (See Table 5.1). Over the last decade the role of the tertiary sector has increased its contribution to GDP, rising from 60 percent in the mid 1990s to 66.55 percent by 2010. The importance of the real estate sector needs to be highlighted, it is driven by mostly speculative dynamics.

An indication is given by the relative contribution of construction to GDP which increased from 8.8 in 1997 percent to 15 percent in 2010 (see table 5.1). It did so with every revival of the

---

<sup>1</sup>Ghassan Dibeh also makes an argument about Lebanon suffering from “Dutch disease” (Dibeh, 2005, 2007).

Table 5.1: Sectoral Contribution to GDP in US\$ billion

Sector	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Agriculture and Livestock	1.08	1.06	1.08	1.08	1.04	1.08	1.10	1.16	1.37	1.37	1.56	1.76	1.77	1.76
Energy and Water Supply	0.15	0.26	0.23	0.13	0.18	0.16	0.07	0.02	-0.17	-0.26	-0.34	-0.89	-0.58	-0.98
Industry	2.02	2.16	2.06	1.97	2.00	2.07	2.16	2.34	2.33	2.18	2.37	2.35	2.64	2.66
Construction	1.42	1.69	1.40	1.35	1.43	1.43	1.45	1.64	1.76	1.94	2.69	4.04	4.66	5.65
Transportation	0.87	0.99	1.24	1.37	1.39	1.60	1.67	1.87	1.94	1.91	2.07	2.24	2.27	2.05
Market Services	5.38	5.77	5.94	6.06	6.11	6.55	6.97	7.36	7.57	8.02	8.65	9.94	11.00	12.42
Trade	3.41	3.54	3.51	3.35	3.44	4.16	4.54	5.24	5.07	5.03	5.70	7.82	9.73	10.22
Government	1.77	1.87	1.94	1.96	2.07	2.11	2.13	2.18	2.21	2.24	2.36	2.83	3.17	3.36
Total GDP	16.09	17.35	17.40	17.27	17.66	19.16	20.09	21.80	21.87	22.45	25.06	30.09	34.66	37.14
GDP real growth percent	4	3.6	-0.5	1.3	4	3.4	3.2	7.5	1	0.6	7.5	9.3	8.5	7
Agriculture percent of GDP	6.71	6.09	6.20	6.24	5.86	5.66	5.49	5.30	5.25	6.12	6.22	5.84	5.09	4.74
Construction percent of GDP	8.82	9.74	8.06	7.81	8.10	7.44	7.23	7.50	8.05	8.65	10.73	13.43	13.44	15.21
Tertiary Sector percent of GDP	60.04	59.42	61.45	62.44	61.96	64.21	65.62	66.38	66.68	66.68	65.50	66.46	66.36	66.47

Source: (Economic Accounts Mission, 2010; Kasparian, 2006, 2007, 2009, 2010, 2011)

economy, after the slump of late 1990s, buoyed by Arab capital redirected after September 11, 2001 for fear of seizure in western economies, and more so after the Iraq war in 2003. The post 2006 war destruction and reconstruction also helped to raise real estate prices. Finally the global financial crisis of 2007–2008 also redirected Gulf capital towards Lebanon in search of lost profit margins (see Fig. 5.8). When construction projects with a cumulative worth of many hundreds of billions of dollars were cancelled in the Gulf Arab countries (Achcar, 2013, p.61) FDI to Lebanon almost doubled between 2006 and 2009 from US\$ 2.6 billion to US\$ 4.8 billion (ESCWA, 2009).

The market services sector, which includes the real estate sector, has grown continuously, even in the years when tourists stayed away because of internal conflicts and instability or war. In all likelihood this reflects the growing debt service, the substantial rises in property prices, and the profits that derive from these. Its share of GDP varies with the ups and downs of the economy but remains around 33 percent. Trade is the next largest sector and has increased its share of GDP from just under 20 percent to about 28 percent in the period from 1997–2000. This is related to the demand created by the inflow of remittances, as well as to the monopolies and oligopolies protected by the elite.

The productive sectors in turn were not the focus of economic development strategy. The industrial sector relative contribution to GDP has decreased since 1997, and it has been much more exposed to the vagaries of the political and security climate. An exception to this rule is the concrete market where three Lebanese producers enjoy state protection shielding the producers from imports (see also The Daily Star, 2013a).

More important for this discussion of water resource management is the agricultural sector. While it has also grown in terms of value, its share of GDP has constantly decreased. The neglect of the sector has been observed by many and as a former minister puts it: “nobody cares” (Interview Cortas 2011). This in itself represents a water resource management choice, as related to the neoliberal project, and to the wealth transfer process and the rent creation mechanisms discussed earlier (see Section 3.1.2).

## 5.2 Infrastructure and Development Planning

Before turning to the geographical and ecological analysis of the effects of the economic development strategy a brief analysis of infrastructure development and production is in order. The Horizon 2000 plan was the document that framed and laid out the technical details of the vision for the future of Lebanon. The reconstruction and development plan laid out in this document was to:

serve as a catalyst for the recovery process, providing through the Horizon 2000 programme essential public services and facilities, and supporting an economic and social environment in which the private sector, and all Lebanese, may grasp recovery and development opportunities. (CDR, 1993, in Najem, 2000, p. 59)

The first reconstruction efforts were launched under the National Emergency Reconstruction Programme. This project or plan was the result of a collaboration of the World Bank, UNDP, and the CDR based on an early and rapid assessment of war damages carried out by Hariri’s construction company Oger. The Horizon 2000 plan incorporated this work and presented a ten-year reconstruction and development strategy and master plan.

As a plan it took into consideration balanced regional development, which was constitutionally required after Taef. Investment plans did project a regionally relatively balanced expenditure plan; real investment, however, centred on Beirut and focused on basic physical infrastructure. This “macrocephaly” was further encouraged by the government’s support to the private sector and effectively centred development in and around Beirut (Najem, 2000).

At the time total cost of the programme was estimated at US\$ 11.672 billion — constant 1992 dollar — out of which US\$ 10.2 billion was earmarked for “physical investment”, US\$ 270 million was allocated to “non-physical investment” concerned with programme management and administrative support, and US\$ 1.19 billion was planned as “grant and credit support to the private sector” (CDR, 1993, p.9). The plan was projected to be implemented between 1994–2004, while actual costs considering inflation was estimated at US\$ 14.4 billion in addition to US\$ 4.1 billion related to budget deficits and debt repayment.

The engineers of the plan very optimistically expected more than half of this to be sourced from budget surpluses that were to materialise starting in 1996 based on estimated average growth rates of around 9 percent. Dibeh (Dibeh, 2005) makes an argument that these estimations were sensible because they were based on the planned investments in infrastructure and the contributions to GDP these should generate. But these predictions should rather be read as utopian dreams of growth, because the assumptions very clearly did not take into consideration the geopolitical dynamics of the region. They were overly optimistic given that the south was still occupied by Israel, that the rest of the country was occupied by Syria, and the situation in Palestine remained uncertain and this notwithstanding the Arab-Israeli peace process.

As seen earlier, the expected growth did not materialise. The considerable difference between reality and prediction suggests that the primary function of the plan was to restore confidence in the country and its government. It ran into trouble early on when the parliament refused to “incorporate the spending bill for Horizon 2000 into the 1995 budget” (Stewart, 1996, p.496) in 1994 but wanted it reviewed as a separate item. Nevertheless, it gives a good indication of the government’s intentions and priorities for the country. According to the plan, water sector development would be allocated 11 percent of total planned expenditures, whereby the distribution of investment was “about 30 percent” towards water supply and 54 percent towards the waste water sector. Water supply rehabilitation and extension was to produce 150 litres per capita per day (lcd) by 1997 and 160 lcd by 2002. According to the plan:

Approximately two-thirds of the total waste water investments are scheduled for implementation during the latter half of the Horizon period. ... In parallel with these priority physical actions it will be necessary to undertake non-physical investments in order to establish an appropriate basis for the heavy subsequent investments proposed for the collection, treatment and disposal of waste water — including institutional developments to ensure appropriate management of the sector financial sustainability, and proper cost recovery mechanisms. The sector programme targets to connect 50 percent of the population to waste collection and disposal systems by 1997, and 98 percent of the urban population and 70 percent of the rural population by 2002. (CDR, 1993, p.56-57)

As was already shown in Chapter 3 and as will be shown below these targets were not met. The plan as a whole was effectively laid to rest in 1996–1997 with the attempts to rein in the public

deficit. But it guided investment afterwards, even if on an ad-hoc basis, and decoupled from a time schedule it provided a pool of projects for implementation from which to choose.

From 2002 until 2004 the Investment Planning Programme funded by the EU readjusted the investment programme and goals and identified new priority projects. But the dependency on foreign funding, political instability, and the debt-induced austerity politics derailed its scheduling and phasing. In 2005 the National Physical Master Plan for the Lebanese Territories (NPMPLT) formed a first attempt at comprehensive spatial planning for the country as a whole. It formulated principles for spatial development of land and resource use, as well as sectoral development strategies. For example, water resource protection principles and related protection zones that regulated and, where necessary, prohibited polluting activities such as quarrying. It was supposed to become a binding document to guide master planning at the local scale. For the first time a balanced vision of development was articulated and published. The plan explicitly stated that balance was to be understood as providing equal public services for all regions (Dar al Handasah (Shaer and Partners) – IAURIF, 2005, p. III-3). By this it meant to move away from the logic that misunderstands an equal distribution of projects and funds to all regions as balanced development, but spending that would attempt to equalise the existing uneven development.

The global vision of the plan and the relative detail which it articulated represents a radical break from the *modus operandi* of government operation. The plan was never ratified and so has no legal or binding implications on planning. But it is still published and accessible on the website of the CDR and can be used to represent a more sovereign and even progressive vision of Lebanese development.<sup>2</sup> Its formulation of the priorities of waste water management show the diverging interest of the IDC and this vision. Like the plans before, the objective was total coverage by networked systems or individual solutions with adequate treatment before discharge. To reach this goal, while acknowledging the high cost, it was prioritised:

In the short term, the priority should be given to two categories of “localities”:

- 1) On one hand, mountainous regions located in areas of extreme vulnerability of water table, tapped by downstream villages and cities for domestic supply: For these regions, the works should encompass collection of sewage water as well as treatment;
- 2) On the other hand, in large agglomerations, where rehabilitation and extension of networks is needed, treatment should be of second priority, except for interior agglomerations (Baalbeck, Zahleh-Chtaura and Nabatieh), where they must constitute a priority.

(Dar al Handasah (Shaer and Partners) – IAURIF, 2005, p. IV- 82)

While in a second and third phase smaller isolated towns were to be progressively equipped. The priorities expressed here are the opposite of those of the IDC, or at least its European faction. The depollution of the Mediterranean in this plan was of low priority. A USAID US\$ 24 million project that financed small scale water treatment plants for villages was also not a priority. Of high priority were sources of pollution that affect downstream users — in the mountains and inland where sewage pollutes aquifers that are sources for water supply.

---

<sup>2</sup>The study was produced as a joint venture of the Lebanese company Dar el-Handasa and the French IAURIF. The project team included a number of progressive professionals such as Charbel Nahas, Kamal Hamdan, Habib Debs and a number of other figures that have at different times challenged the government’s vision of development.

The availability of external funding should not be the determining criterion for identifying projects: On one hand, the external funding can concern projects of less priority than others, and on the other hand, it can disappear if the problems of local expropriation or acceptance by the population are not resolved.

(Dar al Handasah (Shaer and Partners) – IAURIF, 2005, p.IV- 82)

It criticised the practice of accepting loans that are coupled to specific projects and points to the necessity to prioritise according to need and government funding capacity. Unlike the practices of the post-war years it advocated against investment driven by the loans made available by the IDC and coupled to specific projects of lower priority. Accordingly the plan did not produce a long term investment plan. A follow-up study identified a more modest detailed investment horizon of four years (2006–2009) and defines 27 different possible policy and context scenarios, and based on these priority projects (Dar al Handasah (Shaer and Partners)– CNBureau s.a.r.l. - IAURIF (2006)). But like the master plan this study seems to have been disregarded as evidenced by the history of investment patterns that are still strongly influenced by IDC priorities.

Water sector plans experienced the same fate as the successive master-plans. A first plan produced by Lyonnaise des Eaux in the mid 1990s seems to have been shelved immediately (Lyonnaise des Eaux Dumez, 1995). In 1999 the government presented the Ten-Year plan for the water sector. The plan emphasised the need for dams and aimed at producing 18 dams until 2010, as well as a total of 27 storage projects (Comair, 2010b, p. 155). Of these only one dam has been build because of the lack of interest by foreign donors. A project on the Assi river flowing into Syria was in the early stages of work in 2006, but after it was bombed, the Chinese company building it withdrew from the project.

The Ten-Year plan was revived in the NWSS that projects expenditures on infrastructure on the scale of US \$ 7.74 billion in the period from 2011 to 2020. The priorities for dams in this plan (MEW, 2010b, p. 90) are almost the opposite of those proposed in the NPMPLT (Dar al Handasah (Shaer and Partners) – IAURIF, 2005, p. IV-74) as can be seen from Table 5.2. The latter had four criteria for dam selection: 1) a graded scale measured in volume/capita of RWEs representing production capacities where the least productive were assigned high priority; 2) irrigation criteria in order of importance: improvement of existing infrastructure, non-irrigated agricultural zone, additional supply to existing networks where it generates improvements, and finally where new networks needed building; 3) other benefits that can be derived from such a project such as flood protection or as regards to tourism; and 4) the availability of existing studies and designs.

The two plans differ in their approach to planning. The authors of the NWSS built the demand scenario and produced a plan that in theory would meet this demand, as well as complete the transfer of the burden of the full cost of water resource management onto the citizenry. The result was an investment plan and the definition of capital requirements. How the funding needs would be met above the projected revenues of US\$ 2.72 billion for the time period between 2011–2020 is not explained. The plan is driven by the same wishful thinking as earlier plans.

Table 5.2: Priority of Dam Projects in NWSS and NPMPLT

Dam	Capacity & Use	NPMPLT	NWSS start / completion
Noura et-Tahta	35- 50 Irrig.	High	before 2020
Bared	37-90 WS	High	2011 -2015
Iaal	12-18 WS - Irrig.	High	start (2016 - 2020)
Younine	5.8 WS	High	2011 - 2014
Chabrouh	8-12 WS	High	executed
Massa	8 Irrig. - WS	High	2013 - 2015
Ibl Saqi	50 Irrig.- WS	High	2014 - (2016 -2020)
Assi	63 +15 irrig.	Medium	2011 -2015
Janneh	30-90 WS - Irrig.	Medium	2012 - (2016 -2020)
Boqaata	6-12 WS	Medium	2011 -2014
Azzounieh	4.1 -5.0 WS	Medium	2011 -2014
Damour	42 -106 WS-Irrig.	Medium	dropped
Bisri	120 WS	Medium	2016 - 2020
Khardali	120 Irrig. -WS	Medium	after 2020
Qarqaf	20-25	Low	2012
Dar Beashtar	55 Irrig. - WS	Low	dropped
Qalaat el_Mseilha	6-12 WS - Irrig.	Low	2011
Kfarsir	15 Irrig. - WS	Low	dropped
Yammouneh (HL)	1.5 Irrig.	High	in progress
Qammouaa (HL)	1.2 Irrig.	Medium	dropped
Qartlab / atolbe(HL)	0.7 WS	Medium	start (2016-2020)
Kouashra (HL)	0.35 Irrig.	Medium	2011 (rehab.)
Sbat (HL)	0.6	Medium	2014 - 2015
Jriban (HL)	n/a	Medium	dropped
Azzibe (HL)	0.6 Irrig.	Medium	dropped
Masser Chouf (HL)	2.2 WS	Medium	2011 - 2014
Brissa (HL)	0.8 Irrig	Low	2011
Balaa (HL)	1.2 -2.2 WS	Low	2011 - 2013
Laqlouq (HL)	0.5	Low	2013 - 2014
el-Hasbash / Manzoul(HL)	0.4	Low	2013 - 2014
Qaissamani (HL)	1.0 WS	Low	2011- 2012
Rashaya (HL) / ain arab	8.0	Low	2014 -2015
Lebaa (HL)	0.8 Irrig.	Low	dropped

Source: National Water Sector Strategy 2010; National Priority Master Plan for the Lebanese Territory 2004.

The fact that work has started on only four dams (Jannah, Boqaata, Msaileh, and Qaysamanieh) since the inception of the strategy shows that the priorities presented in the strategy and actual implementation already diverged by the end of 2013. The Qaysamanieh dam project is implemented by the Kuwait Fund. The three other dams are located in areas where the constituencies of the minister reside and the only areas where real electoral competition actually takes place. Their prioritisation is a reflection of the minister's efforts to profile himself politically. The local master plans published by the minister follow the same pattern, they are for the cazas of Keserwan, Metn and Aley, as well as the cazas of Jbeil and Batroun. The Bisri dam is part of the Greater Beirut Water Supply Project funded by the World Bank (see Chapter 3), and work on the project is very likely to start within a few years of publication of this study. This selective and politically motivated reprioritisation by the minister who commissioned the study shows the disconnect between planning and implementation.

In contrast the NPMPLT highlighted "the financial difficulties of the state" and stated that reducing system losses should be given more importance, especially because these represent an

equivalent loss of investment (Dar al Handasah (Shaer and Partners) – IAURIF, 2005, p. IV-70). The National Master Plan’s point of departure is the financial situation of the state which explains why it does not provide an investment horizon. Instead it defines priorities so loosely as to make them adaptable to the financial capacities of the state. Unlike the NWSS it does not rely on debt funded miracles but aims to minimise the debt, taking into account its effects on economic growth as the development plan for 2006–2009 explains (Dar al Handasah (Shaer and Partners)–CNBureau s.a.r.l. - IAURIF (2006)).

Given the experience of past capital expenditure in the water sector and on infrastructure in general, as well as the problems that dam projects encounter (see Chapter 3 and section 5.2.3 in this chapter) the NWSS is unlikely to achieve its goals. The NWSS produces very optimistic scenarios and is planned without taking into account the Lebanese political context nor the funding abilities of the state, like earlier plans before it. It shows how disconnected the planning process has been and still is. In the light of this, the NWSS seems to be targeted more at the IDC to attract funds and projects because one of the main problems remains the fiscal situation. It resembles a bargaining situation where an excessively high demand is initially made to obtain a good offer, or in this case more funds for projects. The 2011 World Bank “Water Sector Assistance Strategy” describes the problem as follows:

The NWSS contains a ‘strategic road-map’ for implementation, and this is now being broken out into a phased implementation programme. The implementation program should take account of the social, political and institutional constraints, prioritising measures and investments according to impacts, adopting proposals to overcome or by-pass constraints, and setting out a plan to ensure the needed support of champions, key political actors, stakeholders and financiers. Taking a step by step approach, tailoring reforms to local realities, and testing out reforms on a small scale could also help. ... Development partners have been associated with the NWSS from the start and have contributed to its elaboration. *As planning for implementation goes ahead, it will be important to keep the development partners aligned behind the NWSS, with financing of the priority infrastructure investment and institutional development plans of each WE coordinated.* (World Bank, 2012b, p. 23–24)

### 5.2.1 Infrastructure Development

An analysis of expenditures on infrastructure in general and water infrastructure specifically has to take into consideration severe data limitations. In a World Bank water sector report from 1998 that was never published, the authors note that “it was impossible to gather sufficient expenditure data” (World Bank, 1998) to assess government expenditures at the time. Data regarding expenditure on infrastructure remains patchy. Two main sources will be used here, the various CDR progress reports, a number of World Bank reports, but mainly the 2010 water sector expenditure review and the 2005 public expenditure review. But even in the 2010 report the authors point to data limitations. As the 2010 report comments :

The budget in Lebanon has not been approved by the Parliament since 2004. Budget allocations to ministries since 2005 onward are based on approved 2004 values and significantly depart from actual expenditure figures. This severely weakens the ability to monitor budgetary outcomes by comparing allocated versus actual expenditure in the sector and link spending to sector priorities. (World Bank 2010, p.5)

According to the World Bank 2005 Public Expenditure Report public investment expenditure averaged about 3 percent of GDP or 15 percent of primary expenditures. US\$ 8.5 billion were disbursed between 1992 and 2003 (World Bank, 2005). Gaspard estimates expenditures between 1993 and 2002 at US\$ 9.2 billion and 6 percent of GDP on average annually. 16 percent of overall government spending including debt service (debt service = 38 percent of expenditure) went into investment activities during this time period.

Between 1992 and 2003 the CDR awarded contracts worth \$7.1 billion of which US\$ 5 billion were disbursed. By 2008 this sum amounted to US\$ 8.95 billion and US\$ 6.5 billion respectively, by end of 2011 US\$ 10.66 billion and US\$ 7.40 billion of completed work contracts. These sums include operation and maintenance as well as management contracts that have no bearing on capital investments; the World Bank estimates these at an annual US\$ 100 million.

The emphasis on the electricity, telecommunications, and transportation sectors reflects the government priorities aimed at producing a service and financial industry hub for the region. Table 5.3 shows that the water sector, excluding irrigation but including waste water disposal and treatment, was earmarked to receive 12.6 percent of CDR expenditures in 2003 and 13.9 percent in 2008. Yet progress in the sector lagged behind other sectors as can be seen from the percentage of completed projects. Investment in agriculture and irrigation infrastructure was extremely low and reflects successive governments' attitude towards the sector.

Table 5.3: CDR percent expenditure by sector 2003 and 2008

Sector	2003		2008	
	Awarded % total	% completed	Awarded % total	% completed
Electricity	19.7	94.7	15.7	92.9
Transportation	25.8	68.2	23.5	67.6
Telecommunications & Post	10.9	99.9	9.1	100
Water Supply	7.2	61.2	8.2	61.3
Waste Water	5.4	51.3	5.7	69.4
Agriculture & Irrigation	1.5	63.9	1.2	84.0
Solid Waste	12.1	29.0	14.2	40.6
Public Health	3.6	81.9	3.5	93.6
Education (2003 with Sport & Culture)	8.4	53.4	10.8	77.4
Other Sectors	8.4		8.1	

Source: CDR 2004, 2009;

Figure 2.7 on page 60 showed an average annual capital expenditure in the water sector of US\$ 142 million (adjusted for 2008 prices) most of which was spent by the CDR. The Council of the South and the Central Fund for the Displaced also spent considerable amounts on water supply infrastructure. In both cases a lot of the expenditure was focused on drilling wells and the renewal and extension of water supply networks. In terms of size the projects remained relatively small (and certainly had even higher degrees of waste than CDR managed projects).

All waste water related expenditures were financed by the CDR. By 2008 the CDR had disbursed US\$ 694 million with US\$ 472 million worth of contracts in progress.<sup>3</sup> The Ministry of Energy and Water's contribution to capital investment and capital formation in infrastructure during the time period from 1992 - 2008 was according to these numbers just above 6.3 percent. This shows that the waste water sector was of secondary importance. So too were ecological concerns in general

<sup>3</sup>In 2012 these numbers were US\$ 900 million and US\$ 610 million.

which is confirmed by the level of investment in the solid waste sector (see Table 5.3), where only 40.6 percent of awarded contract sums were disbursed.

The numbers regarding capital expenditure do not adequately describe efforts in the sector. The World Bank writes that the “public investment in the water and waste water sector has been inadequate to meet sector development needs.” Investment on a scale of 0.4–0.5 percent of GDP is “below the optimal level of investment” <sup>4</sup>and about half the MENA average. The US\$ 128 million annual average (excluding agriculture) is judged insufficient by the World Bank. But, according to the report, it explains why private alternatives or complementing public provision has grown “to the point that revenues accrued to private operators exceed revenues raised by the four RWAs” (World Bank, 2010d, p.35).

### 5.2.2 Efficiency of Public Expenditure: a Study of the Waste Water Sector

It was mentioned earlier (see Section 3.1.4) that estimates regarding the scale of waste and corruption go as far as 20 percent, but this is only one aspect of the “high inefficiencies in public expenditure.” The waste water sector provides many examples.

Figure 5.1 illustrates these inefficiencies. The map shows the waste water projects that are completed, in progress and under preparation by the CDR as of 2012. The green areas show the projects under preparation. Blue areas and icons denote completed projects. Red areas denote the networks under construction. The most striking aspect of this map is how many completed waste water treatment plants are not connected to a network or where the network is under construction.

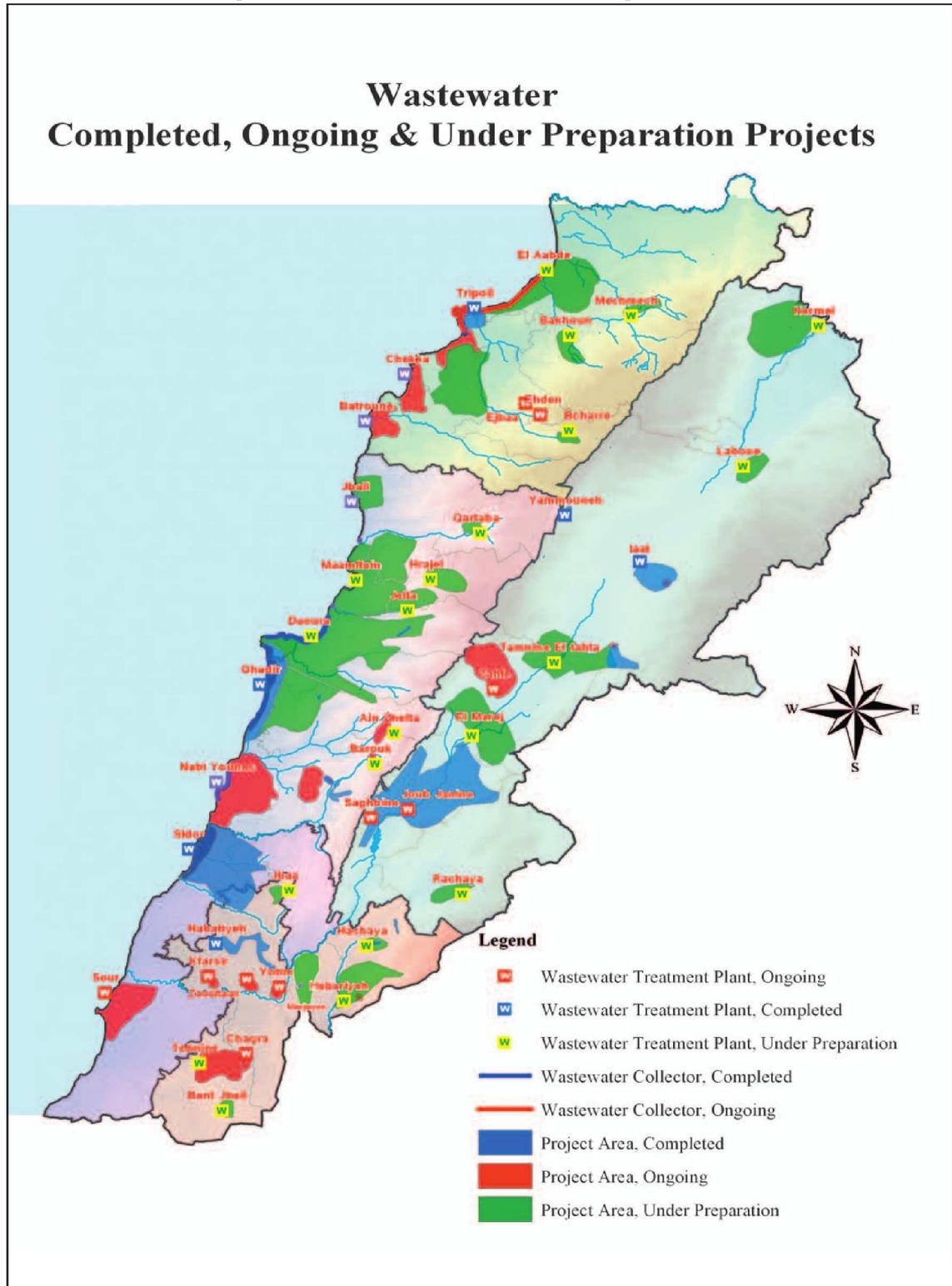
The NSWWS (MEW, 2010a) lists the treatments plants planned and constructed. A waste water treatment plant was built for a total cost of US\$ 120 million in Tripoli, the project was financed through an EIB loan. Construction started in 2004 and was completed with a delay in 2009–2010, yet the plant did not start operating before 2011 because the waste water volumes reaching the plant were insufficient to allow for efficient operation. A trunk connector and secondary network collecting waste water from the north of the city was built with German financing to remedy the problem. This project did not start until 2010 and was not completed until 2013. The conveyance network to the plant required an additional US\$ 90 million for extension works, but this funding was not secured in 2011. Three smaller plants in Chekka, Batroun and Jbeil were constructed from French funds but are not operational. They were completed in 2006, 2010, and 2010 respectively. Combined US\$ 57 million for the construction of networks to these plants was not available and US\$ 74 million worth of works were completed or under construction.

The Ras Nabi Younes plant between Beirut and Saida was also listed as complete but not operational and required an additional US\$ 22 million for network extension. The Saida plant was completed and operational but provided only pre-treatment. Work on the Sour (Arabic: Tyre) plant was underway. Inland plants too were listed as being operational, in Baalbeck and Yammouneh, and two were under construction in Zahleh and the West Bekaa. The same study lists the plants produced by USAID but more than half of these are not operational anymore (MEW, 2010a).

---

<sup>4</sup>I do not intend to endorse the World Bank’s definition of optimal investment. The methodologies it employs to define what an optimal level of investment is are mathematical and defined for an average of countries. Here the quote serves only to illustrate that even the World Bank viewed efforts as insufficient.

Figure 5.1: CDR Waste Water Works Progress in 2012



Source: CDR (2013)

In the Bekaa, the World Bank-financed “Baalbeck Water and Waste Water Project” is another example of the delays and problems these projects suffer from. Construction works were completed in late 2007–2008, but farmers broke the main waste water conveyor coming from Baalbeck to the

plant in order to use the water for irrigation, as they had prior to the project. These issues were eventually resolved by the installation of wells providing groundwater for the farmers (see World Bank, 2012a, Interview Yazbek 2011).

The low efficiency of these projects is only in part caused by the Lebanese administration. The availability of funds or rather the lack thereof is an important component in the completion of functioning waste water infrastructure. The focus on treatment of waste water bound for the Mediterranean was responsible for the funnelling of funds towards treatment plants along the coast. The networks were not a priority of the donors, and with no funding source other than the IDC these were not built. The result was that investments stood idle for considerable periods of time and in 2013 the plants that did function only did so below capacity.

### 5.2.3 Infrastructure and the Hydrosocial Cycle in Keserwan: a Case Study

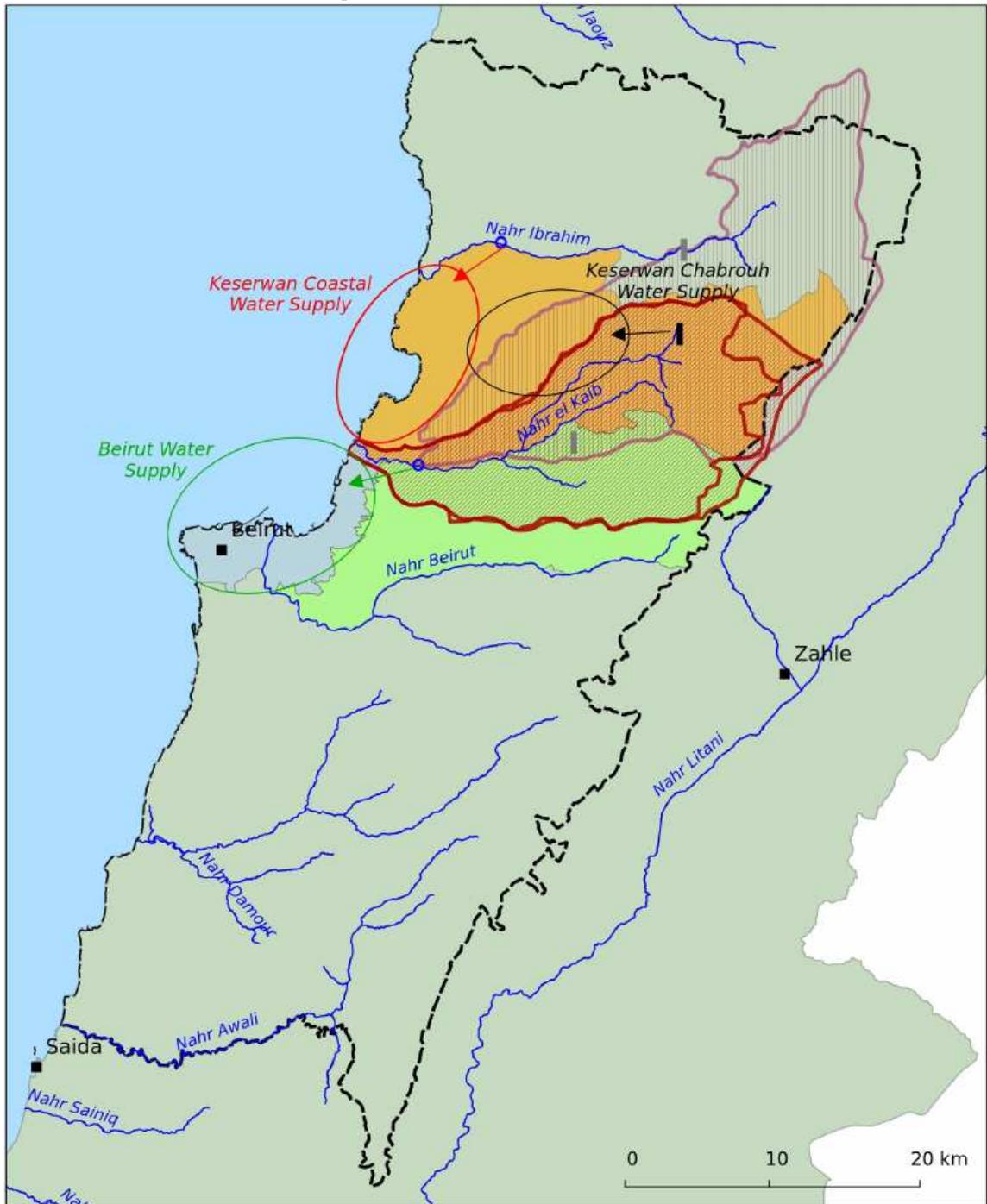
In contrast to descriptions of the waste water sector at the national scale above, it is the local aspect of infrastructure production that is the subject of this section. The analysis is extended to produce an understanding of the material aspects of the hydrosocial cycle. The aim is to show 1) that there is a variety of factors that influence water resource management and the infrastructure production process at this scale, 2) how these factors influence water resource management with a focus on infrastructure production and planning, and 3) how the hydrosocial cycle is shaped locally.

In order to produce a description of the hydrosocial cycle and understand the infrastructure production process at a local scale, one watershed was chosen. The area selected is the Nahr el Kalb drainage area in the Keserwan–Metn region, about 20 km north of the capital. The watershed served only as a starting point, hydrogeological and sociopolitical factors redrew the limits of the area of analysis. Figure 5.2 sketches this evolution.

The Nahr el Kalb watershed falls within the administrative boundaries of the cazas Keserwan and Metn, with the river forming the border between the two. Before the reform of the water sector administration, the north flank of the watershed was administered by the Keserwan-Ftuh water office and the southern slope by the Metn water office (as was shown earlier, the limits of the caza largely coincide with the limits of the water offices). After the reform the water offices were integrated into the Beirut Mount Lebanon Water Establishment (BMTLWE).

The Jeita Spring at the bottom of the watershed is the principal source of water for large parts of Beirut and the northern suburbs as well as part of the lower Metn (see fig5.2). In 2012 a German hydrogeologist delineated the groundwater catchment area for the Jeita Spring in the framework of a German funded development project, the aim of which was the definition of a ground water protection area for the Jeita Spring. He found that the groundwater catchment extended beyond the watershed into the adjacent Nahr Ibrahim watershed and the mountain plateau over the watersheds (Margane & Schuler, 2013). The Chabrouch Dam project and the related water supply network supplies water to all the upper Keserwan as well as parts of the coastal area that do not lie in the surface watershed. The water supply there is supplemented by the Keserwan coastal water supply project that draws from the Moudiq Spring on the slopes of Nahr Ibrahim.

Figure 5.2: Keserwan problemshed



**Keserwan Problemshed**

Water Authorities (until 2000)

- Beirut
- Metn
- Keserwan-Ftouh

Water Establishment (since 2000)

- Beirut Mount Lebanon

Watersheds

- Nahr el Kalb
- Jeita Grotto Groundwatershed

- Selected Springs

Dam Projects

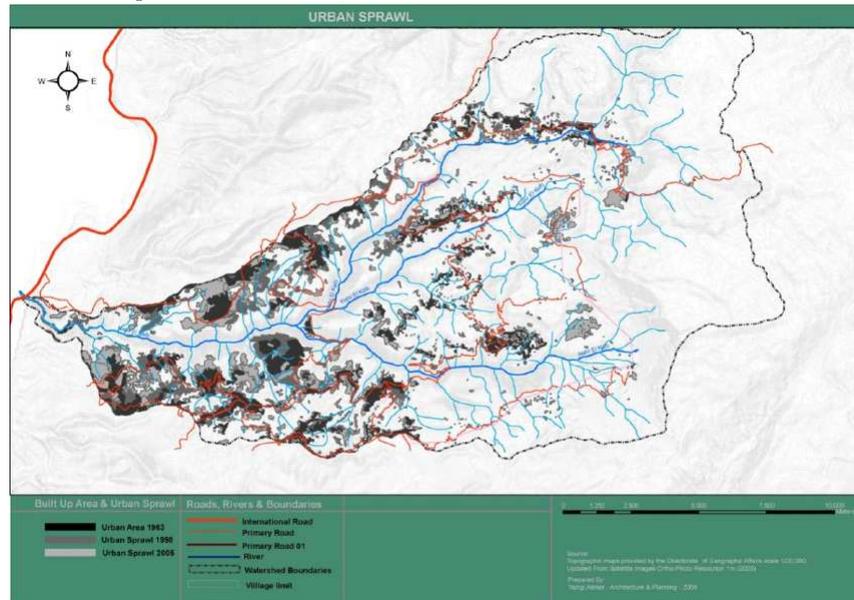
- under construction
- built

Sources: Nation Physical Masterplan for the Lebanese Territory (2004); BGR (2013)

### 5.2.3.1 Socioeconomic Features of the Study Area

The cazas Keserwan and Metn are the wealthiest areas in the country after Beirut. They form the extension of the Beirut metropolitan area which is the central economic pole of the country. Population in these area varies with the seasons. Generally the summer month see a flux towards the mountains and the villages. In addition to regional and international tourism to these areas, people living along the coast and in Beirut move to the mountains during the summer months.

Figure 5.3: Urban sprawl in the Nahr el Kalb watershed



Prepared by: Yazigi & Abi Fadel

Source: The Study of the Nahr el Kalb watershed (Yazigi and Abi Fadel 2009, p. 95)

One study estimated that only about 45 percent of the registered population is present in the winter in the villages of the Keserwan, whereas in the summer months this rises to 80 percent of the registered population (NDU, Harb, Yazigi, Abi Fadel & Zind, 2009). In the highest villages the ski season produces the opposite effect.<sup>5</sup> Philip Schuler describes the process in relation to the hydraulic cycle with the goal to model the water balance of Jeita Spring catchment (JSC):

In mountainous villages, like Faqra or Faraya, number of population in winter exceeds number of population in summer. Thus, JSC is exposed to additional pressure by people spending only a limited amount of time within the catchment. In turn to this, in agriculture-dominated villages, like Lassa or Ouate El Jaouz, approximately 80-90 percent of the total population leaves during winter. This seasonal variation leads to changing demand for drinking water and, in turn, seasonal variation of discharged waste water.

(Schuler, 2011, p. 70)

The area has experienced considerable urban sprawl. Urban planner Serve Yazigi points out that urban areas in the Nahr el Kalb surface watershed increased by 22 km<sup>2</sup>, from 17 km<sup>2</sup> to 39 km<sup>2</sup> between 1963 and 2005 (see Figure 5.3) (NDU et al., 2009, p. 95). This represents an increase from

<sup>5</sup>These fluctuations are reflected on the national scale. International tourism peaks in the summer months to amplify demand in the months when it is already highest because of the heat.

6.8 percent to 15.6 percent of the area of the watershed. Urbanisation decreases with increasing altitude.

### **Economic Activities and Pollution**

In the Keserwan area agriculture is not a very important activity. According to the agricultural census (MOA 1999) published in the Atlas Agricole (2004) there were 2,320 ha of agricultural land of which 70 percent was irrigated. In the Metn, 3,300 ha exist of which 45.5 percent are irrigated. Schuler (2013) mentions irrigation figures for Kfardebian, the largest municipality in Keserwan, situated at an altitude of 1,500 m above sea level (asl), that range between 86 percent to 96 percent of used agricultural land under irrigation. These are the result of the rehabilitation of the irrigation network financed through a World Bank loan in the framework of a larger irrigation rehabilitation project (World Bank, 2004).

According to the Nahr el Kalb watershed report (NDU et al., 2009) agricultural areas decreased since before the war and continued to do so until 2005. This study considers that from 1998–2005 used agricultural area decreased from 3,720 ha to 3,500 ha (in the watershed). The author suggests that the driving factor is urban sprawl displacing agricultural uses of the land. He observes that while overall areas decreased, fruit tree orchards, apples in particular, expanded. In a sample survey of 24 farmers and their exploitation he found that all irrigated with different means. He also confirms that fertiliser as well as pesticides and fungicides were used in excess of requirements and form a source of potential pollution.

The German funded and implemented project identified groundwater hazards in the upper Keserwan. The project mapped the groundwater catchment for the Jeita Spring which provides up to 75 percent of Beirut water supply. In the process it delineated potential protection zones and identified the specific infiltration threats within the area. The list of hazards includes: Gas stations and car workshops, dump-sites<sup>6</sup>, quarries, agriculture, restaurants, hospitals and dispensaries. Figure 5.4 shows the pollution sources on the map with the identified vulnerability zones. Within the area the gas stations were identified as particular threat, 86 gas stations were counted on a groundwater catchment of 409 km<sup>2</sup>.<sup>7</sup>

#### **5.2.3.2 Infrastructure and Hydrogeology**

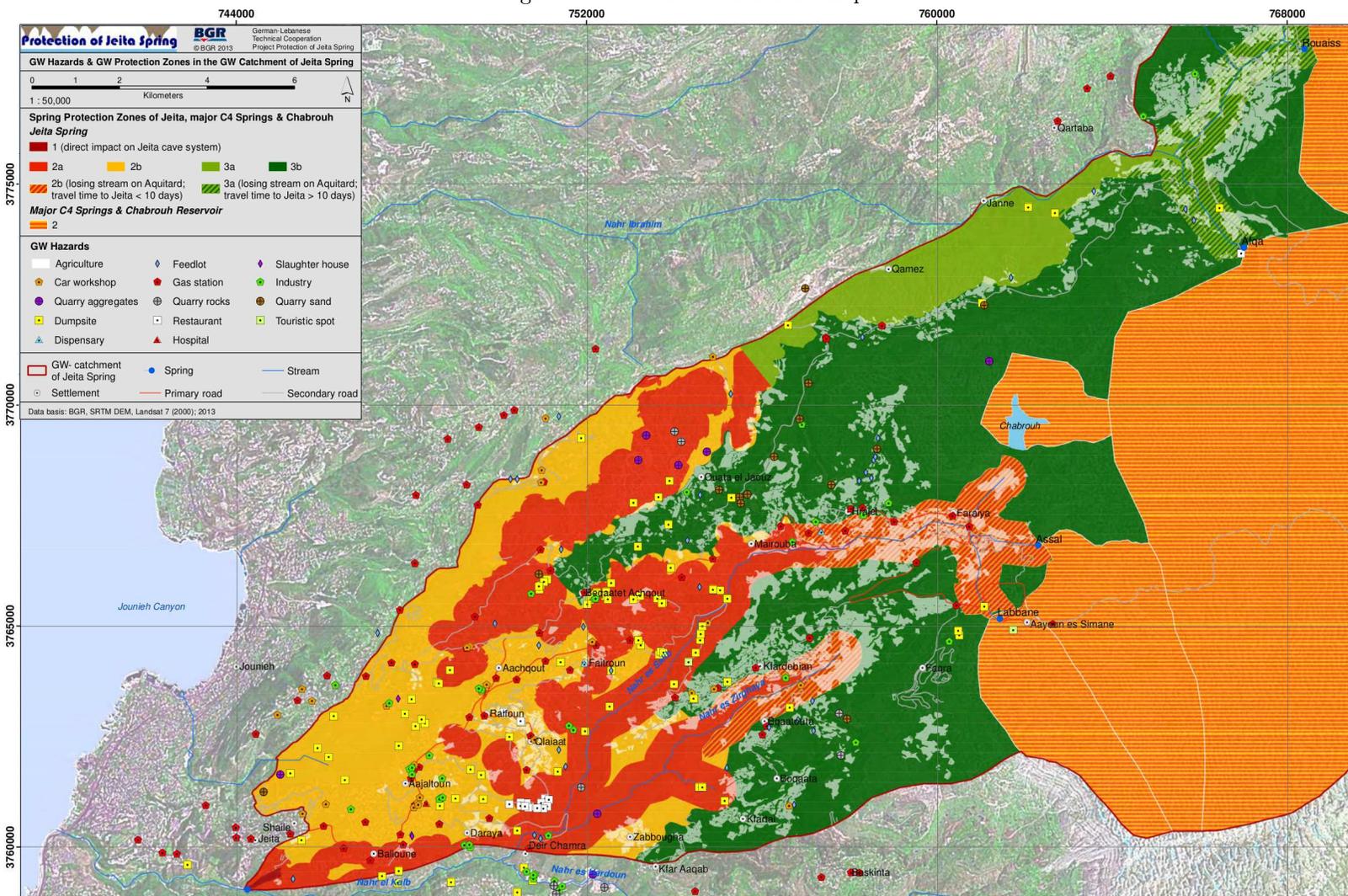
This section will now explain the water flows through the case study area and discuss some of the ways in which quantity and quality are affected. One aspect is the hydrogeology of the terrain. Bakalowicz (2009) observes that the separation of surface and groundwater is of little use in Lebanon because of the karstic nature of the two main aquifers. Karst denotes geological formations shaped by the dissolution of rock layers. In Lebanon the main aquifers consist of limestone, a carbonate rock that is dissolved by mildly acidic rain or water.<sup>8</sup> Over long periods of time, in geological terms, the rock weathers, and canal systems and caves, as well as finely porous diffuse flow matrices form in the geological layer. These formations govern the groundwater flow patterns. The flow velocities for large fractions of the groundwater are comparably rapid, while the diffuse flow matrix holds a considerably smaller part of the groundwater. The porous and fractured

<sup>6</sup>Especially during the war, waste disposal was organised by dumping into the steep valleys. This practice can still be observed today even though not as frequently as before.

<sup>7</sup>Of about 3,600 gas station about 1,800 are not licensed by the MEW (Interview Cochrane 2012). In the watershed numerous gas station use only single shelled underground tanks instead of doubly reinforced storage tanks posing an even greater risk of infiltration into groundwater (Interview Margane 2013).

<sup>8</sup>Rain becomes mildly acidic with its exposure to carbon dioxide (CO<sup>2</sup>) in the atmosphere.

Figure 5.4: Groundwater hazard map



Source: modified from BGR Groundwater Hazard Map 2012.

nature of karst also makes it highly vulnerable to infiltration and percolation of pollutants and waste water.

In Lebanon the snowpack cover forms the principal water reservoir. The snow melts and water percolates into the limestone through sinkholes or dolines and recharges the aquifers. The water flows through the aquifer and resurfaces as spring water where the aquifer (the permeable geological layer) meets an impermeable layer (an aquitard). The water will remain at the surface as long as the riverbed is impermeable but will partially re-infiltrate when it flows over karstic bedrock. Understanding and identifying the groundwater flows through karstic aquifers in Lebanon is further complicated by the history of tectonic activity and related deformations of the geology that have shaped the topography of the country.<sup>9</sup> Bakalowicz states that almost the totality of water volumes originate from these aquifers even though surface water run-off is discharged through rivers and all the perennial rivers are sustained by the discharge from these aquifers (Bakalowicz, 2009, p.8).

### 5.2.3.3 Keserwan Problemshd

For the purpose of the analysis of infrastructure production I will focus only on the Keserwan area. This is justified by the topography and the related layout of the supply system. The river runs in a very steep valley often hundreds of meters below the inhabited areas. The inhabited areas are situated on the gentler slopes between the rivers, in the case of Keserwan this is the Nahr Ibrahim and the Nahr el Kalb. The domestic supply network for both areas, Metn and Keserwan, rely on wells that withdraw water from the underlying aquifer and from mountain springs. The Keserwan water network is isolated from the Metn. It does not receive water from it, but one water main originating from the Chabrouh dam supplies water to a reservoir and pumping station in the Metn.

The research of the German project on the JSC started out with the previously held assumption that the spring water originated from the watershed, but very quickly delimited the Jeita catchment to the northern half of the Nahr el Kalb watershed. With the progression of its exploration of the geology and hydrology of the area the German hydrologist and geologist showed that the groundwater catchment extends into the higher altitudes of the northern adjacent surface watershed of Nahr Ibrahim, including its two principal springs (see Margane, 2013a, 2013b; Figure 5.5 shows the surface and ground water catchment).

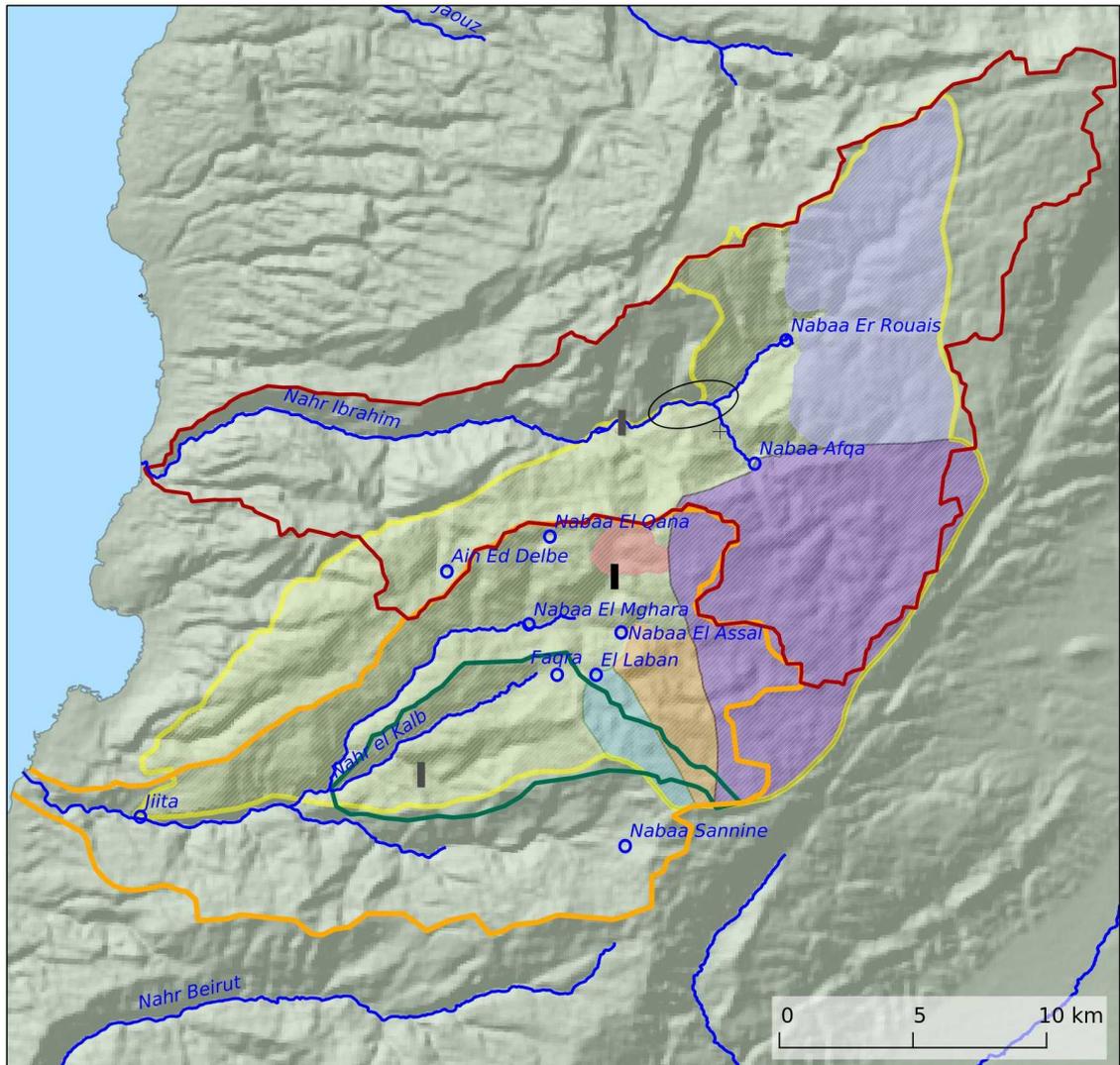
As Figure 5.5 shows, in this case the hydrogeology of the area gives the groundwater catchment equal if not more importance than the surface watershed with regards to resource management. Very little water is abstracted from Nahr el Kalb for use. The water supply source is in fact the aquifer that receives the snowmelt water (the shaded areas on the map). The urbanised area along the coast is not part of either of the surface watersheds of Nahr Ibrahim or Nahr el Kalb. It lies in a separate surface watershed.

As already mentioned in Chapter 3 in the context of the political outfall of the German findings, the theory that the upper Nahr Ibrahim and its springs are part of the JSC is contested by the engineering consultancy company Khatib and Alami which is responsible for the design and the supervision of work on the Jannah dam project on the Nahr Ibrahim. The dam reservoir as planned

---

<sup>9</sup>Lebanon is situated on the Dead Sea transformation fault system, which is still active today. It results from the relative movement of the African Plate and the Arabian Plate and extends from the Red Sea into Turkey where it meets the East Anatolian fault. The Yammouneh fault which runs parallel to Mount Lebanon and Anti-Lebanon is a main fault in this system.

Figure 5.5: Nahr El Kalb and Jeita Spring Catchment from BGR project



**Nahr el Kalb Surface Watershed and Jeita Groundwater Catchment**

Surface Watersheds	Groundwater Catchment Areas	Dam Projects
Nahr Ibrahim	Jeita	under construction
Nahr el-Kalb	Labbane	built
Zirghaya	Afqa	Tracertest Location
	Assal	Spring
	Chabrouh	Potential Infiltration Area in Jannah Dam Reservoir
	Rouaiss	

Sources: Nation Physical Masterplan for the Lebanese Territory (2004); BGR (2013); Elard Report (2013)

and under execution since mid 2012 would extend into the infiltration zone along Nahr Ibrahim reducing the dam capacity considerably. According to the German hydrologist a loss up to 60 percent is possible (Margane, 2012c) while others estimate the potential loss in retention capacity

at only 10 to 20 percent (Interview Gabi Abdelnour 2012), but still affecting the project's economic feasibility.

The debate concerning the existence of a hydrological interconnection between the two catchments — JSC and Nahr Ibrahim — was not the only reaction to the publication of these findings. Other reactions pointed to the technical possibilities to manage the connection. One Lebanese engineer suggested to the ministry that the infiltration areas that would overlap with the dam retention area could be sealed off by technical means. Depending on the rate of infiltration of the flows of Nahr Ibrahim in the area, the contribution to the discharge of the Jeita Spring could be considerable. In a worst case (but not improbable) scenario this technical intervention could have drastic repercussions on the water supply of Beirut because the Jeita Spring is the capital's main source of water.

The engineer considered that the extra cost (estimated at roughly US\$ 10 million), and even the potential reduction in discharge from the Jeita Spring is outweighed by the benefits the increase to the domestic water supply would represent (Interview Abdelnour 2012). It is estimated that the project could provide up to 200,000 m<sup>3</sup> per day (Khatib and Alami 2008) to the northern Beirut coastal area during the whole year, almost double of what Beirut receives during the summer according to the same source and thus substitute for potential losses.

Which hydrogeological interpretation will prevail depends also on the political developments in Lebanon probably as much as on the scientific correctness of the analysis. In December 2013 construction work on the dam was stopped because cavities in the bedrock were discovered on the construction site or its vicinity (Interview Margane 2014). Whether this confirms the findings of the German research and whether it will move decision makers to rethink the project remains to be seen.

This example reinforces the argument made by Mollinga et al. (2007) and Turton (2009) questioning the river-basin (or watershed) as the appropriate unit for water resource management and analysis. The hydrogeology of the case study area shows that at least in karstified areas it is unsuitable as both a management and an analytical unit. Furthermore, the extent and intensity of hydrological interconnection is uncertain and complex and does not fit preset templates (Mollinga et al., 2007, p. 703). In this case the physical reality of the hydrogeological system, or at least its scientific representation, extended the problemshed beyond the watershed: physically and permanently if correct; discursively and only temporarily if not.

#### 5.2.3.4 Water Supply Infrastructure

The Keserwan and its aquifers are the principal reservoirs for the Beirut water supply. Between 60,000 m<sup>3</sup>/d–350,000 m<sup>3</sup>/d are conveyed to Beirut from the Jeita Spring depending on the season. But while sitting atop a wealth of water, the area itself was poorly served during the 1990s and well into the following decade. In some of the villages water tankering was the norm and in the summer public water supply ran for up to six hours/day, but often only in intervals of a week or longer. In the absence of public water supply private wells were dug. A 2004 building census counts 508 buildings with private wells in the caza Keserwan (CAS, 2004).

A study from 1993 estimates that of 38,200 subscriptions or 44,873 m<sup>3</sup>/day only received about 15,400 m<sup>3</sup>/day, or about 40 percent of a nominal 46,500 m<sup>3</sup>/day available in the dry period (Lyonnaise des Eaux Dumez, 1994b). The rest was lost in leakage from an old and war-battered network. A later assessment (WB 1996) shows that no new sources were added by 1995 and

summer production was still at the same level. This assessment shows that subscriptions had increased from 38,600 in 1990 to 43,498 by 1995.

The first damage assessment after the war (the ERP) allocated about US\$ 5 million for emergency repairs to the area (see Table 4.1 on page 135 ). This was equivalent to a rate of about US\$ 120 per subscription. Only the Metn and Saida had lower rates of investment per subscriber. The water supply situation improved only marginally if it all in the 1990s and repairs seem not to have kept pace with the increase of subscriptions. Infrastructure production until 2004–2005 was no more than patchwork, and supply was augmented piecemeal. An engineer working with the Keserwan–Ftough water office describes the repair activities:

There was no water so we fixed things here, dug a well there. Got 1,000 m<sup>3</sup> (/day) here 2,000 m<sup>3</sup>(/day) there. The last project was the waters from Jeita which gave us 10,000 m<sup>3</sup> to Baloune. (Interview Abdelnour 2012)

A review of the plans of the networks confirms that only very targeted replacements of old sections of the transmission network were replaced in the 1990s some of which was financed through the World Bank in the framework of the NERP (Oger International, 1992; Massaad, 1997). Most of the work done described by the engineer was financed through the ministry. Overall 13 wells pump groundwater, about 16,000 m<sup>3</sup>/d in 2013, drawing from the Jeita Spring Catchment. The Jeita Project installed pumps and transmission mains to convey water from the spring at an altitude of about 50m asl to the reservoirs in Baloune at 785 m asl. With the work of rehabilitating the Ain el Delbe system with funding from the Kuwait Fund total production must have reached 60,000 m<sup>3</sup>/d to 70,000 m<sup>3</sup>/d in 2003. Given the comparably meagre repair investments water losses should not have been better than 2010 estimated averages of about 50 percent UfW (MEW, 2010b, p. 10) so that the really supplied volumes were likely to range between 30,000 m<sup>3</sup>/d and 45,000 m<sup>3</sup>/d. Subscriptions can be expected to have grown in the range 8–12 percent or about 4,000–5,000 if not more to about 48,000–50,000 and an equivalent increase in demand (in the absence of data about subscriptions in the year the building census records from 1996 and 2004 are compared see Table 5.4). Thus even after ten years of augmenting the supply the situation was hardly better than at the end of the war.

Table 5.4: Growth of building stock in Keserwan between 1996 and 2004

	1996	2004	Growth
Buildings	23 389	24 876	6.34 %
Units	81 520	88705	8.81 %

Source: Central Administration of Statistics,  
Census of Buildings Dwellings and Establishments 2004;

The situation improved only after two large infrastructure projects were completed, namely the Chabrouh Dam and distribution network and the Keserwan Coastal Water Supply Project. They provided water for the whole area from the coast upward and providing 4,000 m<sup>3</sup>/d to the Metn area (Figure 5.6 shows the coastal water supply project). Combined these increased the water supply to about 140,000 m<sup>3</sup>/d.

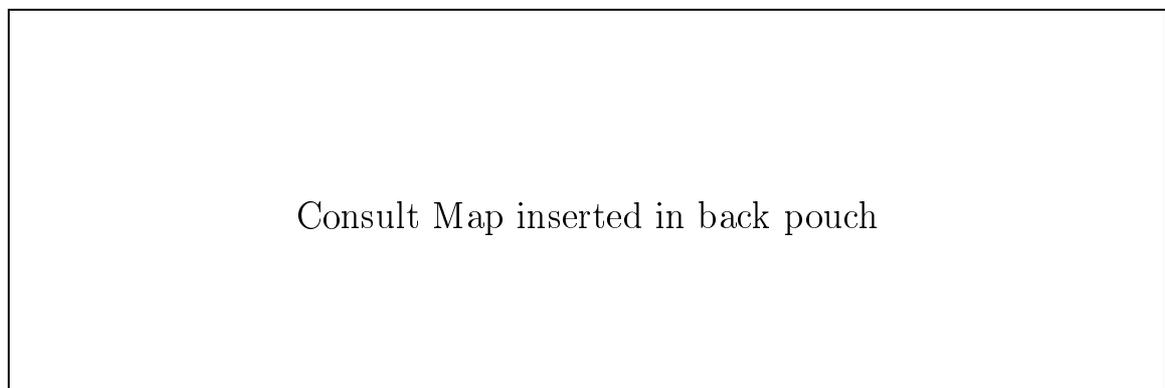
Both projects were already conceived in the 1990s. The coastal water supply project was designed in the mid 1990s, tenders were expected by the end of 1997 and the project was expected to be completed by 1999 (Massaad 1997). Funding was secured through the Japanese development agency OECF (now JICA) in 1997, within the framework of a coastal pollution protection project lead by the World Bank. When the programme collapsed implementation was delayed and had

to wait until 2001 for work to start. The project experienced severe delays for various reasons, political events in Lebanon, as well as technical difficulties and cost overruns (cost increased from estimates US\$ 58 million (CDR, 2009) to US\$ 76 million (CDR, 2013). The project was not completed until 2012, when testing began (Interview Abdelnour 2012). Despite the higher cost the project was not implemented in its entirety. Initially, the work included 22 reservoirs and 13 pumping stations in addition to networks and a conveyor tunnel (Massaad 1997). Of those only six pumping stations and 14 reservoirs were built and numerous others — as well as parts of the network — were excluded from the scope of work in negotiations between the contractor and the CDR as implementing agency (see Figure 5.6). Litigation between the two were still on going in 2012 (Interview Karam 2012).

The Chabrouch dam project idea stems from the 1970s and has been considered important for the region ever since. Towards the end of the 1990s planning for the project began, but the project had to face opposition from different political factions, mostly related to the regional distribution of projects and the cost of the dam. No foreign funding could be mobilised and the project had to be financed from the government budget. Calls for tenders were not launched until 2000. The Minister of Energy and Water at the time then attempted to stop the tender process because he considered the cost too high (Interview Abou Assali 2012). Eventually by end of 2001 the order to commence work was given. The project was to be completed in 2006 but the Israeli attack on Lebanon in the summer of 2006 delayed the dams completion until late 2007 (Comair, 2010b). Work on the transmission and distribution network was only started after the completion of the dam, even though efforts had been made to mobilise the CDR's support years earlier. One engineer commented that the CDR or the relevant foreign donors were simply not interested (Interview Abdelnour 2012). Eventually it was the Beirut Mount Lebanon Water Establishment which completed the transmission network. The dam alone was an investment of between US\$ 45–65 million depending on the sources (NDU et al., 2009, MEW 2002, Interview Faysal 2012).

The dam project received a lot of criticism and has a reputation for the corrupt dealings that supposedly made it possible (see Chapter 2). Important in the context of this discussion of the physical aspects of water resource management are the discussions about leakage of the reservoir due to the karstic nature of the bedrock. Bou Jaoude et al. (2010) modelled the leak and estimated leakage of about 200 L/s. Schuler (2013) in turn calculates that the total annual leakages is about 3.6 MCM or about 24 percent of inflow as leakage occurs only when the water level reaches a certain height.

Figure 5.6: Coastal Water Supply Project



The existence of leakages related to the karst topography repeatedly puts the dam strategy of the government into question. In the case of Chabrouch the proponents argue that 1) the water is not lost because it increases the flows of springs north (Qana Spring) of the reservoir and 2) because the dynamic capacity of the dam is higher than initially calculated during the design phase the economy of the dam is not affected (Interview Faysal 2012, Abdelnour 2012). These arguments however overlook the fact that the reservoir is almost empty at the end of the dry season with less than 0.2 MCM remaining even in average rainfall years.

In any case, the discussions highlight the difficulties of dam construction, and with that the ministry's strategy. The Chabrouch Dam — officially named Emile Lahoud Dam after the president who's political support enabled the project — was the first dam project of the post-civil war era. Construction on the Boqaata Dam started in 2012 in the Nahr el Kalb basin on the border of the Metn and the Keserwan. It is designed to supply water to areas of the Metn. It is also situated on karstic rock and the risk of infiltration exists. The same can be said of a majority of these projects, and judging from the experience of Chabrouch and Jannah they can also be expected to experience cost overruns.

#### 5.2.3.5 Waste Water Infrastructure

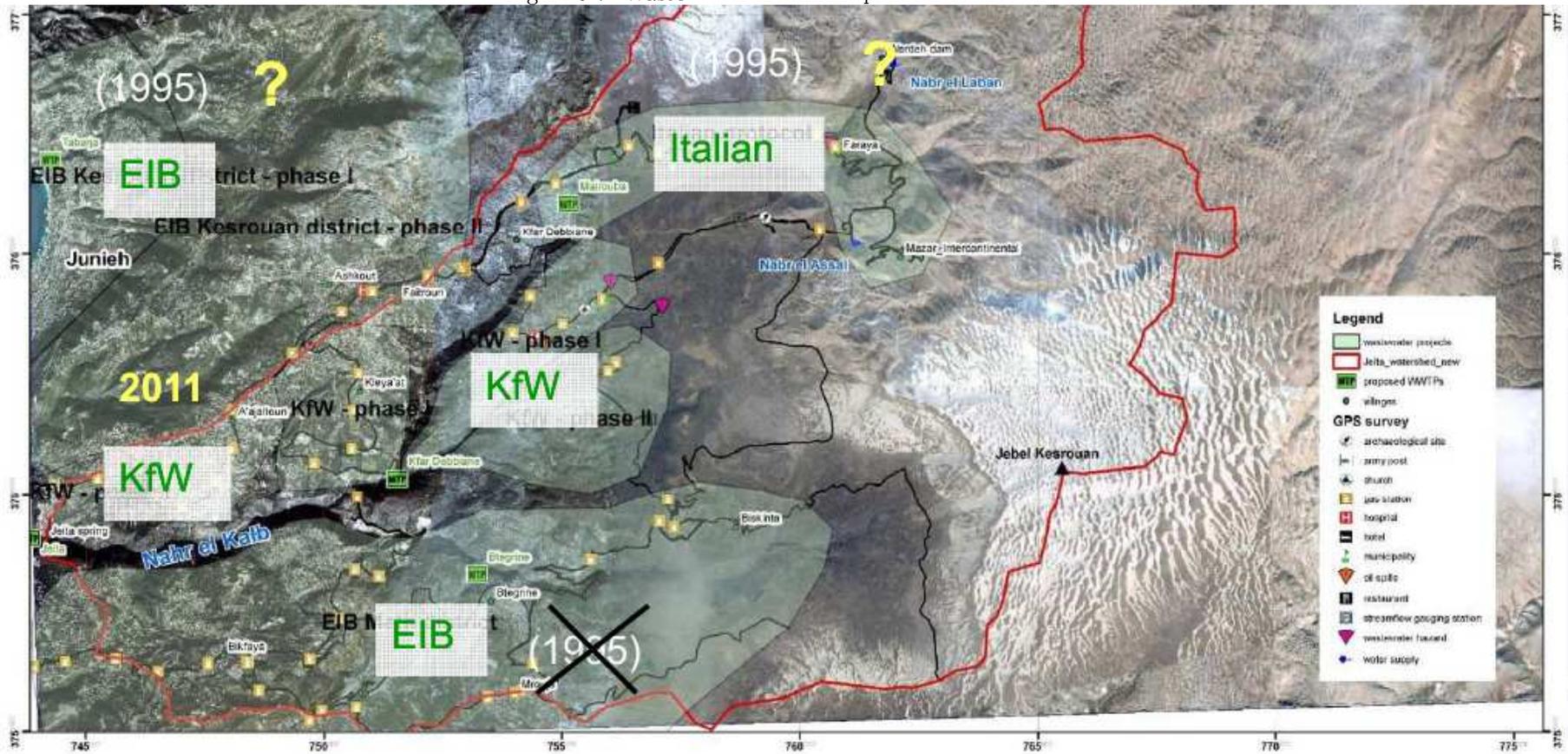
Unlike the water supply situation the state of waste water management in the area has not improved since the war. No waste water is treated. The building census of 2004 (CAS, 2004) shows that only 5,772 buildings are connected to waste water networks and 18,312 are not. A majority of the buildings connected are situated in the coastal area. Waste water is discharged through a sea outfall, which is damaged and the shoreline is polluted as a result. Most of the buildings at higher altitude sitting on the JSC are not connected to a waste water network and dispose of their waste water in cesspits. Schuler (2011) describes the situation as follows:

According to unpublished data, within the catchment of Jeita Spring, only a negligible share of households empties their cesspits; due to the high potential for leakage, emptying is not necessary. Therefore, waste water, no matter if previously collected through a central network or not, may concentrate towards streams, infiltrate into the unsaturated zone, and/or percolate into the saturated zone. The consequence of this is partial groundwater recharge by untreated waste water. Return-flow from households towards aquifers is one component of the regional water balance. (Schuler, 2011, p. 10)

Water quality tests confirm this. In the framework of the JSC protection project an analysis of micropollutant loads of water at different locations throughout the surface water catchment was conducted. As one would expect, water at the exit of Jeita Spring showed higher loads and more variety of micropollutants than water at higher altitudes. Even the two highest springs in the catchment, the Laban and Assal Springs, showed traces of pollution indicating infiltration of domestic waste water from the few villages at higher altitudes than the two springs (see Figure 5.5) (Doummar, Noedler, Geyer & Sauter, 2012). A water sampling campaign in the Nahr el Kalb watershed showed pollution with coliform bacteria in almost half of the samples and high concentrations of nitrate and nitrite in all tested water samples (NDU et al., 2009, p. 54–57).

The first attempt to begin managing waste water in Keserwan was along the coast (see Figure 5.7). A loan agreement with the European Investment Bank dating from 1995 secured funding for the installation of collector sewers and the construction of a waste water treatment plant and

Figure 5.7: Waste water treatment plan for Keserwan



Source: BGR 2013.

on the coast in Tabarja (see Figure 5.7). It experienced initial delays when the municipality of Tabarja did not give its agreement for the use of the proposed location (Interview Karam 2011).<sup>10</sup>

The project was included in the same framework programme as the Japanese loan for the coastal water supply project, work was also planned to be tendered in 1997 and the project completed in 2000 (Massaad 1997). Unlike the Japanese-funded water supply project, it was not only delayed but the loan agreement was nullified by the EIB when the World Bank decided to stop its participation in this specific program in 1998. The CDR has aimed to relaunch the project ever since 2004 by attempting to mobilise foreign funds but it was not until 2012 that funding for the whole project was secured. The new project is expected to launch in 2013 when updating of tender documents by the CDR is completed (CDR, 2013).

The first waste water treatment project to be considered in the higher parts of Keserwan was an Italian funded project in Hrajel (see Figure 5.7). A progress report published by the CDR in 2001 listed June 2001 as the expected start date for the project. The project was repeatedly delayed. In the later half of the 2000s a location was considered but would have displaced a restaurant. This proposal was rejected by the municipality as a result of dynamics similar to those in the earlier failure to find a site in Tabarja, causing further delays (Interview Karam 2012). In 2013 the CDR report of the year listed December 2013 as starting date for the project and an expected completion date by December 2014, still with Italian funding (CDR, 2013, p. 135).

In 2008, the German KfW in the framework of its post-2006 war involvement in Lebanon and in cooperation with the CDR decided to finance a project for the protection of the Beirut water supply. An initial amount of € 6 million was promised as grant but eventually made available as loan only. A year later an additional amount of € 7 million was negotiated to fund up to three small-sized waste water treatment plants. But the loan agreement was passed in parliament only in 2010 (Interview Neuwirth 2010).

The BGR project for the protection of the JSC started in 2009 funded by a € 1.7 million grant from Germany. One goal of the project was to “provide advice to the partner institutions and KfW Entwicklungsbank concerning the concept and environmental impact assessment for waste water facilities to be built in the project area” (BGR 2012). The investigations of the German team lead to alterations in the initial KfW plans and necessitated adjustments in the regional sewage plan. The original locations of one of the proposed plants was judged to be potentially hazardous to the Jeita Spring waters and it was recommended to redesign the project. By mid 2012 a new location was found in the village Jeita, in spite of initial opposition by the municipality (Interview Karam 2012, Margane 2012). By 2014 the consultant still had to answer to reservations of the Ministry of the Environment before a final approval could be given (Interview Margane 2014).

Twenty years after the reconstruction can be said to have begun in earnest the water supply reservoir of Beirut was still subject to considerable pollution loads. The experience in Keserwan and the quality of the water in Beirut are not an exception, much rather they are reflective of the situation in the whole country.

This brief history of infrastructure production in the Keserwan area illustrates the varied factors that influence the process. Different hydro-geological circumstances and varied socio-economic contexts, that is to say human and non-human agencies, always in the framework of the

<sup>10</sup>The land which was designated for the plant, according to rumours, belonged to a powerful political dynasty (the Edde family) which was not willing to be expropriated and sell. In order to avoid a confrontation with the state that has the legal right to expropriate the land, the family mobilised its influence with the municipality to oppose the project (Interview Majdelani 2012, Interview Karam 2011).

larger political economy, will produce distinct, contingent, and often interrelated infrastructure development dynamics for each project.

A wealth of delayed and cancelled projects has already been introduced, there are only few projects that were implemented without delay and to their planned extent. This situation is not only a result of the haphazard approach to planning and the weakness of the administration but also of the development strategy of the successive governments.

### 5.3 Political Ecology and Uneven Development

The development strategy of the government produced a highly uneven development, geographically and in terms of economic sectors. The economy's focus on finance and real estate and its bias against agriculture (and industry) has already been discussed above. This economic structure is part result, part cause of a development strategy relying on the private sector that had the capital Beirut as centre of gravity.

The Beirut Central District project was planned to be the figurehead of the new Lebanon vying for international capital. As such it had to be flanked with a range of image building measures that projected a sense of modernity, advancement, and culture. The business opportunities and especially the profits from government capital expenditure promised certainly gave the theory more appeal. To give an idea, almost half a billion dollars was spent to build an over-sized airport<sup>11</sup>, super-sized highways with even larger price tags, as well as a number of stadiums to host the Asian Cup. In Beirut a sports complex worth US\$ 250 million was planned - eventually downsized to a meagre US\$ 150 million or so - to host the Asian Games. These measures reflected the same wishful thinking that governed growth prediction and are a reproduction of place and city marketing practices driven by global best practices and as such by neoliberalisation processes (see Leitner, Peck & Sheppard, 2007; Peck et al., 2009; Smyth, 2013). The direct link from airport to the BCD was not only to make travel for the international business elites more comfortable but also works to justify the highest property prices in the country. Incidentally it bypasses and hides from view the poorest quarters of the city.

The government via the CDR launched a number of infrastructure projects targeting the basic services sector, yet the bulk of the reconstruction was achieved through the private sector and rested largely on real estate development. The Greater Beirut Area saw an estimated 6,500 new buildings erected between 1991 and 1995. Construction after the war went well beyond the replacement of destroyed or damaged buildings (see Verdeil, 2002, p.133). The post-war construction boom echoed the pre-war dynamics; construction and real-estate were an important pillar of the economy already in the pre-war era and remained so since the end of the war (see table 5.5).

An important part of the products that were brought on the market were high-end and luxury developments, be they gated communities outside of Beirut or luxury towers, equally gated, in the capital. These were aimed at the Lebanese upper classes, expatriate Lebanese and foreigners, mainly from the Arab Gulf, a dynamic which remains true until today. Price ranges for the first half of the 1990s for these types of developments were between US\$ 800/m<sup>2</sup> and US\$ 3,500/m<sup>2</sup> for apartments ranging from 700 m<sup>2</sup> to 3500 m<sup>2</sup> for the top Beirut properties (Verdeil, 2002, p. 134). In 2005–2006 at the apex of the price pyramid, downtown Beirut apartments would reach

---

<sup>11</sup>It was designed with a capacity 6 million passengers a year to be reached by the year 2000 and the second phase was to allow for almost double that by 2010. This second phase was never implemented and in 2012 the airport has still not reached full capacity.

US\$ 7,000/m<sup>2</sup> and by 2010 US\$ 11,000 – US\$ 15,000/m<sup>2</sup> (and higher) for the flagship properties in Solidere.<sup>12</sup>

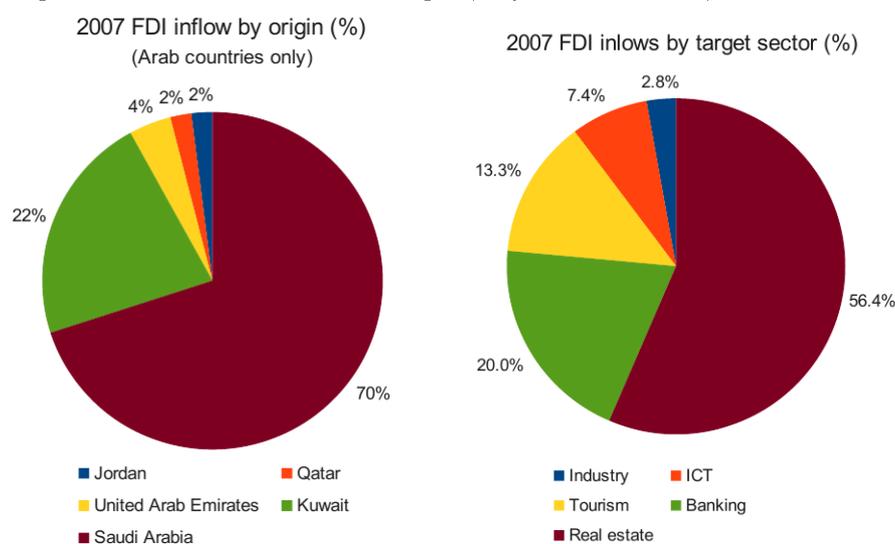
Table 5.5: Destruction and Reconstruction of Building Stock in Beirut and Surrounding Areas

type of building / area	heavily damaged	destroyed	built between 1971 - 1975	built between 1976 - 1990	built between 1991 - 1995
Beirut	593 <sup>1</sup>	397 <sup>1</sup>	1228	1662	690
Metn	1814	318	2786	5366	2809
Aley	1385	2806	2205	3394	2777
Baabda	4405	1947	3831	9385	2796
Shouf	4578	1947	2631	5601	2971

Source: Verdeil 2004 p.132, based on CAS building survey 1996, and Oger International damage assessment (1992).  
<sup>1</sup> without counting the destruction in the BCD

These dynamics were and are highly speculative. Verdeil (2002) points to the fact that growth in housing inventory did not correspond to an equivalent demographic growth and was not aimed at the section of the population where demand was greatest. According to him, 180,000 housing units remained empty in 1996 throughout the country and about 60,000 in the Greater Beirut Area. Today the real estate bubble is literally visible in the number of empty and under-construction buildings mushrooming in Beirut. The price dynamics are related to the Dutch disease dynamics described previously. According to ESCWA (ESCWA, 2009) 56 percent of FDI was flowing into the real estate sector and 20 percent into the banking sector in 2007 (see fig 5.8). Arab countries were the source of these capital flows, non-Arab share of these flows was negligible in 2007, but has increased especially after the beginning of the Syrian revolution. In 2009 the share of FDI to GDP was 14.3 percent and total FDI was US\$ 4.8 billion (ESCWA, 2009, 2011).

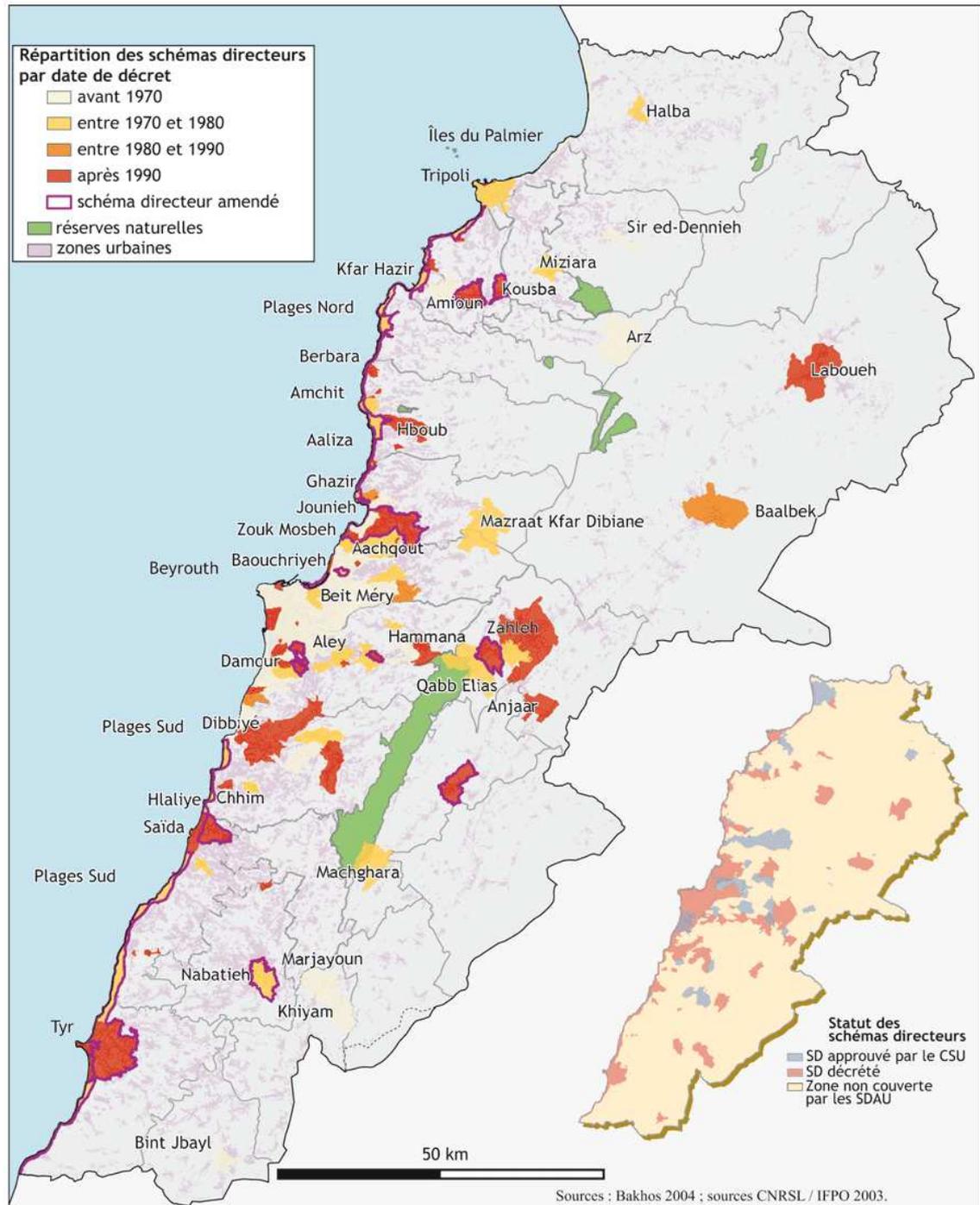
Figure 5.8: FDI in Lebanon by Origin (only Arab countries) and Sector 2007



Source: ESCWA 2009

<sup>12</sup>A 2014 article in *al-Akhbar* newspaper cites a report by a local development firm that estimates the average price for new apartments in municipal Beirut at just below US\$ 1 million (Wehbe, 2014).

Figure 5.9: Areas covered by master plans



Source: Atlas du Liban (Verdeil et al 2007)

This dynamic was and is encouraged by the political establishment; numerous laws and changes in regulation have made properties progressively more exploitable, for example through indirect increases in floor-area-ratios, that as a consequence allow the construction of more floors, and are a direct subsidy to real estate developers.<sup>13</sup> Relaxation of ownership requirements and limits for

<sup>13</sup>For example: In order to promote the construction of fire escapes and wider stairs these were exempted from the calculations of the built-up area so as to allow for the construction of more floors than before, with the same build up area requirements.

foreigners, as well as tax incentives given through the Investment and Development Authority of Lebanon were also part of the active promotion of this sector of the economy that influenced not only Beirut but the whole country. (See Annex 4 for a list of measures taken to liberalise and revitalise the real estate sector).

Urbanisation was already intense in the 1960s, after the war Lebanon emerged as one of the most urbanised countries in the region, with an estimated 87 percent of the population living in what are considered urban environments (see MOE/UNDP/ECODIT, 2011; UNHabitat, 2011).

This intense urbanisation process was further supported by the fact that only 16.3 percent of the country's land is subject to zoning/urban master plans. Of these 6.3 percent were awaiting to be decreed — and so not legally binding — by the government in 2004. The remaining land is buildable as soon as it is accessible by a road (tarred or concrete) (see Figure 5.9). But even where master plans exist usually resource protection is not considered, also because the national master plan is not legally binding.

The proliferation of gated communities around Beirut and Mount Lebanon mostly, but also in other parts of the country, was certainly encouraged by this state of affairs.<sup>14</sup> The booming real estate market pushed up prices throughout the country, not only in the urban centres but also for agricultural lands. Especially in rural areas land prices have multiplied — quadrupled in some areas — in the last decade. This also made infrastructure development considerably more expensive with the cost of expropriation of land rising in tune.

The rate of urbanisation has also put pressure on agriculturally usable land. Roland Riachi writes that 20,000 ha of agricultural land have disappeared (7 percent of the total agriculture area and 15 percent of the irrigated area) due to the urban sprawl dynamics caused by the reconstruction and real estate speculation (Riachi, 2013, p.263). There is no evidence that this trend will reverse. Urban sprawl also has direct effects on the water resources, at least locally. Built-up areas constitute a barrier and water is prevented from infiltrating. Where run-off infiltrates it carries pollutants amassed over the dry period. This normally happens but when urban sprawl remains unchecked and drainage networks badly maintained the effects are worse.

Another development related to the intensity of construction and urbanisation is the proliferation of quarries to provide input as aggregate and for cement. Quarrying activity is legally regulated but often politically protected, neither the legal nor illegal quarrying abides by environmental standards. Apart from destroying the landscape these are also sources of water pollution (see Figure 5.10 for an idea of quarrying activity). Using remote sensing tools researchers from the Lebanese National Centre for Scientific Research (T. Darwish et al., 2011; T. M. Darwish et al., 2010) established that:

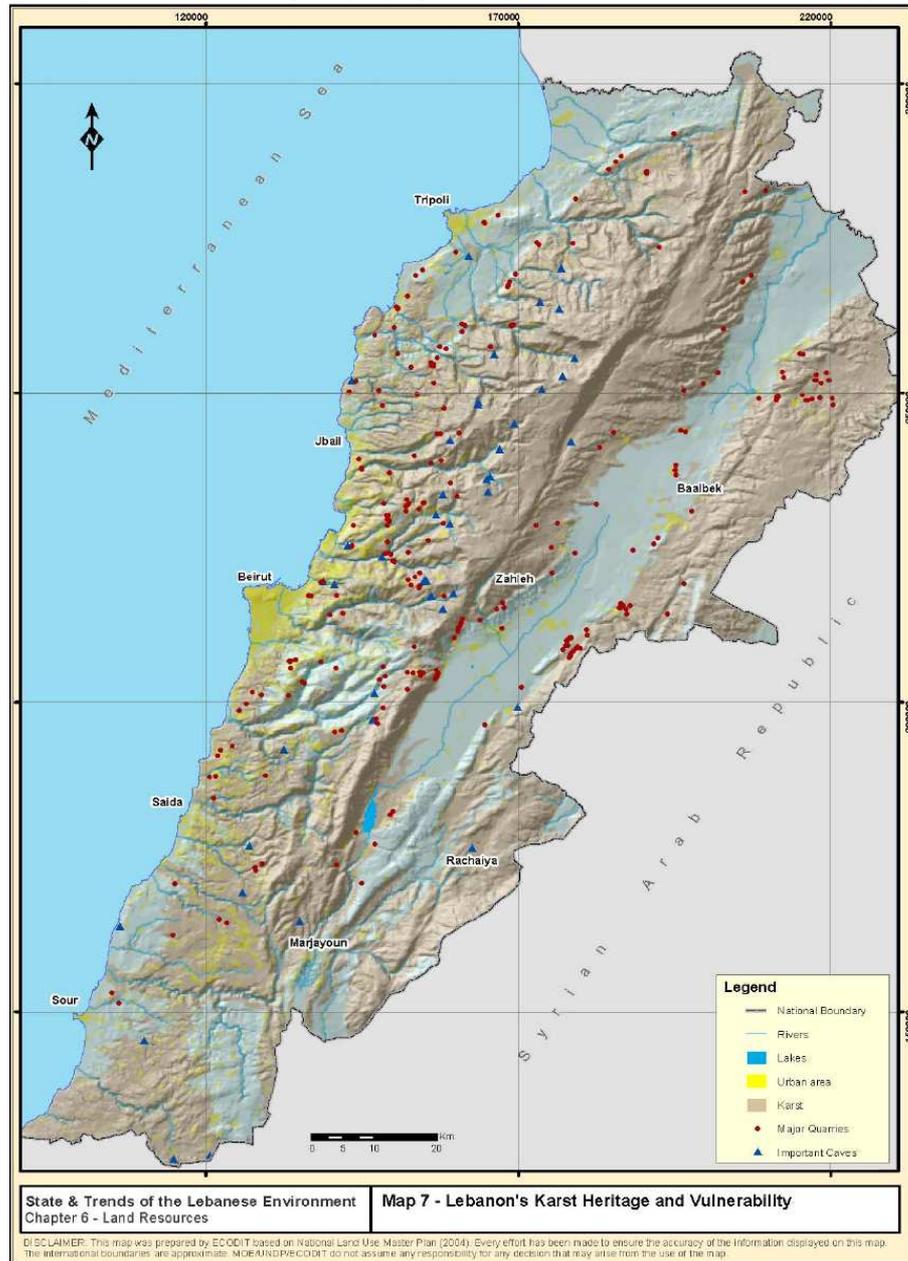
Between 1996 and 2005, the number of quarries increased by 55.6 percent (from 711 to 1,278 ha). During the same time, the quarried land area increased by 54.4 percent (from 2,875 to 5,283 ha). (T. M. Darwish et al., 2010, p. 338)

Hamadeh, Haider, and Zurayk (2006) point to areas around Aarsal in the north where quarrying has replaced the growing of apricots and cherries as the most important economic activity because of the higher short-term profits. The construction boom was a result of the neoliberalisation process, real estate development and speculation was also one of the rent creation mechanisms identified by Baumann (2012), and its effects were felt beyond the urban areas affecting agriculture and the environment. Amery points to the effect of quarries on the Litani and writes:

<sup>14</sup>Again, these are not new processes. Georg Glaze (2000) describes how these dynamics started in the 1960s. But the post-war saw a drastic increase of such developments concentrated in the areas close to the capital mostly.

The Litani watershed has 96 quarries; a mere 19 of them have government licenses (Srouf and Sleiman 1998). Their activities increase soil erosion and water turbidity and harm the quality of water, thus adversely affecting aquatic life and the purity of the river water. (Amery, 2002, p. 120)

Figure 5.10: Major quarrying operations across the Lebanese Territory



Source: MOE/UNDP/ECODIT (2011) State and trends of the Lebanese Environment.

### 5.3.1 Uneven Development of Domestic/Urban Water Infrastructure

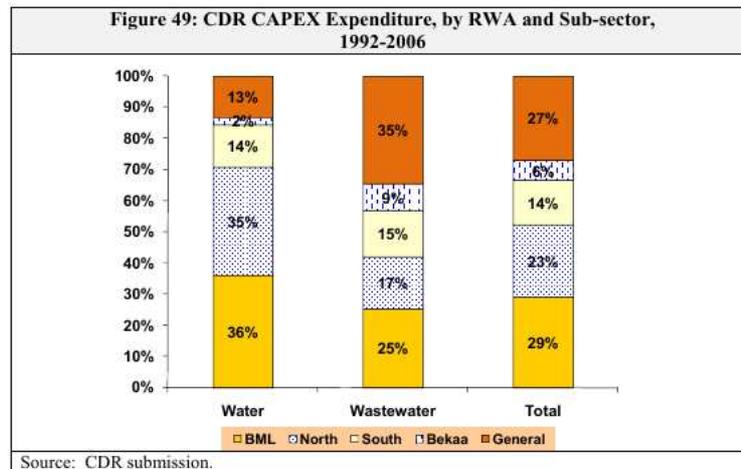
Infrastructure development was not regionally balanced. Investment in water infrastructure was focused on Beirut and the surrounding areas. CDR investments were highly focused in the areas of what later became the BMTLWE and NLWE. Respectively they received 29 percent and 23

percent of investment. The Bekaa on the other hand received only 6 percent of CDR capital expenditures (see Figure 5.11). The fraction marked “general” in Figure 5.11 from the World Bank water expenditure report hides even further imbalances. Infrastructure is produced locally, it is necessarily sunk in or fixed on the terrain. As such capital expenditures cannot fall in a general category, they are always geographically distributed. It is inconceivable that over 27 percent of capital expenditure on water and waste water cannot be attributed to one of four areas.

Beirut and Mount Lebanon are home to over 60 percent of the population while only 13 percent of the population of the country live in the Bekaa. Thus even if the figures given by the World Bank and the CDR are taken at face value per-capita expenditures are marginally lower in the Bekaa. Yet to deliver service of similar quality in the peripheral mohafazaat would require larger investments, especially in an area like the Bekaa that covers 40 percent of the Lebanese territory because it does not benefit from the same economies of scale. In the water-supply sector the inequalities are much more pronounced: the Bekaa received only 2 percent of investment. Investment patterns are not only skewed in relative terms but even more so when compared to the relative needs.

The 9 percent in the waste water sector includes investments through the Baalbeck waste water project. It is not an expression of the investments in the Bekaa but rather of the lack of investment in other areas until 2008. As was detailed earlier the waste water investments along the coast started only in the mid 2000s.

Figure 5.11: Expenditure by RWE and Sector (1992 -2006)



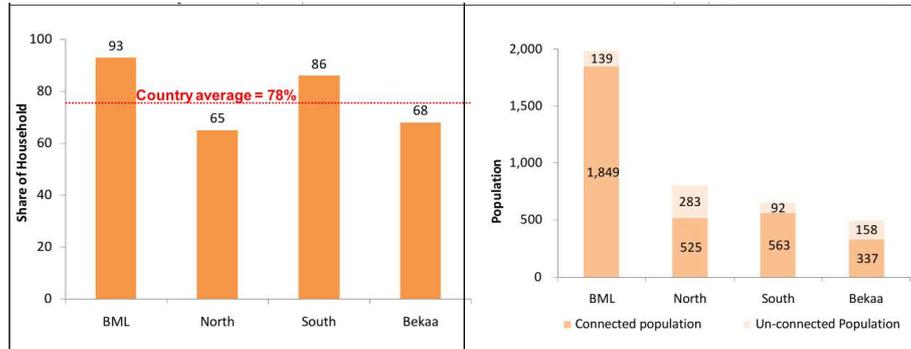
Source: Lebanon - Water sector expenditure review (World Bank, 2010d).

Figures 5.12 and Table 5.6<sup>15</sup> show the connection rates to the water supply system. Figure 5.6 shows the connection rate per building from the 2004 Central Administration of Statistics census of buildings and Figure 5.12 shows connection rates per household, as well as estimates of the population from the 2010 World Bank report. Both show that the investment patterns only partially translate. Beirut is unsurprisingly the area where the largest percentage of the population is connected to a network: 93 percent of households were connected in 2003 and 88 percent of buildings. In the north, where 35 percent of overall capital expenditure were directed, the connection rate per household is the lowest: 65 percent of households and 56 percent of buildings

<sup>15</sup>It needs to be noted that the Census of Buildings, Dwellings, Establishments from 2004 omits the caza Shouf and Aley in the BML area, most likely because of the issue of the internally displaced during the war in these areas. (These areas were the site of intense Christian–Druze confrontations and forceful displacement of the population).

in the area are connected. In the Bekaa the situation is reversed. The World Bank report shows that only 68 percent of households and 88 percent of buildings are connected. One explanation for this state of affairs is the high number of illegal or off the books connections that exist in the area and that profit from political protection. They are thus not included in the World Bank report that draws its data from an older CDR report.

Figure 5.12: Household Connection Rate (%) and Connected Population (in 1,000s)



Source: Lebanon - Water sector expenditure review (World Bank, 2010d, p. 15).

Household connection to the water network is related to income. A greater percentage of low-income households are not connected. Measured by household income 38 percent of households in the lowest income quintile are not connected to the network compared to 14 percent in the highest income quintile. This is less related to the affordability of connection and rates but to the regional extension of networks. In most cases households are not connected because no network exists. This situation mirrors the investment patterns of the administration and their geographical distribution: the poor which are more concentrated in the periphery and in rural areas have less access to network connection (World Bank 2009, p. 35).

The data about connection and population served does not include the about 260,000 Palestinian refugees living in United Nations Agency for Refugees in Western Asia (UNRWA) administered camps. In the camps basic services are under the auspices of UNRWA and vary greatly from camp to camp and in terms of volume and quality of supply. The informal “gatherings” of Palestinian refugees outside of the camp perimeters do not always get infrastructure services from UNRWA but depend on the Lebanese state. For this reason water supply and quality is generally of relatively bad quality. UNRWA operates and builds wells. If no wells are built then supply depends on agreements with the Regional Water authorities and infrastructure is produced by either international NGOS or popular committees (UNDP/UNHabitat, 2010). From field visits though, it is safe to say that supply and quality are worse on average in the camps than in the rest of the country.<sup>16</sup>

The data about connections is only one aspect, the differences in hours of water supply and quality of supplied water across regions is a different matter. Figure 5.13 shows estimates of water supply availability in hours in the different areas of Lebanon.

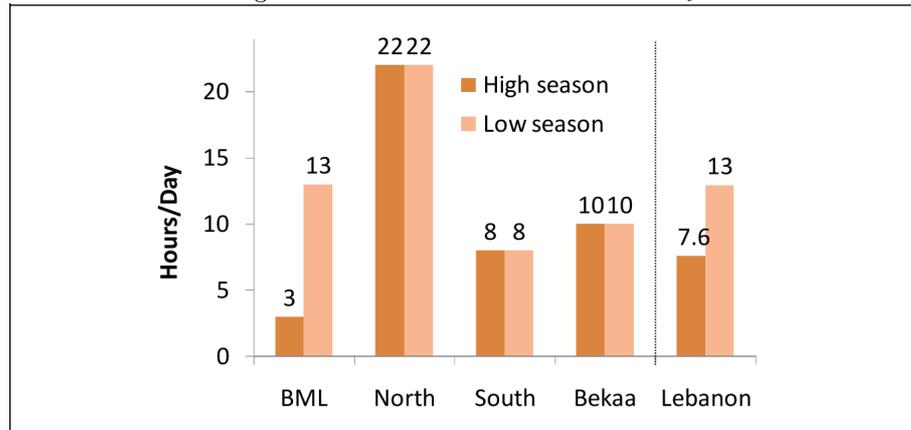
<sup>16</sup>UNRWA does not have the best reputation in the camps, it is viewed as corrupt and inefficient. This is very well exemplified in this quote from an article in *al-Akhabar* about water provision in al Jalil camp in Baalbeck: “The well, adjacent to the UNRWA building, is now well-sealed. “Dead: the victim of the corrupt and bribable UNRWA mafia,” reads the graffiti on the adjacent wall. Expressions of “sorrow, anguish... and contaminated water,” and bitter remarks such as “no condolences will be received” cover the wall.” (Hamieh, 2012).

Table 5.6: Building Equipment - Wells, Water Network and Sewage System connection by Caza

Mohafaza/Caza	Buildings	Units	Artesian well		Percentage		Water network		Percentage		Sewage system		Percentage		Unknown	
			Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No		
<b>Beirut</b>	<b>18,336</b>	<b>156,801</b>	<b>3,163</b>	<b>14,118</b>	17.3	77.0	<b>16,407</b>	<b>874</b>	89.5	4.8	<b>16,651</b>	<b>630</b>	90.8	3.4	<b>1,055</b>	<b>0.0</b>
Baabda	36,186	197,008	4,710	29,342	13.0	81.1	28,326	5,726	78.3	15.8	31,021	3,031	85.7	8.4	2,134	5.9
Metn	38,647	180,454	1,051	36,082	2.7	93.4	36,230	903	93.7	2.3	21,112	16,021	54.6	41.5	1,514	3.9
Kesserouan	24,873	88,705	508	23,576	2.0	94.8	23,657	427	95.1	1.7	5,772	18,312	23.2	73.6	789	3.2
Jbeil	15,782	32,085	63	15,235	0.4	96.5	13,631	1,667	86.4	10.6	1,460	13,838	9.3	87.7	484	3.1
<b>North Mount-Lebanon</b>	<b>115,488</b>	<b>498,252</b>	<b>6,332</b>	<b>104,235</b>	5.5	90.3	<b>101,844</b>	<b>8,723</b>	88.2	7.6	<b>59,365</b>	<b>51,202</b>	51.4	44.3	<b>4,921</b>	<b>4.3</b>
Tripoli	10,350	85,187	1,772	8,045	17.1	77.7	8,700	1,117	84.1	10.8	8,956	861	86.5	8.3	533	5.1
Koura	11,761	24,692	1,040	9,577	8.8	81.4	8,281	2,336	70.4	19.9	3,030	7,587	25.8	64.5	1,144	9.7
Zghorta	11,318	24,468	623	9,734	5.5	86.0	8,077	2,280	71.4	20.1	7,675	2,682	67.8	23.7	961	8.5
Batroun	10,689	17,349	252	9,310	2.4	87.1	8,682	880	81.2	8.2	86	9,476	0.8	88.7	1,127	10.5
Aakkar	46,631	70,326	4,914	40,564	10.5	87.0	19,227	26,251	41.2	56.3	15,919	29,559	34.1	63.4	1,153	2.5
Beharreh	4,662	8,172	4	4,436	0.1	95.2	1,331	3,109	28.5	66.7	731	3,709	15.7	79.6	222	4.8
Miyeh-Dennieh	15,542	33,303	1,007	14,076	6.5	90.6	8,173	6,910	52.6	44.5	10,679	4,404	68.7	28.3	459	3.0
<b>Administrative North Lebanon and Akkar</b>	<b>110,953</b>	<b>263,497</b>	<b>9,612</b>	<b>95,742</b>	8.7	86.3	<b>62,471</b>	<b>42,883</b>	56.3	38.6	<b>47,076</b>	<b>58,278</b>	42.4	52.5	<b>5,599</b>	<b>5.0</b>
Zahleh	26,623	61,771	2,819	22,492	10.6	84.5	22,188	3,123	83.3	11.7	20,911	4,400	78.5	16.5	1,312	4.9
West Bekaa	14,552	26,482	843	12,561	5.8	86.3	12,726	678	87.5	4.7	9,989	3,415	68.6	23.5	1,148	7.9
Baalbeck	49,540	74,712	6,209	40,343	12.5	81.4	41,005	5,547	82.8	11.2	32,006	14,546	64.6	29.4	2,988	6.0
Hermel	7,530	9,265	168	7,220	2.2	95.9	6,392	996	84.9	13.2	5,706	1,682	75.8	22.3	142	1.9
Rachaya	7,135	10,811	278	6,550	3.9	91.8	6,600	228	92.5	3.2	3,029	3,799	42.5	53.2	307	4.3
<b>Bekaa</b>	<b>105,380</b>	<b>183,041</b>	<b>10,317</b>	<b>89,166</b>	9.8	84.6	<b>88,911</b>	<b>10,572</b>	84.4	10.0	<b>71,641</b>	<b>27,842</b>	68.0	26.4	<b>5,897</b>	<b>5.6</b>
Saida	26,757	76,895	1,180	24,101	4.4	90.1	23,595	1,686	88.2	6.3	14,227	11,054	53.2	41.3	1,476	5.5
Tyre	33,152	73,126	1,609	29,604	4.9	89.3	27,440	3,773	82.8	11.4	8,389	22,824	25.3	68.8	1,939	5.8
Jezzine	7,648	11,765	13	6,670	0.2	87.2	6,515	168	85.2	2.2	3,135	3,548	41.0	46.4	965	12.6
<b>South Lebanon</b>	<b>67,557</b>	<b>161,786</b>	<b>2,802</b>	<b>60,375</b>	4.1	89.4	<b>57,550</b>	<b>5,627</b>	85.2	8.3	<b>25,751</b>	<b>37,426</b>	38.1	55.4	<b>4,380</b>	<b>6.5</b>
Nabatieh	24,797	51,366	352	22,631	1.4	91.3	22,349	634	90.1	2.6	8,469	14,514	34.2	58.5	1,814	7.3
Bent Jbeyl	17,256	27,812	245	15,566	1.4	90.2	15,112	699	87.6	4.1	670	15,141	3.9	87.7	1,445	8.4
Marjaayoun	13,569	22,095	573	11,931	4.2	87.9	12,163	341	89.6	2.5	2,019	10,485	14.9	77.3	1,065	7.8
Hasbaya	7,179	12,795	14	6,340	0.2	88.3	6,138	216	85.5	3.0	4,883	1,471	68.0	20.5	825	11.5
<b>Administrative Nabatiyeh</b>	<b>62,801</b>	<b>114,068</b>	<b>1,184</b>	<b>56,468</b>	1.9	89.9	<b>55,762</b>	<b>1,890</b>	88.8	3.0	<b>16,041</b>	<b>41,611</b>	25.5	66.3	<b>5,149</b>	<b>8.2</b>
<b>Lebanon</b>	<b>480,515</b>	<b>1,377,445</b>	<b>33,410</b>	<b>420,104</b>	7.0	87.4	<b>382,945</b>	<b>70,569</b>	79.7	14.7	<b>236,525</b>	<b>216,989</b>	49.2	45.2	<b>27,001</b>	<b>5.6</b>

Source: Central Administration of Statistics Census of Buildings, Dwellings and Establishment (2004).

Figure 5.13: Network Water Availability



Source: Lebanon - Water sector expenditure review (World Bank, 2010d, p. 13)

With the highest connection rate the BML and especially Beirut and the Greater Beirut area have the lowest water availability per household. In the summer in some areas of Beirut households receive water for 3 hours a day every other day, and even less the further summer has progressed and the higher the building floor occupied. In the Bekaa the BWE interrupts service to save on energy costs (World Bank, 2012a, p. 13). Electricity costs provided through the state company is subsidised fully by the ministry. Yet, supply is rationed and areas outside of Beirut receive only 6–16 hours-worth and the establishments have to operate generators at high cost.

Intermittent supply does not mean that households remain without water between intervals. Water is supplied through a fixed gauge at the household connection and then stored in a roof or ground tank, so that a buffer reservoir exists. But intermittent supply does affect metering strategies because pressure changes are likely to reduce the life span of many water meter types and models, as well as affect measurement accuracy. More importantly, many if not most water meters will record air flows as well as water flows and so are likely to over-register consumed volumes.<sup>17</sup>

The quality of the water is also substandard and is generally not trusted, on average only 53 percent of connected households use the public water supply for drinking (World Bank, 2009, p.35). As with supply, quality depends also on the geography. Pollution stems from two sources, the first is related to pollution in the water catchments as described previously in the case study of the Keserwan, pollution of ground and surface water sources. Treatment is, where it exists, not able to control the quality sufficiently and extract all contaminants.

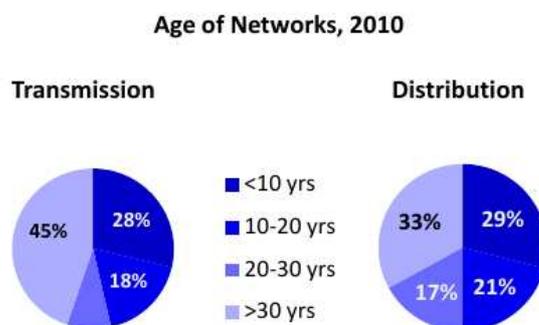
The second source of pollution is found in the quality of the networks and the pressure variations therein, the age of ducts and pipes is one indication of this (see Figure 5.14). Some of the most important transmission lines supplying Beirut are more than half a century old. More than 50 percent of transmission and distribution networks are judged to be beyond their useful life (MEW, 2010b, p.9).<sup>18</sup> With receding pressure leakage into the supply network occurs. Where sewage and supply networks are in close proximity sewage can enter and contaminate the domestic water

<sup>17</sup>Judging from the interviews with the various experts and preliminary research there seems to be a strong correlation between the wish to install water meters for economic reasons and the requirement of 24hr constant water supply. I suspect that water metering can only work properly under conditions where a minimum of constant pressure exists throughout the system. This would require more research, but if confirmed it would mean that water metering strategies require/ are predicated on an elevated technical level of service.

<sup>18</sup>That network ducts reach an elevated age is nothing unusual around the world (see Bakker 2012) but in the Lebanese case they have been subjected to a prolonged war.

supply after treatment. In rural areas this is less prevalent but in mountainous areas especially, pollution from septic tanks contaminates water supply sources for lower lying villages as was shown in the case of Keserwan.

Figure 5.14: Age of Water Supply Network



Source: National Water Sector Strategy 2010

As has become evident related to the issue of pollution and the quality of the water supply is the lack of waste water treatment and the connection rate to sewage networks. According to the NWSS waste water network coverage is around 60 percent. The CBDE has it at about 50 percent but more importantly treatment is minimal. Only 8 percent of total water consumed is treated. Along the coast water is simply disposed via sea outfalls, some of which are very close to the shore. In the Bekaa the Litani received and still receives substantial volumes of raw sewage causing serious pollution.<sup>19</sup> Industries along rivers are also sources of heavy pollution as attested by newspaper articles describing the Beirut river as having turned “blood red” or the Litani waters running “white” (Hamieh, 2011; Meguerditchian, 2012). In some places, especially in the Bekaa, sewage is pumped into wells that have run dry and so eventually seeps into the groundwater. One study (Hourri & El Jeblawi, 2007) investigated pollution of eight perennial coastal rivers during the dry season and found that these carried heavy pollutant loads with among others fecal e.coli contamination, mostly due to raw-sewage disposal.<sup>20</sup> A much earlier study (Jurdy 1992 cited in Khair, Aker, Haddad, Jurdi & Hachach, 1994) found that 50–75 percent of all water sources did not fulfil WHO standards for bacterial contamination. Later studies confirm that the situation has not changed since (see S. Korfali & Jurdi, 2011; S. I. Korfali & Jurdi, 2010) — a situation that is reflected in high frequency of water born diseases (S. I. Korfali & Jurdi, 2007, 2009).

### 5.3.2 Private Water Supply and Social Justice

Compensating for the shortcomings of the public water services, parallel local and private service provision enterprises have sprung up. Generators provide electricity in times of power outages of the public supply, and private wells, water tankering, and bottled water make up for the shortages in the public water supply. This is also true for areas connected to public networks. Seventy five percent of revenues in the water supply sector are made by private providers or 75 percent of household expenditures are spent on alternatives to public services for all households, and 65

<sup>19</sup>To the point where restaurant owners along the river complain that the smell drives away their customers.

<sup>20</sup>According to them pollution levels along the coast are so high that one study found that most beaches are not suitable for swimming, bearing potential costs to the tourism industry.

percent by households connected to the network (World Bank, 2009, 2010d). In this sense the water sector is already largely privatised and water partially commodified, not according to IDC designs and not to the benefit of the elites or transnational corporations. The World Bank's concern with this situation is that:

Despite the relatively low budget shares, the sector raises serious consumer welfare concerns given the (1) lack of consumer power; and (2) the over-reliance on un-regulated and highly priced off-network private water providers. In particular, the over-reliance over non regulated off network providers further exposes low income households to water carried diseases or opportunistic behaviours from these private providers. (World Bank, 2009, p. 32)

In some rural areas, and in low-income and informal neighbourhoods, illegalities in the built environment are prevalent. As a result public water services are either completely absent, or only partially available, and local committees organise their own services and rely on the provision of water through political parties or other patrons. The clientelist networks are configured according to very local political dynamics and reflect the socio-political history of the specific areas and remain crucial for the efforts of the local committees (See al Khayat (2008) for an example in a Beirut suburb, and Riachi (2013) describes dynamics in Aarsal, see also Makhoul and Harrison (2002)). There are numerous cases throughout the country. Even after the water reforms of 2001 that concentrated 21 water office into four regional water establishments, some water committees and municipalities still operate their own supply networks, building them and producing water from wells or springs.

An important aspect of the failure of public services to fill the demand even marginally is the proliferation of private wells. According to the NWSS (MEW, 2010b) the number of private wells is about 43,000 producing some 440 MCM/year, yet this number is presented with a caveat that states: "Numbers and volumes of private wells are feared to be significantly higher" (MEW, 2010b, p.8). Numbers as high as 70,000 were suggested by interviewees active in the sector. For comparison some 620 public wells provide 267 MCM/year. The bulk of the private wells are small wells to satisfy domestic demand and supply one building or in the rarer cases a cluster of buildings. The CBDE counts 33,410 buildings with wells in 2004 (see Table 5.6). An unknown number of wells produces water for irrigation.

The gigantic number of wells, both for domestic use and irrigation, has led to an over-abstraction of groundwater along the seashore and in inland areas. Construction during the war is one important component of this development, with water services interrupted on numerous occasions, wells were an integral part of building planning and construction and remain a wide spread practice in Beirut and outside of the capital.

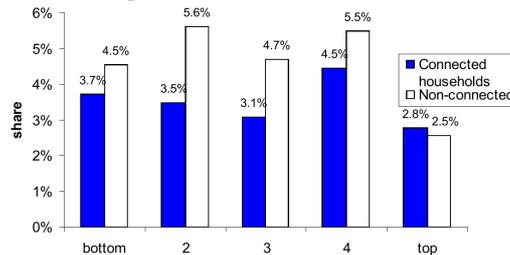
Along the coast this over-abstraction has led to saltwater intrusion. Groundwater levels are so reduced that the flows from the mountains cannot replenish the aquifers and sea water flows in instead. Salt deposits accumulate in the karstic underground. These dynamics are accentuated by the high urban density that prevents infiltration in the area. Mark Saadeh (2008) writes that this has been on-going for at least three decades and continues to do so. It has progressed so far that even during the winter when groundwater flows and volumes are highest, well water in many areas of Beirut and some other places along the coast such as Tripoli, Saida and Jounieh, remains brackish. Saadeh judges this situation to be irreversible (Interview Saadeh 2012). According to him the necessary surpluses of freshwater are not available, at least not for the time period required

to wash out salt deposits and remedy the current state of affairs with ground water recharge techniques.

Private water businesses have stepped in to fill the water supply gap. Drinking water is available in bottles and larger sized gallons of 5, 10 and 20 litres, the more expensive suppliers especially in bottled drinking water produce from mountain springs, and, unsurprisingly, Nestle has the largest market share in this sector (Interview Cochrane 2012). The market for gallons is more competitive as numerous small and local businesses produce from wells even in urban areas. The quality of this water is more variable. A study from 2002 showed that 24 percent of 403 samples of bottled water were micro-biologically contaminated (El-Fadel, Maroun, Semerjian & Harajli, 2003). As with the wells the state’s supervisory and regulatory capacities are not developed and are at the root of the related public health risks. In 2011 the Minister of Health estimated that 85 percent of drinking water producing businesses were unlicensed by his ministry (The Daily Star, 2012).<sup>21</sup> The quality of the water delivered via tankers is equally not subject to controls.

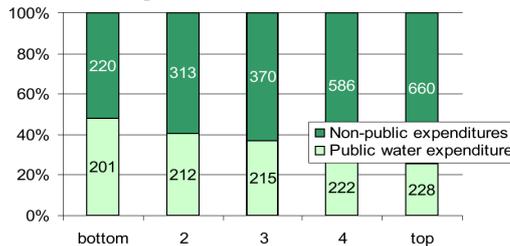
Together figure 5.15 and figure 5.16 shows the water expenditures of households according to household budget. They show that households without connection to the network spend relatively more on average and as mentioned above are more likely to be poor. The 20 percent of households with the highest budget spend relatively less on water than the remaining 80 percent of households. They do this for much better quality water.<sup>22</sup>

Figure 5.15: Percentage Water Expenditures in Household Budget



Source: Lebanon - Water sector expenditure review (World Bank, 2009, p. 38).

Figure 5.16: Expenditure of Connected Households



Source: Lebanon - Water sector expenditure review (World Bank, 2009, p. 39).

This privileged access to water is related to real estate dynamics. The luxury developments that house the upper class provide in-house or in-community services — for water this means reverse osmosis plants that can purify the brackish water coming from wells — again illustrating the class

<sup>21</sup>Some companies operate completely without licenses others with a license only from the Ministry of Trade. Given the prevalence of petty corruption in the administration, even a license from the Ministry of Health is not a 100 percent guarantee for the quality of the water. In 2002 it was estimated that 10 out of 800 companies had a license from the Ministry of Health (El-Fadel et al., 2003).

<sup>22</sup>The drop between the top quintiles is explained by the steep wealth disparities.

character of Lebanese political economic and developmental dynamics. It is not by accident that such luxury housing is advertised by emphasising the availability of water and electricity around the clock. Improved services were according to Glasze among the most important reasons for inhabitants to chose to live in gated communities even after the war (Glasze, 2003, p.183).<sup>23</sup>

The IDC logic to move towards private sector participation and privatisation is partially based on the fact that the domestic water sector produces revenues of US\$ 411 million of which only US\$ 104 million are captured by the public water sector (World Bank, 2010d, p.30). The remaining US\$ 300 million are revenues to the private sector of which a considerable fraction is expected to be shifted to the water utilities. It is also the basis for expectations that the potential for profits exists and could attract private sector actors.

Based on its social impact analysis the World Bank estimates that the “combined water expenditures on all water sources are in line with affordability norms” (World Bank, 2009, p.38) set by the bank itself to 3 to 5 percent of household budget.<sup>24</sup> An earlier study assessing opportunities for and obstacles to privatisation estimates the expenditures threshold at 8 percent for water and waste water services (Jacobs Gibb, 2002, p. 6). This 2002 report makes a tariff level analysis for a privatisation strategy, it shows that a fixed tariff structure would exceed the eight percent of household income threshold and proposes a unit based tariff structure that allows a degree of cross subsidisation. According to the report:

The analysis shows that at a threshold of a maximum cost of water and waste water services of 8 percent of household income that the LRAC<sup>25</sup> is generally below the threshold cost. The only exception is in the Bekaa regional office, the cost of water supply and waste water services to the lowest income households makes up around 10 percent of household income. The cost of water supply for households [in all of Lebanon] is equivalent to between 5–6 percent of household income. Since waste water services are only made available to 70 percent of the population, it could be argued that it is unlikely that the lowest income households would be connected.

Despite the improvement in the affordability of services, affordability would be an issue for the lowest quintile (20 percent) of the population where an annual cost recovery tariff is implemented. The cost of water and waste water services would exceed the affordability threshold to the year 2010. (Jacobs Gibb, 2002, p. 32)

This 2002 report excluded “large scale water resource development projects” from the cost calculations. These were assumed to remain the government’s responsibility (Jacobs Gibb, 2002, p. 10) and would include the major (if not all) dam projects such as the Jannah Dam and others described earlier. The report goes on to explain that the proposed tariffs would further not include “debt servicing obligations for existing debts in the water and waste water services”. Their inclusion

<sup>23</sup>Another example of the unequal access to infrastructure and the profits made from its construction can be found in downtown Beirut. The real estate company Solidere struck a deal with the government to build the infrastructure of the BCD and turn it over to the state in return for the right to reclaim land along the coast and sell it for a profit. The cost of finished construction was estimated at some US\$ 400 million and the land at about US \$ 1 billion by 2003 and has certainly increased since (see Leenders 2004). Designed for a fully occupied area sewers had to be regularly flushed with large amounts of water to maintain it and prevent corrosion. But more importantly elite space was produced with the highest level of services.

<sup>24</sup>The norm is calculated including waste water charges but these are not collected by RWEs. With the introduction of polluter pays principles and the charging for waste water it is reasonable to expect that affordability norms set by the World Bank will be exceeded.

<sup>25</sup>“The standard approach to deriving a full cost recovery tariff is the use of long run average cost (LRAC) pricing techniques. A tariff set at the LRAC would recover capital and operating costs over the project life and incorporates allowances for returns on capital employed” (Jacobs Gibb, 2002, p. 2).

would increase proposed tariffs by about 20 percent. Accordingly the 8 percent threshold would be exceeded in all areas but the BMTLWE area. It goes on to state that:

The cost of services would also create some affordability problems for the second lowest household income quintile in South Lebanon. Despite the reduction in the cost of water and waste water services under the unit charge tariff structure, the recovery of debt servicing obligations on existing debt would be difficult. (Jacobs Gibb, 2002, p. 32)

The initial assumption of the analysis is that water and sanitation services “would be provided by joint (private/public) venture under a long term concession contract” (Jacobs Gibb, 2002, p. 2). Tariffs were established using a target rate of return of 15 percent (Jacobs Gibb, 2002, p.24) that would have to be shared between the partners.

The results of this 2002 report suggest that the financial burden on the poorest 20 percent of households would not be relieved with a privatisation strategy. The euphemistically named “equity considerations” of the World Bank would not be met. The socially unjust distribution of water for domestic use would in all likelihood be reproduced and the cost of large scale infrastructure production would still be carried by the state — even in the case where the regulatory and management capacity of the state was drastically improved, as the report assumes (and needs to). Thus a privatisation strategy seems to produce only limited benefits but considerable disadvantages.

## 5.4 Agriculture in Lebanon

In the agricultural sector distribution of water resources and water use patterns show the same trend as in the domestic water sector. The disproportionate focus on Beirut and on the tertiary economy is reflected in the lack of investment in infrastructure in the rural areas. The poverty in the rural areas is also related to the dilapidated state of the agricultural sector. Contrary to the GDP data the agricultural sector is important for a considerable part of the population. That just about 5 percent of GDP is linked to the livelihoods of 20–25 percent of the population (World Bank, 2010b) and possibly more, who rely on agriculture as primary or secondary source of income (and that does not include those that farm solely for their own consumption) sheds light onto the high levels of rural poverty. According to a study by the Ministry of Social Affairs the agricultural sector employs 7.5 percent of the labour force (aged 15 years and above) on average in Lebanon. In the main agricultural regions, the mohafazaat of Northern Lebanon, the Bekaa and Nabatieh, this share rises to 12.3 percent, 20.2 percent, and 20.7 percent respectively (MOSA 2006). Roland Riachi shows that 67.5 percent of agricultural households are poor – double the national average (Riachi, 2013, 274).<sup>26</sup>

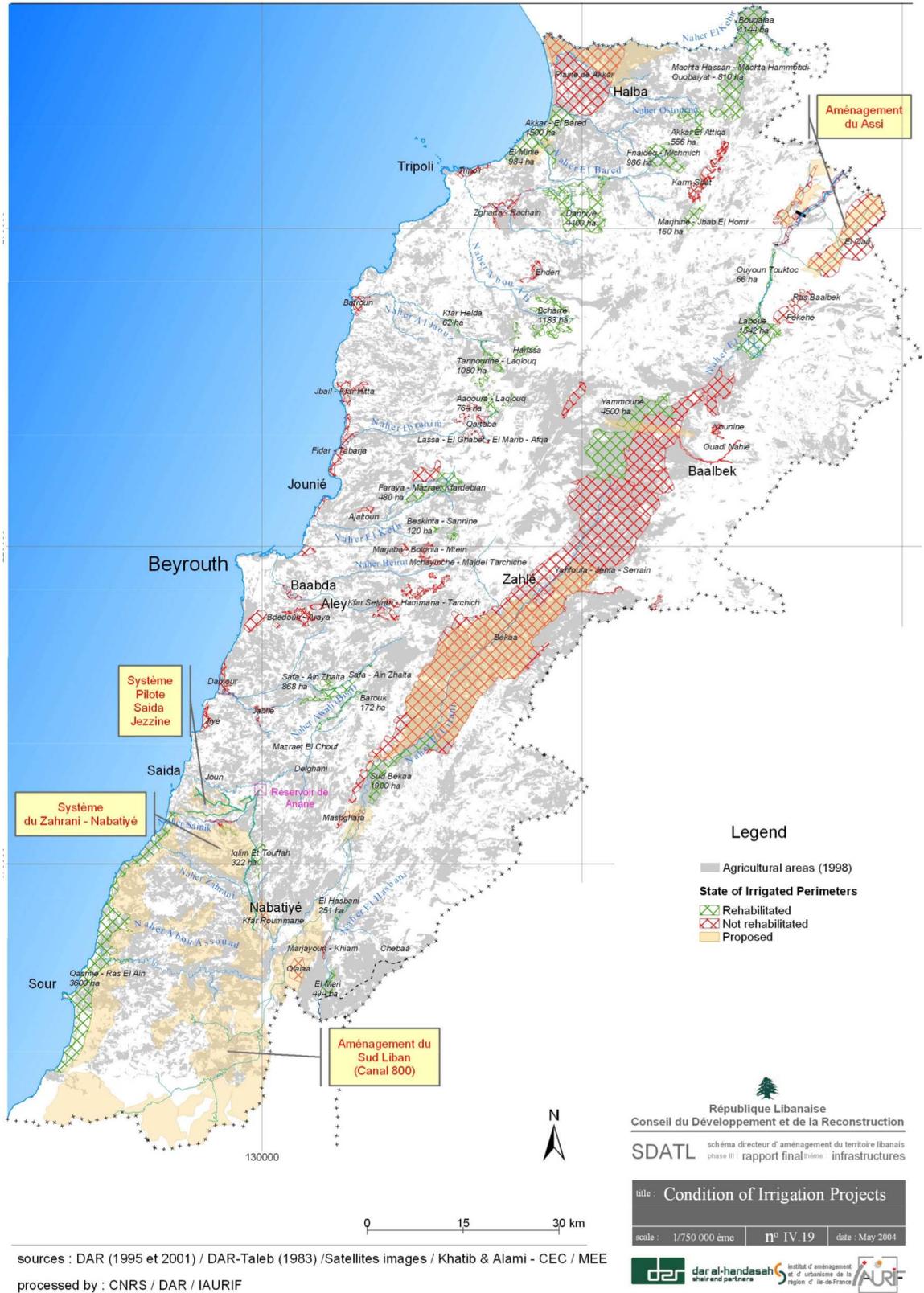
Despite being important for the livelihoods of large sections of the population it is usually depicted very negatively in terms of water management. Its depiction as a relatively unimportant sector of the economy sustains statements like the following from the Ministry of Environment’s State and Trends of the Environment Report:

Although the percent contribution of the agricultural sector to total GDP appears to be dropping the sector continues to be the largest water consumer in the country – about 60 percent of total freshwater goes for agriculture. (MOE/UNDP/ECODIT, 2011, p. 53).

---

<sup>26</sup>The calculations are based on average and median monthly revenues, US\$ 288 and US\$ 300 respectively.

Figure 5.17: Rehabilitated, planned, and not rehabilitated irrigation networks



Source: National Physical Master Plan of the Lebanese Territory 2004.

This demonising of agriculture as inefficient comes in tune with the government’s agricultural

policy of neglect during the last 20 years and misrepresents the importance of the sector. But it is reflected in the infrastructure production efforts of the state and the IDC. Since the end of the war investments in irrigation were negligible and only one project, funded by the World Bank with a loan of US\$ 57 million focused investment in the sector.<sup>27</sup> The project aimed at rehabilitating 27,000 ha of which 17,000 ha in five large irrigation schemes and 10,000 ha in smaller sized schemes. According to the World Bank project completion report (World Bank, 2004) 24,300 ha were successfully rehabilitated. As was mentioned earlier the MEW has a department to support rehabilitation and extension of existing schemes but does not have the manpower nor the financial capacity to do so in a substantial manner (see Chapter 2). In 2012 the Canal 800 project was launched to irrigate about 14,000 ha in the south (see Figure 5.17).

### 5.4.1 The Structure of the Agricultural Sector

The GDP calculations presented in table 5.1 are based on farm-gate prices and related down and upstream activities are not included. According to the national accounts study for 2009 agro-food output was about 30 percent of overall industrial output (Kasparian, 2010). Transportation of produce and whole and resale trade, as well as commerce in agricultural inputs are not included in the calculations of the contribution of agriculture to GDP, but depend on it. Molle (2011, p. 116), based on Alberto Valdes and William Foster (2010), suggests that agriculture's contribution to growth is about twice its value added to GDP (measured at farm-gate) based on an analysis of the economic activities it produces in the downstream supply chain (in developing countries). But even such a calculation would underestimate the value added that is produced on farms large and small, as well as by agricultural labour in the Lebanese context. Following an argument made by John Smith (2012) for GDP calculations on a global scale the importance of the agricultural sector becomes even clearer. Smith distinguishes between value added not represented in GDP of producing nations and value captured from the same production process by corporations and showing up as GDP of the economically most powerful nations. In the case of Lebanon a similar argument can be made for value added in the agricultural sector but captured and represented in other sectors contribution to GDP. An indication of value captured downstream of the supply chain is given by Riachi (2010) who produces a relatively conservative estimate, excluding land rents and using the higher of the available prices for agricultural crops as listed by the MOA. Table 5.7 shows that the farmers' share of final retail price is relatively low on average. It is generally lower for vegetables, and on average higher for fruit trees produced generally on larger farms. Olives and almonds are the exceptional crops from which farmers earn more than 50 percent of the final retail price. But these numbers still do not take into account the better market positions of large farms and so overestimate the profits of small sized farms and producers.

With these caveats, they do provide an image of who captures the value added in the metabolic process that combines water with land and inputs as the result of farm labour including the small and family sized farmer who do a lot of the work themselves.

#### 5.4.1.1 Agricultural Markets

Like all other sectors of the economy the agricultural sector is highly concentrated. The distribution of agricultural land is highly uneven. According to the agricultural census of 1999 1 percent of

<sup>27</sup>The Hassad Project funded by IFAD and implemented through the Green Plan provides loans and subsidies to the agricultural sector at the farm level. Parts of these US\$ 12 million are spent on improvements of on-farm irrigation techniques, reservoirs, and rehabilitating terraces.

Table 5.7: Prices of Agricultural Produce along Supply Chain

Crop	Cost LL (Share)	Prices LL (Share)		
		Farm-gate	Wholesale	Retail
Fruits				
Orange	160 (0.12)	570 (0.32)	967 (0.31)	1284 (0.25)
Clementine	196 (0.12)	700 (0.30)	1239 (0.32)	1685 (0.26)
Lemon	160 (0.15)	650 (0.46)	713 (0.06)	1069 (0.33)
Grapefruit	160 (0.16)	480 (0.32)	641 (0.16)	999 (0.36)
Apple	211 (0.10)	1000 (0.39)	1539 (0.27)	2027 (0.24)
Pear	222 (0.09)	1000 (0.32)	1869 (0.36)	2445 (0.24)
Medlar	577 (0.14)	2000 (0.34)	3365 (0.33)	4197 (0.20)
Apricot	152 (0.08)	850 (0.35)	1433 (0.29)	1986 (0.28)
Cherry	445 (0.16)	1200 (0.27)	2188 (0.35)	2828 (0.23)
Peach	152 (0.07)	1000 (0.42)	1547 (0.27)	2034 (0.24)
Plum	152 (0.06)	1100 (0.39)	1911 (0.33)	2433 (0.21)
Almond	270 (0.15)	1250 (0.54)	1377 (0.07)	1826 (0.25)
Grape	228 (0.09)	775 (0.22)	1943 (0.47)	2466 (0.21)
Strawberry	1015 (0.24)	2100 (0.26)	3393 (0.31)	4207 (0.19)
Banana	326 (0.18)	800 (0.27)	1359 (0.32)	1765 (0.23)
Pomegranate	258 (0.14)	900 (0.34)	1721 (0.43)	1894 (0.09)
Melon	183 (0.09)	800 (0.31)	1453 (0.32)	2015 (0.28)
Water melon	111 (0.10)	450 (0.29)	668 (0.19)	1152 (0.42)
Olive	404 (0.16)	1900 (0.58)	2018 (0.05)	2591 (0.22)
Vegetables				
Potato	195 (0.20)	570 (0.39)	711 (0.15)	963 (0.26)
Onion	105 (0.09)	500 (0.36)	760 (0.23)	1109 (0.31)
Garlic	560 (0.24)	1100 (0.23)	1850 (0.32)	2347 (0.21)
Green peas	524 (0.22)	1250 (0.31)	1847 (0.25)	2366 (0.22)
Green beans	697 (0.32)	1000 (0.14)	1732 (0.33)	2211 (0.22)
Broad Beans	387 (0.20)	900 (0.26)	1488 (0.30)	1969 (0.24)
Cauliflower	344 (0.39)	600 (0.29)	610 (0.01)	874 (0.30)
Cabbage	223 (0.33)	350 (0.19)	411 (0.09)	686 (0.40)
Lettuce	163 (0.18)	370 (0.22)	619 (0.27)	929 (0.33)
Spinach	271 (0.15)	750 (0.27)	1294 (0.31)	1770 (0.27)
Cucumber	230 (0.16)	650 (0.30)	721 (0.05)	1403 (0.49)
Eggplant	396 (0.30)	700 (0.23)	917 (0.17)	1312 (0.30)
Vetch	549 (0.35)	800 (0.16)	1133 (0.21)	1551 (0.27)
Squash	440 (0.30)	650 (0.14)	1060 (0.28)	1473 (0.28)
Gombos	473 (0.14)	1950 (0.43)	2800 (0.25)	3430 (0.18)
Tomato	235 (0.19)	670 (0.35)	878 (0.16)	1260 (0.30)

Source: Riachi and Chaaban (2010), p. 17.

landowners and farmers own 25 percent of the land and 20 percent own 72 percent of the land while 10 percent of small farmers own only 0.4 percent of agricultural land and the 75 percent of all farmers own 22 percent (see Figure 5.11).<sup>28</sup> Unsurprisingly this picture is reproduced in total area exploited with the largest crops: potatoes (see table 5.8) and cereals (see Table 5.9). The potato market for example is dominated by large landowners who have immense market power supported by better storage capacities, transportation, on-farm infrastructure and access to information.<sup>29</sup>

Table 5.8: Distribution by Plot Size of Area Planted with Potatoes

Area planted with ware potatoes (ha)	Number of farms	Aggregated area planted with ware potatoes (ha)	% of total area planted	% of potato farmers
< 1	4,728	879	6.2%	66.7 %
1 - 5	1,660	3,412	24.2%	23.4%
5 - 20	576	5,220	37.3%	8.1%
> 20	121	4,543	33.3%	1.7%
total	7,085	14,054	100%	99.9%

Source: Agricultural census 1999 (MOA)

The supply chain is held in rather fewer hands. According to a paper by World Bank staff (Dessus, Ghaleb & Malouche, 2006) “rents accruing from monopolistic positions represent more than 16 percent of GDP in Lebanon.” To illustrate, an earlier report (CRI, 2003) analysing competition shows that the market in pesticides and other agro-chemical products is dominated by one company that has 59 percent of market share, and five companies dividing the market among themselves.<sup>30</sup> To go back to the example of potato farmers, seed import is also highly concentrated, four companies, three of which carry the same family name, import about 62 percent of seeds (Abou Zeid, 2005). Input supplier monopolies or oligopolies are matched by equally prevalent market power downstream, where local wholesale markets and powerful traders control the supply chain. As Roland Riachi and Jad Chaaban write, “farmers are in a weak position compared to such monopolies. The inability to gather in cooperatives to face wholesalers is mainly due to their small sized exploitations. They also lack adequate technology and storage structures” (Riachi & Chaaban, 2010, p.16).

The concentration of land reflects the class hierarchies. The structure of the sector is the result of government policy, or rather its absence, and the lack of interest in agriculture by the financial and commercial bourgeoisie. Accordingly, government budget allocations to the Ministry of Agriculture (MOA) were always low, they never exceeded 1 percent of the budget and usually were held at around 0.5 percent. In comparison the Ministry of Youth and Sports had a budget of 0.25 percent when the the MOA was receiving 0.47 percent of the budget in 2001 (Sanyu Consultants Inc. & Yachiyo Engineering Co. Ltd., 2003) — again, this is for a sector that provides

<sup>28</sup>The Lebanese Observatory of Agricultural Development started a new census in 2010 but it still has not been published. Unofficially because of problems with the methodology and the data. But according to a consultant on the study the concentration of land into fewer hands has continued.

<sup>29</sup>Anecdotal evidence suggest that this power is deployed via importation of potatoes during the harvesting season so pushing local prices down and buying up small producers' harvests, as they do not have access to adequate storage capacity. After storing the harvest greater off-season margins are made when imports are down and local prices rise again.

<sup>30</sup>Exclusive dealerships for imported products are legally protected in Lebanon. Importers have monopolies on a whole range of products. Attempts to rescind these exclusive rights made it to the stage of draft law in 2002 but were eventually thwarted by the commercial bourgeoisie.

a livelihood for 20–25 percent and possibly more of the population. In itself this is a stark expression of local class politics.

#### 5.4.1.2 Financing the Agricultural sector

This lack of funds from which the ministry suffers is one cause of the poor state of extension services, as well as other support mechanisms and infrastructure that could profit small-scale farms and farmers.<sup>31</sup> The other cause is the weakness of the administration of the sector: the MOA like all ministries is understaffed in key positions.

Subsidies to the agricultural sector originate from different organisations, and bypass the MOA. Tobacco, wheat, and until rather recently sugar beet received direct subsidies from the government through the monopoly of the National Board for Tobacco and Tobacco under the auspices of the MOF, the Ministry of Trade and Commerce via the General Directorate for Cereals and Sugar Beet.<sup>32</sup> The tobacco subsidies served Hezbollah's and Amal's clientele and were instituted as an incentive for the rural population in the south to remain on their land during and after the Israeli occupation.<sup>33</sup> This US\$ 51.1 million (in 2008) is distributed as price support to farmers, most of them poor and constitutes an important portion of their income. According to a survey from 1999 mentioned by Zurayk (Zurayk, 2011, p.38) it ranges from 25–85 percent of a tobacco farmer's total income.

With this exception the major subsidies do not target the poor. Lebanon imports 75 percent of all its wheat and the 25 percent which is sourced from local production is subsidised. Wheat subsidies have increased dramatically in the last decade from US\$ 8 million in 2001–2002 to US\$ 93.5 million in 2008 when they were abolished but reinstated in 2010 (Riachi & Chaaban, 2010; World Bank, 2010b). This increase, reflecting global food price rises linked to the financialisation and speculation of commodities, highlights the vulnerabilities that come with this kind of import dependency and the potential importance of a policy of food sovereignty. Unlike the tobacco subsidies that benefit small farmers<sup>34</sup> cereal production is dominated by large farms (see Table 5.9) who profit from economies of scale. About 24 percent, or 12,429 ha in 1999, of cereal production is irrigated. The percentage of irrigated parcel increases with the size of the exploitation, more than half (6,529 ha) were parcels larger 5 ha (Choueiri, 2002a). In 2002 irrigated wheat-growing areas equalled 16,905 ha and were three to four times more productive than non-irrigated wheat fields (Choueiri, 2002a, p.27). Thus the subsidies favour the owners of larger land who irrigate.

The Export Plus programme financed by IDAL is also usually named as a subsidy to the agricultural sector. These US\$ 33 million, coming in the form of a subsidy for transportation for export, has repeatedly been criticised for benefiting traders and large scale export-oriented farmers, following the pattern of neglect of small-scale farming.

Financing for farmers is not readily available, at least for the large majority. Not one operational agricultural development bank exists in the country even though three institutions existed in the past and still do legally and on paper. The Credit Bank for Agriculture, Industry and Real

<sup>31</sup>Zurayk (2010 p.25 & p.33), for example, points out that quality control and inspection of imported goods and their labelling as such and a policy to promote local produce could benefit local farmers. Other possibilities are linked to the regulation of the supply chains and wholesale markets to reduce farmers vulnerabilities. The extension service would remain crucial in the improvement of farmers access to education and skills, and input management.

<sup>32</sup>Subsidies to the tune of US\$ 4 million were also paid for pesticides by the MOA in the early 2000s, though it is not clear how far this benefited the smaller farmers. Most likely these ended up being indirect or even direct subsidies to importers.

<sup>33</sup>Zurayk points to the 2006 war and the rugged resistance fought by Hezbollah and the people of the south to underscore the importance of these subsidies.

<sup>34</sup>Half of tobacco farmers have plots under or around 4 dunums or 0.4 ha.

Estate was effectively laid to rest in 1968 when the government withdrew its support (despite being profitable). The National Union for Cooperative Credit did exist but lost its assets in the successive bouts of hyper-inflation during the war and after. The National Bank for Agricultural Development was created in 1994 on the basis of a 1977 law but never saw the light of day. Disputes over commercial bank participation, a change of the law in this regard, disagreements between different ministries as to its effective role, and a refusal to directly support the agricultural sector left the project stillborn (Choueiri, 2002c, p.34 -35).

Table 5.9: Cereal Growing Areas by Size of Exploitation

Size of expl.	Exploitations (producing cereals)		total area of exploitation		Area of cereals	
	number	% of total in size class	area	% of total	area	avg. area/ expl.
< 1ha	10,941	7.7	5791	11.9	3,394	0.3
1 - 4 ha	13,245	31.6	26,831	34.2	14,229	1.1
4 - 20 ha	4,516	46.7	34,250	47.7	19,035	4.2
> 20 ha	633	54.8	28,845	58.7	15,184	24.0
Total	29,515	15.1	95,717	38.6	51,842	1.8

Source: Ministry of Agriculture (Choueiri, 2002a).

In general small farmers' access to financing is very limited. A number of smaller projects funded by international organisations and local NGOs exist but their reach and means are extremely limited. Financing support through the government tends to flow towards larger operations (Choueiri, 2002c) with the exception of the Green Plan whose mission is to support agriculturalist with small loans and grants not exceeding US\$ 10,000 but on average half of this.<sup>35</sup>

Bank loans to the private sector have always been marginal compared to overall credit volumes. The agricultural sector receives a decreasingly small share of not even 1.5 percent of bank credits and loans. Of these the majority are held by the larger land owners and farmers. "The private banks have little interest in agriculture, considered as a high-risk activity with elevated operation costs" (Choueiri, 2002c, p. 35). Real estate and treasury bonds offer higher profit margins. Coupled with the dollarisation of the economy and the competitive returns on LLTBs these have had a crowding-out effect on industrial and agricultural access to credit and financing (see Kubursi, 1999; S. A. Makdisi, 2004). Accordingly the barriers for small farmers are nearly insurmountable. Physical access to banks in rural areas is difficult, as only very few branches operate outside the major population centres. Collateral requirements are very stringent, effectively excluding small farmers from access to credit. Both these obstacles are also related to the urban focus of the banking sector.

The agricultural sector reflects the general class political orientation of the country and successive governments. It is structured in favour of the land and capital owning classes and severely biased against small landholders and tenants: the majority of farmers. The larger economic orientation of the country towards the tertiary sector is expressed in the negligible budgets allocated to the MOA, the lack of capital flows towards agriculture, and a reduced export competitiveness due to the overvalued Lebanese lira pegged to the dollar (see Kubursi, 1999; Nahas, 2009). This general

<sup>35</sup>Minimum plot requirement are 1500 m<sup>2</sup> or 1.5 dunum (0.15 ha). I did not investigate the distribution of loans and grants relative to exploitation size. Anecdotal evidence suggests that there is a tendency to favour larger exploitations (going towards 2 ha).

economic orientation and bias against agriculture is reflected in water use and abuse patterns in the sector.

## 5.4.2 Agriculture and Water Resources

That agriculture is the largest water user is true for most developing countries, certainly for countries in similar climatic zones, and is in the nature of the activity. Looking at Lebanese water use by sector reveals that in Lebanon the share of water used by agriculture is significantly less than in most other countries of the Arab region and the Mediterranean (see Table 5.10). Different sources produce different numbers the 61 percent are MEW estimates while the World Bank estimates irrigation water use at 64 percent (World Bank, 2003, 2010b).

Table 5.10: Comparison of water use by sector in the Region

Comparison Water use by Sector in the Region			Total Freshwater Withdrawal	Per Capita Withdrawal	Agricultural Use (%)	Industrial Use (%)	Domestic Use (%)
Region	Country	Year (data)	(km <sup>3</sup> /yr)	(m <sup>3</sup> /p/yr)			
Selected Mediterranean countries and countries from South West Asia	Croatia	2010	0.63	143.00	1.37	13.68	84.95
	France	2007	31.62	512.10	12.41	69.32	18.26
	Italy	2000	45.41	789.80	44.07	35.87	20.06
	Bahrain	2003	0.36	386.00	44.54	5.68	49.78
	Palestine	2005	0.42	112.10	45.22	6.94	47.85
	Kuwait	2000	0.91	441.20	53.87	2.28	43.86
	Israel	2004	1.95	282.40	57.78	5.78	36.44
	Qatar	2005	0.44	376.90	59.01	1.80	39.19
	Lebanon	2005	1.31	316.80	59.54	11.45	29.01
	Spain	2008	32.46	698.70	60.51	21.74	17.76
	Algeria	2001	3.50	182.00	61.19	14.58	24.24
	Jordan	2005	0.94	166.00	64.96	4.08	30.96
	Turkey	2003	40.10	572.90	73.82	10.72	15.46
	Tunisia	2001	2.85	295.80	75.96	3.86	12.81
	Iraq	2000	66.00	2,616.00	78.79	14.70	6.52
	UAE	2005	4.00	739.50	82.84	1.73	15.43
	Egypt	2000	68.30	973.30	86.38	5.86	7.76
	Cyprus	2009	0.18	164.70	86.41	3.26	10.33
	Morocco	2000	12.61	428.10	87.31	2.86	9.81
	Syria	2005	16.76	867.40	87.53	3.67	8.80
	Saudi Arabia	2006	23.67	928.10	88.00	3.00	9.00
	Greece	2007	9.47	841.40	89.30	1.76	8.93
	Yemen	2005	3.57	162.40	90.74	1.82	7.43
	Iran	2004	93.30	1,306.00	92.18	1.18	6.65

Source: FAO-Aquastat.

### 5.4.2.1 Assessing the Data

Numbers regarding agricultural water use are difficult to assess. Data regarding the distribution of irrigated versus non-irrigated agricultural land is equally ambiguous. A World Bank report from 2003 estimates the total equipped area at 90,000 ha. The Bank report goes on to estimate the effectively irrigated area at about 81,030 ha (World Bank, 2003). These numbers show a large variation to those of the MOA census of 1999 according to which 104,009 ha, or about 42 percent, of a total of 247,940 ha agricultural land were irrigated. The 90,000 ha originates from a report that was produced by JICA but never published because of differences that emerged between the consultants, the agency, and Lebanese experts.<sup>36</sup> The 90,000 ha estimate was based on a 1993 FAO and the 1999 census (Sanyu Consultants Inc. & Yachiyo Engineering Co. Ltd., 2003). It constitutes an extrapolation that deducts plots of a quarter of a dunum included in the census and claims to account for the lack of expansion of schemed irrigated area by the state. What is more, this same number is reproduced by the MEW in the NWSS in 2010. Nonetheless irrigated area

<sup>36</sup>The JICA report on which these numbers are based was never published and was rejected by the Lebanese government (or MEW) because it was considered inaccurate or so it was claimed (Interview Catafago 2010).

has increased since the writing of the Japanese report. The FAO consultant in charge of the new agricultural census project of 2010 estimated it at about 112,000 ha (Interview Choueiri 2011).<sup>37</sup>

The production surveys of the MOA estimate that 139,000 ha and 130,000 ha of farmed agricultural areas were irrigated in 2006 and 2009 respectively (MOA, 2010). This sum includes irrigated area for each crop and so counts the fields that are used for multiple crops repeatedly. Field observation confirms that irrigation, at least irrigation from groundwater, has increased importantly in some areas, as observed in this case in the Hasbani basin in the south of the country.<sup>38</sup>

The following analysis of agriculture is based on the 1999 census and the agricultural production surveys based upon it and published by the MOA. These numbers cannot be taken at face value; the margins of error are in all likelihood too substantial, and the data is 15 years old. The numbers are inaccurate and as in the case of irrigated area can have a variance of 15 percent. Use of this data though is justified. It is the only coherent and comparable data set on the topic. The errors in all likelihood are systematic and consistent throughout. The trends that emerge from the following analysis were confirmed through interviews with academics, agronomists, ministry official, and IDC professionals.

#### 5.4.2.2 Irrigation and Irrigated lands

The distribution of land and the use of water is highly uneven. Irrigated agricultural land is even more concentrated than agricultural land, a comparison of the two is presented in Table 5.11. 72.68 percent of farmers own land holdings smaller than 1 ha, which represents only 19.62 percent of all agricultural land and 14.52 percent of irrigated land. Holdings of a size between 1 and 10 ha make up 50 percent of the agricultural land and 42 percent of irrigated land. These are owned by 25.7 percent of farmers. Holdings larger than 10 ha make up 30.4 percent of all land but 43 percent of irrigated land and are held by only 1.6 percent of landowners and farmers. The percentage of irrigated land to total land held increases with the size of the exploitation (see Table 5.11). Accordingly water in agriculture is even more unequally distributed than land.

Table 5.11: Distribution of land according to size of farm

Exploitation Size	% Farmers	% exploited land owned cumulatively	% irrigated land owned cumulatively
< 1 ha	72.68	19.62	14.52
< 2 ha	86.76	34.83	25.36
> 1 ha < 10 ha	25.71	49.96	42.14
> 10 ha	1.61	30.41	43.35

Source: Agricultural census 1999 (MOA)

104,000 ha of used agricultural land is irrigated which amounts to 42 percent of the 248,000 ha of total used farmland. Of those 64 percent were irrigated by gravity (flooding), 28 percent by sprinklers, and 8 percent via drip irrigation technology (Choueiri, 2002b).<sup>39</sup> Water for irrigation is

<sup>37</sup>This latest census was never published because the data that was produced was considered to have major flaws (Interview Ghadban 2012).

<sup>38</sup>A fact that raises questions as to the usefulness of numbers presented by both the WB and the MEW.

<sup>39</sup>According to the NWSS these numbers are 70.4 percent gravity, 23.4 percent sprinklers, and 6.2 percent drip irrigation in 2010.

sourced to 52 percent from groundwater and 48 percent from surface water. Table 5.12 shows the distribution of modes of irrigation and their reliance on the respective sources of water. Pressurised systems rely disproportionately on groundwater, 85 percent of sprinkler irrigation and 74 percent of drip irrigation respectively are sourced from groundwater. Channel or flood irrigation in contrast relies up to 65 percent on surface water. The cost of irrigation varies widely, those that irrigate with surface water tend to pay less, where groundwater is used prices are higher (Choueiri, 2002b). In both cases where irrigation networks are operated collectively, local political dynamics can play a role, usually to the advantage of the better politically connected (Interview Nassif 2012). Those with no access to a network pay tankers with mobile pumps and accordingly pay the most (Interview Ghadban 2012).

Table 5.12: Area irrigated by type and source

Source	Irrigated area (ha)		Gravity		Sprinkler		Drip	
	Area	%	Area	%	Area	%	Area	%
Surface water	49,939	48 %	43,093	86 %	4,477	9 %	2,369	5 %
Ground water	54,070	52 %	23,035	43 %	24,565	45 %	6,469	12 %
Total	104,009	100 %	66,128	64 %	29,043	28 %	8,838	8 %

Source: Choueiri, 2002b

The cause for this state of affairs is to be found in government policy and its neglect of agriculture and the failure to invest in irrigation infrastructure, as well as a lack of policy and enforcement of regulations by the MEW who could theoretically limit well construction but lacks the capacity and the will to do so. As Amery writes:

Rehabilitating the agricultural sector and rebuilding of the irrigation system were not high priorities of the Lebanese government during the early years following its civil war. As a result, individual farmers relied more on groundwater, and thus between 1992 and 1995, they added 2,000 wells to the existing stock of more than 10,000 wells to augment the farmers' water supply. (Amery, 2002).

It is a process that has been going on since. It is unclear how many exist, and accordingly how much groundwater is really pumped. Table 5.13 below shows that the average plot size of land irrigated from surface water is slightly less than one third that of plots irrigated from groundwater. Depending on the type of irrigation the differences vary, plots irrigated by sprinkler and sourced from groundwater are on average almost three times as large as their equivalent sourced from surface water. This average is even higher in the area of Baalbeck where average plot size irrigated by sprinkler reaches 5.7 ha (Choueiri, 2002b). Larger plots irrigate from groundwater and the larger the exploitation the more likely it is to use pressurised systems.

Table 5.14 serves to confirm that the mechanisation of the farm and capacity to irrigate via pressurised system is related to exploitation size. It shows that the percentage of exploitations equipped with motor-pumps increases with the size of the exploitation, with 45 percent of exploitations larger than 10 ha being equipped on average with two pumps. The author of the irrigation strategy of the MOA (Choueiri, 2002b) sees the cause in the weak financial capacities of small farmers and remarks that an appropriate financing system would allow small farmers to implement more modern irrigation systems. It is not only the one-time investment in a new technology and system that stands in the way of small farmers irrigating with pressure and from groundwater but also the increasing depth from which pumping occurs. "It increased from an average depth of 50 m to 100 m, 150 m and even up to 500 m, particularly during the last decade" (Dar al Handasah (Shaer and

Partners)– CNBureau s.a.r.l. - IAURIF, 2006, p.9). The cost associated with pumping is expressed by one interviewee at the MOA: “In Lebanon we irrigate with mazout (Arabic: diesel)” (Interview Roukos 2011). Seen from a different perspective this means that responsibility for rapidly falling ground water levels is caused much more by large land owners and farmers.

Table 5.13: Irrigated Area by Size of Exploitation

Irrigation system		Surface water	Groundwater	Total
Gravity	Plots	115,080	28,248	143,328
	irrig. area (ha)	43,093	23,035	66,128
	irrig. a. / plot	0.37	0.82	0.46
Sprinkler	Plots	3,459	6,641	10,100
	irrig. area (ha)	4,477	24,565	29,043
	irrig. a. / plot	1.29	3.69	2.87
Drip	Plots	4,374	5,572	9,946
	irrig. area (ha)	2,369	6,469	8,838
	irrig. a. / plot	0.54	1.16	0.89
Total	Plots	122,913	40,461	163,374
	irrig. area (ha)	49,939	54,070	104,009
	irrig. a. / plot	0.41	1.34	0.63

Source: reproduced from Ministry of Agriculture (Choueiri, 2002b) based on agricultural census 1999.

Table 5.14: Size of Exploitation in Relation to Pump Ownership

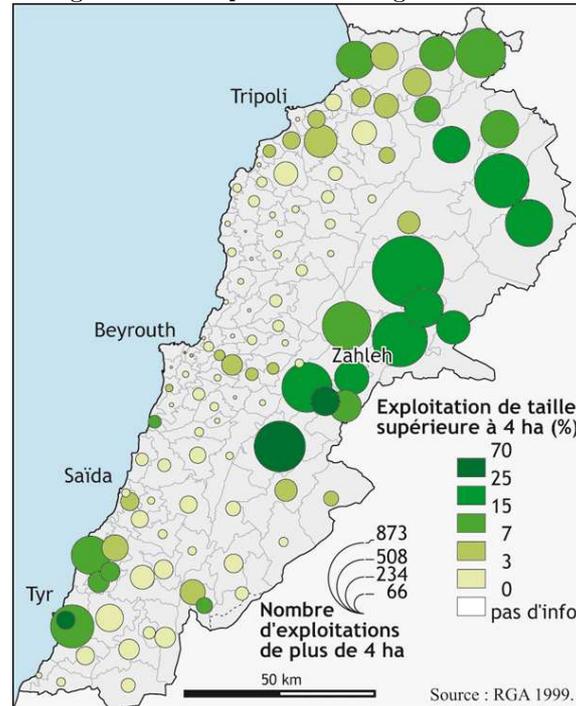
Size exploitation (ha)	# of expl.	# of expl. with pump	percent expl. pump	# of pumps	pump / expl
< 0.5	103,600	8,269	8.0%	8,505	1
0.5 - 1	37,994	3,771	10.0%	3,987	1.1
1 - 2	27,434	3,407	12.4%	3,754	1.1
2 - 4	14,977	2,477	16.5%	2,853	1.2
4 - 10	7,686	1,929	25.0%	2,520	1.3
> 10	3,138	1,390	44.3%	3,007	2.16
Total	194,829	21,243	11.0%	24,632	1.2

Source: reproduced from Ministry of Agriculture (Choueiri, 2002b) based on agricultural census 1999.

### 5.4.3 Production, Irrigation and Export

This final section will show the relationship between groundwater extraction and high value added crops destined for export. The principal agricultural areas are the plains of the Bekaa, the Akkar and areas in the south. According to the annual agricultural production report of 2009, 39 percent of agricultural areas are located in the Bekaa, 29 percent in the north, 20 percent in the south, and only 12 percent in Mount Lebanon (MOA, 2010). According to the agricultural census the largest exploitations are found in the Bekaa. Around Zahleh average size of exploitation is about 9 ha and varies between 4–5 ha in the rest of the Bekaa and some areas of the north. Figure 5.18 shows the percentage of exploitation larger than 4 ha and shows the principal agricultural areas. Table 5.15 lists irrigated agricultural area by type of irrigation and by caza. It shows that in the central Bekaa and the West Bekaa, where the size of exploitation is largest, the share of irrigated agricultural areas reaches 80 percent and more.

Figure 5.18: Exploitations larger than 4 ha



Source: Atlas du Liban, CNRS and IFPO 2007.

The table also demonstrates that the share of groundwater exploited is generally highest in the areas where the percentage of irrigated area to total agricultural area is highest. In the caza Zahleh 80 percent of agricultural lands are irrigated; of these almost 72 percent are irrigated from groundwater. In the West Bekaa the situation is similar and almost 75 percent are irrigated from groundwater. Only in the mountainous areas where little agricultural land exists are the rates of irrigation higher than in the Bekaa. In Baalbeck, further north, 64 percent of irrigated areas draw from groundwater, where the groundwater table is already much deeper and can reach 100 m – 200 m and more (Interview Nehme 2011). Similar dynamics can be observed in the cazas Saïda and Sour, where the percentages of irrigated area are 55 percent and almost 38 percent respectively. Of these, 65.5 percent and 85.5 percent are irrigated from groundwater in Saïda and Sour respectively.

Because the census is from 1999 the data for areas in the cazas Marjayoun and Hasbaya can not be considered representative. Agriculture still suffered from the stifling policies of the Israeli occupation (see El Ezzi, 1990). The lower plains of the Hasbani basin are today well-irrigated (personal observation) and the total cultivated areas have increased. The changes in land use are explained by one man from Wazzani who is cited in a study about poverty in Lebanon (Das and Davidson 2011):

In the 1970s and 1980s there were no big farmers here so we could rent land from the church to take the cows to graze. But since 2000, big farmers from Beirut and Bekaa rented the land. We just have the land where our house is. We have no other land. We used to rent land for \$20–30 but the big renters came and offered \$100 for longer term leases. So of course the church preferred them. (Das & Davidson, 2011, p.146)

Agricultural area by crops is distributed as follows: fruit trees were cultivated on about 30 percent of the agriculturally used area, olives on nearly 23 percent, and cereals on 22 percent, followed

Table 5.15: Irrigation by caza

Region	Type of Irrigation						Water Source				% Irrigated Area	Irrigated Area (ha)	Agricultural Area (ha)
	drip	% of total irrigated	sprinkler	% of total irrigated	gravity	% of total irrigated	Groundwater	% of total irrigated	Surface water	% of total irrigated			
Mount Lebanon	1,179.2	11.8%	86.8	0.9%	8,705.0	87.3%	1,466.0	14.7%	8,505.1	85.3%	38.8%	9,971.0	25,667.0
Baabda	40.9	4.1%	12.2	1.2%	950.1	94.7%	145.0	14.5%	858.1	85.6%	26.9%	1,003.0	3,734.0
Metn	78.3	5.2%	5.2	0.3%	1,420.9	94.5%	189.0	12.6%	1,315.2	87.4%	45.5%	1,504.0	3,303.0
Chouf	199.5	7.6%	1.9	0.1%	2,412.1	92.3%	560.0	21.4%	2,053.4	78.6%	30.8%	2,613.0	8,476.0
Aaley	89.1	7.2%	4.4	0.4%	1,143.0	92.5%	165.0	13.3%	1,071.1	86.7%	36.0%	1,236.0	3,429.0
Keserwan	232.2	14.1%	58.5	3.6%	1,356.6	82.4%	217.0	13.2%	1,430.6	86.9%	71.0%	1,647.0	2,320.0
Jbeil	539.3	27.4%	4.7	0.2%	1,422.3	72.3%	190.0	9.7%	1,776.7	90.4%	44.6%	1,966.0	4,405.0
North Lebanon	600.4	2.4%	1,565.6	6.1%	23,323.4	91.5%	6,288.0	24.7%	19,201.2	75.3%	40.0%	25,489.0	63,728.0
Tripoli – Minie	166.4	3.4%	9.1	0.2%	4,749.2	96.4%	267.0	5.4%	4,658.0	94.6%	58.5%	4,925.0	8,421.0
Koura	5.7	2.9%	1.2	0.6%	192.2	96.6%	116.0	58.3%	83.0	41.7%	3.1%	199.0	6,393.0
Zgharta	5.6	0.3%	1.0	0.1%	1,840.7	99.7%	114.0	6.2%	1,733.1	93.8%	26.0%	1,847.0	7,091.0
Batroun	82.6	10.7%	4.7	0.6%	685.7	88.7%	40.0	5.2%	733.3	94.9%	21.2%	773.0	3,649.0
Aakkar	335.9	2.1%	1,541.4	9.4%	14,447.1	88.5%	5,727.0	35.1%	10,597.0	64.9%	45.0%	16,324.0	36,251.0
Bcharre	4.1	0.3%	8.3	0.6%	1,408.5	99.1%	24.0	1.7%	1,396.9	98.3%	74.0%	1,421.0	1,921.0
Beqaa	6,383.0	11.9%	27,154.9	50.6%	20,123.5	37.5%	36,456.0	67.9%	17,205.5	32.1%	52.1%	53,662.0	102,948.0
Zahle	560.0	3.5%	11,987.2	74.4%	3,556.5	22.1%	11,578.0	71.9%	4,515.7	28.0%	80.2%	16,104.0	20,075.0
West Begaa	508.6	4.9%	7,861.9	75.4%	2,062.6	19.8%	7,812.0	74.9%	2,621.5	25.1%	67.2%	10,433.0	15,523.0
Baalbek	4,043.5	17.1%	7,281.6	30.8%	12,280.4	52.0%	15,178.0	64.3%	8,427.2	35.7%	42.3%	23,605.0	55,754.0
Hermel	1,159.9	36.1%	0.4	0.0%	2,048.2	63.8%	1,626.0	50.7%	1,582.2	49.3%	39.5%	3,209.0	8,123.0
Rachaya	111.4	35.8%	23.9	7.7%	175.7	56.5%	262.0	84.2%	48.9	15.7%	9.0%	311.0	3,474.0
South Lebanon	601.8	4.7%	148.5	1.2%	11,992.8	94.1%	9,052.0	71.0%	3,691.3	29.0%	43.1%	12,742.0	29,570.0
Saida	492.7	7.3%	55.9	0.8%	6,237.8	91.9%	4,444.0	65.5%	2,341.9	34.5%	54.8%	6,786.0	12,382.0
Sour	75.6	1.4%	89.9	1.7%	5,228.0	97.0%	4,555.0	84.5%	837.8	15.5%	37.8%	5,392.0	14,248.0
Jezzine	33.5	5.9%	3.6	0.6%	527.1	93.5%	53.0	9.4%	511.6	90.7%	19.2%	564.0	2,941.0
Nabatiye	73.7	3.4%	86.9	4.1%	1,983.7	92.5%	808.0	37.7%	1,336.3	62.3%	8.2%	2,144.0	26,026.0
Nabatiye	21.0	1.7%	20.9	1.7%	1,186.6	96.6%	722.0	58.8%	506.2	41.2%	15.3%	1,228.0	8,028.0
Bint Jbeil	3.6	3.5%	43.8	42.5%	54.6	53.0%	46.0	44.7%	56.7	55.0%	1.7%	103.0	6,098.0
Marjayoun	31.1	6.9%	0.8	0.2%	422.1	93.0%	38.0	8.4%	416.0	91.6%	5.9%	454.0	7,747.0
Hasabay	17.7	4.9%	21.6	6.0%	320.1	89.2%	2.0	0.6%	357.5	99.6%	8.6%	359.0	4,153.0
Lebanon	8,838.4	8.5%	29,042.8	27.9%	66,128.4	63.6%	54,070.0	52.0%	49,939.5	48.0%	41.9%	104,009.0	247,940.0

Source: Agricultural Atlas of Lebanon, Ministry of Agriculture 2005.

by potatoes, fruit vegetables, legumes, and leafy vegetables. Riachi shows that these distributions represent the results of a transformation process in agriculture that saw a shift towards fruit tree cultivation and away from cereal production. His analysis shows that in the 1960s 39 percent of agricultural area was used for cereal production and only 23 percent for trees. He further points out that this transformation was encouraged by government policy (Riachi, 2013, p.271). After the war it was equally encouraged by the World Bank and other IDC actors which recommend an orientation towards high value added crops for export (World Bank, 2003, 2010b).

The largest crops are potatoes followed by the different fruit tree varieties. The principle fruit tree crops are citrus, apples, and bananas. Table 5.7 shows that only very few crops give revenue certainty to the farmers. Market vegetables in general allow for very low revenue streams for farmers and the largest share of profit is captured downstream in the distribution network. Citrus and banana production also provide a considerable share of the revenues to farmers. But these products tend to benefit large landowners who profit from a vertical integration of the production chain.

With the exception of cereals and olives, large parts of these main crops are destined for the export market to Arab states. Export is dominated by the large producers, they produce, sell and control the local and export market (Riachi, 2013, p.278). They depend on the export market because the major crops are produced in quantities so large that they could not be absorbed by the Lebanese market. The export dependency ratio defined by Riachi (2013) illustrates this well.

He explains it as the ratio of production over local consumption.<sup>40</sup> For example, half of the orange production is exported and import volume is only 0.15 percent of total orange production. The export dependency ratio accordingly is 103 percent, because volume of exports equals volume of internal consumption. A similar situation is found regarding bananas, apples, pears, lemons and lettuce. Riachi calculates export dependency ratios that are 95 percent, 76 percent, 43 percent, 32 percent and 185 percent respectively (Riachi, 2013, p. 286). These crops are exported at dumping prices benefiting from transportation (maritime and by land) offered through the Export Plus Programme.

In terms of water use this means that the over-exploitation of groundwater sustains exports at dumping prices to the Arab countries. This over-exploitation is largely due to large producers and landowners in the principal crop producing areas who are also the exporters.

It is also in this context that the South Lebanon Irrigation Project needs to be understood. In the absence of a structural reform of the agricultural sector it all but guarantees the continued flow of virtual water, embedded in these crops, to the Gulf at bargain prices. A substantial change of agricultural policy is highly unlikely, thus the high-value crop production for export policy promoted by the IDC is similarly likely to reproduce this situation. It will contribute to a continued over-extraction of the resource to the advantage of the large landowners and producers.

This chapter elaborated on the socio-physical effects of water resource management policy and the water infrastructure development process in particular. The uneven and socially unjust distribution of water resources, as well as their ecological degradation are a result of successive governments' development policy. Uneven sectoral and geographical development are the outcomes of a reconstruction strategy that supported the real estate and financial sectors to the detriment of productive sectors. The process of extending water and waste water networks, as well as the failure to do so in many areas, is the product of the interaction between Lebanese administration

---

<sup>40</sup>It is the ratio of total exports over the difference between export and the sum of local production and imports, or exports over total volumes consumed locally.

and IDC. This was especially apparent in the waste water sector but was shown also for the case of Keserwan in the water supply sector.

The variations in availability of potable water from the public network in the different regions are a reflection of these processes. The pollution of water resources is due to the failure to extend waste water networks, open dumping, and polluting economic activities, as well as the government's inability and unwillingness to enforce environmental laws. A particular vulnerability to pollution of water resources is also due to the characteristics of the terrain that allows pollutants to infiltrate very rapidly.

Rapid and dense urbanisation also contributes to pollution and overextraction of resources. Quarrying is a polluting activity that is directly linked to the rapid rate of urbanisation. The over-abstraction and related saltwater intrusion of water resources in urban centres along the coast is caused by the immense number of private wells that make up for the lack of public water supply from the network. The deficits of the public water supply are also a cause for the financial burden water provision imposes on the poorest segments of the population. Those with the financial means are not affected but can guarantee constant supply of better quality water on average. In this context it was also shown that commercialisation and privatisation strategies are not likely to change this situation. The 2002 privatisation study showed that water provision would remain a financial burden on the poorest segment (20 percent and more) of the population.

Finally, the analysis of the irrigation sector showed that this situation is reproduced in agriculture where large landowners profit disproportionately from the ability to mobilise water resources. The government's *laissez-faire* attitude towards the agricultural sector and the related failure to extend irrigation networks is also responsible for the unequal access to water resources for irrigation. As a whole the unequal distribution of water that is a product of the water resource management process reinforces the dependencies, in form of the patron-client networks, that produce them.

# Conclusion

In this thesis I investigated the influence of the International Development Complex on the hydrosocial cycle as conceptualised by critical geographers (Bakker, 2003; Linton & Budds, 2013; Swyngedouw, 2004b) in order to understand how the IDC interventions and its interaction with the Lebanese water sector affect Lebanese power relations. Through this theoretical lens I focused on the social construction of water and the water resource management process. This allowed the inclusion of a variety of agencies, human and non-human, into the analysis of the waterscape. The water flows, their quality and distribution, are the result of a historically and geographically specific and contingent process (N. Smith, 1984) shaped by: the IDC, neoliberal ideology and associated governance templates; Lebanese social, political and economic dynamics, the concomitant institutional framework; physical infrastructure and the related planning process; Lebanese topography, as well as hydrogeology and climate patterns. This also allows an analysis of the neoliberalisation process conceptualised by critical urban theorists such as Brenner, Peck, and Theodore (Brenner et al., 2010a, 2010b; Brenner & Theodore, 2002; ?) as always incomplete, path-dependent and uneven by identifying which elements contribute to it, how they do so, as well as their effects.

Noel Castree (2010b) provides a useful map to make sense of nature's neoliberalisation. Based on a synthesis of the work by Karl Marx, Karl Polanyi, and James O'Connor he produces "two ideal type scenarios" that can be used as a diagnostic guide to assess the neoliberalisation of nature. The first he calls "Neoliberalism triumphant" on one end of the spectrum of outcomes whereby in this case neoliberalism is able to successfully manage the ecological and social contradictions that emerge from its continued geographical expansion and related commodification of nature. The second is on the other end of the spectrum and termed "Neoliberalism on the back foot"; in this scenario the process of neoliberalisation reverses, as it is not able to manage both contradictions and opposition rises in reaction to the social and ecological injustice that has been perpetrated. Depending on the reactions of opposition movements and the various actors invested in neoliberalisation this "leads to strong reform at a minimum, or something even more radical and threatening to the neoliberal order" (Castree, 2010b,p 1744). He summarises six elements for each scenario, four of which are relevant here. Neoliberalism Triumphant: 1) continued expansion of neoliberalism; 2) commodification of the biophysical world combining preservation and exploitation; 3) depoliticisation of issues being mediated by markets; 4) flanking mechanisms from civil society successfully mitigate negative social and environmental effects. The second scenario: 1) geographical contraction of neoliberalism; 2) increased environmental problems from exploitation whereby markets are not able to internalise externalities; 3) politicisation of socio-ecological issues which 'the market' causes and is unable to resolve; 4) flanking mechanisms are not perceived as being able to "manage the negative side of neoliberalism," leading to calls for more state intervention.

Four broad and interrelated categories presented in the introduction of this thesis serve to disentangle these socio-natural assemblages: 1) the International Development Complex and how it links to 2) the Lebanese water administration and the political economic processes in which it is embedded; 3) the water resource management process as product of the interaction of the IDC and the Lebanese water sector administration; 4) the biophysical processes that are the material aspects of the hydrosocial cycle and how these are affected and shape the process. Very broadly this categorisation also reflects how I structured this thesis. The water resource management process and the interaction between the two sets of actors was followed throughout the thesis with a specific emphasis on the water sector reform process in Chapter 4.

I situated the emergence of the IDC in the specifically Lebanese neoliberalisation process. The latter was presented as a hybrid of largely sectarian client-patron networks enshrined in the constitution and a market friendly neoliberal economic infrastructure that protected highly concentrated markets and sustained a wealth transfer mechanism from state coffers to the elites. The resulting public debt led to an increasing inability to invest in social services infrastructure and lack of funds in the service ministries: the Ministry of Energy and Water and the Ministry of Agriculture are examples central to the management of water resources. Rooted in its ability to substitute for the state's fiscal constraints the IDC took on a dual role. On the one hand it resembles what Castree terms a flanking mechanism to replace "state-support in the social and environmental domains" (Castree, 2010a, p.1728) usually associated to civil society. On the other hand its funding support increased its ability to act as an agent of the deepening neoliberalisation and push forward the commercialisation of the water sector with a view to institute full cost recovery and increase private sector participation.

However, this process is riddled with contradictions. One contradiction emerges from the analysis of the sector produced by Lebanese and IDC water sector expertise (see Section 2.2.1). In it the water sector and its administration are disembedded from their sociopolitical context. In this depoliticised representation of the sector the analysis deprives itself of the possibility to understand the more fundamental power relations that shape the water resource management process. This is inherent to the ideology; if the problems were posed in political terms and represented as issues of power the market could not be the solution. Thus the problem is posed in terms of good governance. Economic/productive efficiency or the lack thereof, fragmentation of responsibilities, corruption, as well as the general funding problems of the state are not understood as being the result of the mechanics of power division among the elites, but as technical and managerial problems that can be solved with the application of generic neoliberal templates.

The de- and re-regulation of the sector and the marketisation of water services (or rather the attempt) puts the neoliberalisation of the sector in direct competition with the sectarian patron-client networks that form one important pillar of the power of the Lebanese elites. It in fact represents nothing other than an attempted fundamental restructuring of an important subset of Lebanese social relations. The substitution of patron-client relations with consumer relations, the substitution of patron-protected employment with market-driven labour relations, and the loss of other ways to generate rents through the water administration works against the interests of the elites and the specific patrons. The neoliberalisation of the water sector poses the real danger of destabilising the power base of the elites. This is not a uniform process as different patrons have varying levels of influence in the sector and the administration. Thus deepening neoliberalisation emerges as a threat to the social order. From this emerges a second contradiction. The patron-client dominated political process emerges as both a barrier to gradual neoliberalisation in some fields,

as well as the mechanism of power distribution that has allowed the survival of “actually existing neoliberalism” in Lebanon. Resistance in this case does not originate from social movements as in the case of Castree’s (2010a) scenarios but from elites concerned with the perpetuation of the existing accumulation regime and their positions as patrons of the system and their ability to dispense favours.

I have further shown that as a result the reform was first opposed and later the draft law was altered to exclude or water down elements that had the potential to cause conflict over the distribution of influence, specifically the proposal to create an oversight body and make the regional water authorities largely independent was undercut. Sectarian political dynamics were also a central aspect in the rescaling of the water sector administration and water governance. The need to divide administrative units according to sectarian quotas undermined geographical subdivisions more favourable to the privatisation of the sector whereby the final form of the subdivision is a result of the interplay of historical administrative boundaries, topographical properties and sectarian politics (see Section 4.4). Moreover, aspects of the commercialisation of the sector were (and still are) undermined when they threatened local patronage networks. One of the reasons why Ondeo did not renew its contract was its inability to operate according to commercial principles and was repeatedly faced with political opposition (see Section 4.2.6).

This leads me to the third contradiction which is related to the environmental degradation associated with the almost absent management of waste water as well as the quality and quantity of water supply. In its current form, incompletely deregularised and only partially commercialised, the water administration does not have the financial nor the technical capacities to operate and maintain the infrastructure as needed, even less are they in a position to develop it. As I have illustrated, this is not the result of the neoliberalisation process but rather of its hybridised adaptation, whereby the patron-client dynamics are predominantly responsible for the extremely low management capacity. The view prevails among IDC and Lebanese experts that the continued commercialisation of the regional water establishments will improve water services. The argument is not without merit with a view of the improvement that technical assistance projects by the IDC have been able to produce. The water establishments have for example updated and digitalised their infrastructure inventories, introduced management accounting systems and software, updated subscription data bases and improved their management capabilities in general. Furthermore, the dire fiscal situation of the state, which in turn is also a result of prior rounds of neoliberalisation in Lebanon, and the related dearth of funds from which the regional water establishment suffer, are the most important reasons for the hopes placed in the further commercialisation and the implementation of full-cost recovery via user fees. But this would also require parliamentary action to pass the required law, however, as the World Bank-funded Baalbeck Water Supply and Waste Water Project already experienced (see Section 4.2.6), this is not very high on the agenda and not a law that politicians are enthusiastic about. If such a law passes and if the commercialisation and introduction of full-cost recovery principles were to be successful (or more so), the likelihood for an improvement of water services is high. It could not, or is highly unlikely to produce socially just outcomes, because the cost increases would become a considerable burden on the poorest 20 percent of citizens (see Section 5.3.2).

This speculation aside, in the current situation IDC funding and involvement in infrastructure production shores up the water sector, and in this sense it acts as a flanking mechanism to the state. Increasingly the IDC gets involved at all levels of the water resource management process, including the planning, design, and implementation stages of infrastructure it finances (see Section 3.3). As

such it dampens the effects of the on-going ecological crisis. A crisis that is on the one hand human made, the mismanagement of the sector partially rooted in the spiralling public debt, but also a function of the hydrogeological characteristics of the terrain accentuated by the climate and the long rainless summer period. The karstic geological features that cover large areas of the country create particular vulnerabilities to pollution, while the long dry period makes larger scale water storage of some form a necessity (see Sections 5.2 and 5.3.1). The IDC at the same time attempts to mitigate this socio-natural crisis that is also an effect of actually existing neoliberalism while simultaneously contributing to its prolonged survival. This dynamic forms the third contradiction.

I have shown that the mitigation of the environmental (and associated social crisis in terms of water availability and quality) is not very, or simply not, successful. Water quality has not improved (or not much where it has), worsened in places (such as Lake Qaraoun and the Litani), and remains a health hazard. Unaccounted-for-water remains at the same levels as right after the war, water supply has improved in some areas (notably Saida and Tripoli) but remains sporadic in many places, while only a few areas benefit from clean and sufficient water, mostly in the higher mountain areas where springs are not yet polluted. One important aspect of this is the focus of funds on coastal waste water treatment rather than the more important treatment of waste water originating from mountainous areas and inland sources of pollution. The IDC for a long time did not, or not sufficiently, address issues more central to improved water quality and supply. This dynamic is not directly a product of the neoliberalisation process but of the varying interests of the members of the IDC. The bias towards Mediterranean de-pollution stems from EU Mediterranean policy, the Lebanese accession to the Euro-Mediterranean process and the related EU-Lebanon Association Agreement (see Section 3.3.1.1). EU donor priorities for an implementation of coastal projects is probably better read as a weak form of neo-colonialism rather than conflated with neoliberalisation dynamics. There also has not been any interest in the support of the dam building strategy of the government, while the strategy as expressed in the NWSS, a stark expression of the Lebanese hydraulic mission, is questionable, the long dry period provides arguments for investments into storage capacity. Finally, with the exception of an early World Bank project, very little has been done in the irrigation sector. This is reflective of the government policy of neglect of the agricultural sector as a whole since the end of the war. As a result of the combination of the absence of a coherent agricultural and irrigation strategy (that takes into account the needs of the poorest farmers) and the radical laissez-faire attitude, enables the continued mining of groundwater and the associated degradation of the resource. The IDC thus only partially mitigates the degradation of water resources and their uneven distribution favouring the land owning class (see Section 5.4).

The outcome of the water resource management process of the post-civil war decades has produced and reproduced a situation that is not ecologically sustainable and in which the distribution and use of water resources is highly unjust, which in turn has reinforced the dependency of the weakest parts of society on their political patrons. In this process the IDC has emerged as an important proponent and agent of a highly contradictory neoliberalisation process that has been used by elites to reproduce their social, political, and economic power. The involvement of the IDC in the sector cannot bring about a more ecologically sustainable and simultaneously socially just water resource management process (assuming that the “Neoliberalism Triumphant” scenario is a real possibility) because resistance to the deepening of ongoing neoliberalisation has originated in large parts from the elites, who in turn control the state apparatus and are thus able to subvert de- and re-regulatory processes to reproduce the power relationships on which they depend.

Finally, the obvious failure of the water sector reform and the drastic degradation of the resource has generated a reaction by sections of the elite (the commercial and financial bourgeoisie) represented by the Civil Influence Hub (CIH). The CIH, in a context where the market environmentalist discourse has been heavily promoted by the IDC as a solution to all water problems, has proposed the Blue Gold Project. It is the latest and probably most radical attempt to fully neoliberalise the sector (see Section 3.3). But to finish on a more positive note, the propaganda campaign that has been launched to promote the project has re-politicised the issue of water and is generating increasingly coordinated resistance by environmental activist groups and NGOs and also pro-labour movement groups that have become more vocal and grown stronger since the start of the Arab revolutionary processes in 2011. Opposition to the project, at least by some of these groups, is framed in terms of its relationship to the larger political economic system. The neoliberalisation process thus remains contested, not only by the elite, but also by grassroots movements and NGOs concerned with social and environmental justice.

With this critique of IDC intervention in the political economy of water in Lebanon this thesis addressed a topic that has not been treated in this form before. Specifically, an in-depth understanding of the interaction of the IDC with its Lebanese counterpart, the water sector administration and the wider water resource management structure, is new for the case of Lebanon. This reading of IDC intervention allowed an analysis of the cumulative effects of development projects at the national scale. In so doing I identified the IDC as having a structuring role in the articulation of the “relationships between governance, water, and social networks” (Norman et al., 2012, p. 53) and by extension power. Given the large number of organisations active in a country as small as Lebanon and their tight interlinkages (as shown in Chapter 3) the research suggests that this could be the case for a large number of third world countries and that the IDC needs to be considered an important actor in hydro-political analyses. This is a different notion from analysing the dynamics of individual development projects but emphasises effects at a larger scale that are not necessarily apparent when analysing local dynamics and projects.

I further showed that IDC intervention should not be read as a unilateral imposition of a market environmental logic of water resource management but rather that the water resource management and the hybridised neoliberalisation of the sector is the result of the interaction of the IDC and the Lebanese administration. The Lebanese elites through their use and manipulation of the administrative architecture have an equally important role.

This is also where the analysis of the process in terms of the International Development Complex offers insights that differ from approaches that are framed in Foucauldian terms of the development “apparatus” such as in Ferguson’s work (1994), or the “dispositif” based on Escobar (1995). By not treating power as a disembodied notion expressed in a dominant discourse including the practices of all actors involved, but by analysing the actors and their actions in a specific context, was it possible to differentiate their roles and the effects of their interventions and so identify the inherent contradictions, rather than treat the reproduction of power geometries only as undesired effects that only happen to “end up coming together into powerful constellations of control that were never intended” (Ferguson, 1994, 18-19).

I demonstrated that the resulting development and management dynamics in the water sector in Lebanon do not and cannot overcome the existing hydrosocial injustice nor can they mitigate the associated ecological deterioration. The contradictions inherent to IDC involvement in the sector make this impossible. The most important result of IDC intervention is thus its contribution to the

reproduction of local power structures which are at the root of this unjust hydrosocial constellation in the first place.

Whether or not these results can be generalised would require further study. Comparative work on the countries of the region and beyond would allow to test in how far these dynamics and contradictions are reproduced in other locations. The results from this study are more likely to be reproduced in political economic contexts that show characteristics similar or comparable to Lebanon. These are 1) deep political divisions based on sect, ethnicity, clan or other social identities (what the World Bank calls social polarisation) and related fragile balance of power, and 2) high state debt and dependence on foreign funds, i.e. a precarious fiscal and economic situation. Iraq, notwithstanding its oil richness, seems to be a case in point, but numerous other third world countries (for example in Africa or Asia) come to mind.

Further, and in a more narrow sense focusing on Lebanon, the example of the political economy of water could be usefully transferred to studies of other infrastructure sectors such as transportation, as well as power supply and generation, or even telecommunications.

This study into the ways in which the IDC intervenes in and interacts with the Lebanese water sector also opens other interesting avenues for research. Here two such avenues deserve to be mentioned specifically. The first relates to expert interaction and the propagation and creation of water resource management knowledge and ideology. In Chapter 3 I sketched a transnational policy network that is active throughout the Mediterranean. Detailing these types of networks, their genesis and how they contribute to the construction of expert knowledge and its reproduction could provide interesting insights into the transformation of expertise in third world countries. Related, microsociological and anthropological work on the interaction between international development experts and local administrators and managers (and the overlap in these categories) promises further insights into the power dynamics at the level of the individuals involved. This could show how and under what conditions mainstream development knowledge and ideology are propagated, resisted and hybridised. Throughout my interviews with Lebanese experts a generational shift in knowledge, expertise and ideology could be observed, while probably unsurprising and not clear-cut this does open questions about local training and university education, as well as the intersection of the latter with above mentioned transnational policy networks.

The second avenue for further research relates to the politics of technologies designed to manage, distribute, store and treat water and waste water. The emphasis in this work (also because of space restrictions) was on the distributional properties of infrastructure i.e. the decision and planning processes that locate water infrastructure in one place and not another and accordingly how this affects the flows of water and waste water. But research into the types of technologies in use, their appropriateness (in terms of construction and maintenance cost and expertise), as well as their technical design is necessary to understand the political consequences these choices and designs might entail. Research in this direction might also start to grapple with the dialectical interplay of sociospatial environments or constructed nature and the technological properties of the networks that sustain the flows of water through them. How do sociospatial arrangements limit technological choices? How do available technologies affect sociospatial development, and what are the implications for a socially and ecologically just politics?

# ANNEX 1

## The Principal Characteristics of Neoliberalism (Castree, 2010a)

- *Privatisation* (i.e. assigning clear, legally enforceable, private property rights to hitherto unowned, government owned or communally owned aspects of the social and natural worlds).
- *Marketisation* (i.e. rendering alienable and exchangeable things that might not previously have been subject to a market calculus lubricated by monetary transactions within and between nation states).
- *State roll back or deregulation* (i.e. the withdrawal or diminution of government intervention in certain areas of social and environmental life in order to enable firms and consumers to exercise ‘freedom of choice’; and the creation of new quasi-state or state-sanctioned actors to take on functions that states themselves could otherwise perform in theory or practice).
- *Market-friendly reregulation* (i.e. a reconfiguration of state / governmental policies so as to extend the frontiers of privatisation and marketisation. Here, then, the state in its various forms becomes ‘market manager’ or ‘night watchman’, and less of a ‘provider’ to the citizenry or special interests therein: it intervenes for the economy not, as it were, in it. This entails fiscal discipline, a focus on supply side investments, entrepreneur- and consumer-friendly tax policies, firm-friendly labour market policies, and measures to enable ‘free’ movements of money capital and also other less ‘fluid’ commodities).
- *Use of market proxies in the residual governmental sector* (i.e. making remaining state services more market-like in their operation through the use of measures like internal markets, cost-recovery and budget-capping).
- *The strong encouragement of ‘flanking mechanisms’ in civil society* (i.e. state-led measures to promote the growth of voluntary, charitable, ‘third sector’ and community groups who are seen as being able to fill the vacuum created by the absence / diminution of direct state-support in the social and environmental domains. This is linked to formal state encouragement, where appropriate, of the so-called ‘informal’ and ‘social’ economies whose functioning relies only partly, or not at all, on monetary transactions).
- *The creation of ‘self-sufficient’ individuals and communities* (i.e. the cultivation of an ethic among persons and communities that emphasises less, and ultimately limited, reliance on state-provided services for life’s necessities. For neoliberals this ethic is almost a ‘natural’ good. It encapsulates the individual’s right to maximum freedom and their responsibility for their own affairs).

Source: reproduced from “Neoliberalism and the biophysical environment 1: What ‘neoliberalism’ is, and what difference nature makes to it” (Castree, 2010a, p. 1728).

## ANNEX 2

### Law N° 221 Organisation of the Water Sector

The parliament approved And the President of the Republic promulgates the following law :

Article 1:

Are considered in the core of public interest, the hydraulic natural resources' protection and development within the environment and ecosystems protection

Article 2: Ministry of Hydraulic and Electric Resources (MHER)

In the Water Sector, the MHER assumes the following competencies and missions:

1. To collect, control, meter, establish statistics and study water resources, to evaluate water needs and fields of its usage all over the Lebanese territory.
2. To control the surface and underground water quality and identify standards to be applied.
3. To establish the General Planning project for hydraulic resources allocation, repartition among the drinking and irrigation water usage on the national level, as well as to prepare the National General Water Master-Plan and update it continuously.
4. To design, study and implement the large water installations and works such as dams, artificial lakes, tunnels, water courses rectification, water networks etc. . . , and to operate them.
5. To implement, when needed, artificial recharge of underground water reservoirs and to control underground water extraction.
6. 6- To protect water resources from losses and pollution by elaborating legal texts and taking necessary measures and dispositions to avoid water pollution as well as to bring these water resources back to their former natural quality.
7. To give licenses and permits for water prospection, public water usage and temporary occupation of public properties and to finalise all the necessary formalities according to the laws and by-laws in force.

8. To implement studies, and hydraulic, geological and hydrological researches, to collect technical data relative to hydraulic matters, to establish technical maps concerning these studies, researches and data and to update them regularly
9. To carry out control and tutelage over Public Establishments and other bodies operating in the water field, according to the present law dispositions, texts and stipulations relative to each of the about mentioned establishments and institutions.
10. To ameliorate performances of the Water Exploitation Public Establishments (WEPEs) and to evaluate their performances on the basis of indicators mentioned in the action plans, which has been approved according to the legal procedures.
11. To establish standards to be adopted in the studies conducted by WEPEs as well as in their works implementation. To establish conditions and regulations for surface and underground water extraction and use and their quality standards and control
12. To prepare and carry out expropriation formalities relative to the MHER and WEPEs submitted to its tutelage according to the laws and regulations in force.
13. To express a technical opinion on quarries and mines licenses and permits concerning their impacts on water resources
14. To provide public relations with the population and to inform the people of all necessary information concerning the water matters and to provide adequate orientation toward a rational usage.

#### Article 3: Water Exploitation public Establishments (WEPEs)

WEPEs will be created and their names and main offices will be as following:

Beirut-Mount Lebanon water establishment - main office: Beirut.

North-Lebanon water establishment - main office: Tripoli

South – Bekaa water establishment - main office: Zahleh

North-Bekaa water establishment - main office: Baalbeck

South -Lebanon water establishment – main office: Saida

The about mentioned Establishments have the status of moral person and will operate within an administrative and financial autonomy. Their operating perimeter is fixed in the map attached to the present law.

#### Article 4:

1- Duties and competences of Each Water Establishment within its exploitation perimeter are:

- a) To carry out studies, implementation operation, maintenance and renewing of projects for drinking and irrigation water distribution within the frame of General Water master-plan or according to a Ministry's preallable permit to use public water resource.
- b) to propose tariffs for drinking and irrigation water services taking into consideration general socio-economic conditions of the Country .

- c) to control the quality of the drinking and irrigation distributed water

2- Water Establishments will operate under their own regulations.

The above mentioned Establishments will hire the services of an audit company which mission consist in the preparation of a report on the financial status and closing accounts as well as on the internal regulatory system applied in the said Establishment.

Article 5:

Establishment's management will be undertaken by a Board of Directors constituted by a President and six Members. Members nomination and indemnities will be fixed by a decree taken in the Council of Ministers on the proposal of Minister of Hydraulic and Electric resource. They should be university graduates with diplomas recognised in Lebanon, in the following specialities: law- water and environment- medicine – engineering – economy and accounting.

The Board of Directors' mandate time will be fixed in their nomination Decree and their services could be ended at any time following the same procedure.

The President of the Board will assume the General executive manager's mission. He will be assisted by an executive staff constituted by employees submitted to his own authority

The Establishment's Board of Directors will prepare all the regulations needed to run the said Establishment . These regulations should be approved by decrees taken in the Council of Ministers on the proposition of both the Minister of Finances and the Minister of Hydraulic and Electric Resources.

Article 6:

WEPEs will be submitted to the "a posteriori" control of the Account Court according to regulations to be discussed and agreed with the said Court; they are also submitted to the Central inspection control but not to the Public Recruitment Council authority.

Within the MHER, will be created a "Performances Evaluation Committee" (PEC). It will be nominated by decree taken in the Council of Minister upon the proposition of the two Ministers of Finances and of Hydraulic and Electric Resources; this PEC will be constituted of:

The Minister of Hydraulic and Electric Resources as the President and as members:

The General Director of the Ministry of Finances

The General Director of Exploitation (operations) in MHER

The General Director of Hydraulic and Electric equipment in the MHER

A Hydraulic Engineer with 6 years experience

An Economy Graduate with 6 years experience

A law graduate with 6 years experience

A second category functionary (civil servant) from the General Directorate of Exploitation, as rapporteur

The mission of the said Committee and its working procedures will be defined by a common decision taken by the two Ministers: of Finances and of Hydraulic and Electric Resources. It has the possibility of requiring any expert assistance when needed.

Article 7:

The "Office National du Litani" (ONL), created by the Law dated on August 16th, 1954, will not follow the terms and clauses of the present law; it will continue, as before, to manage and operate irrigation water in its perimeter (South Bekaa and South Lebanon), however ONL will be submitted to Article 4 - paragraph 2 and to article 6 of the present law.

Article 8:

Actual Water Autonomous Authorities and Committees will continue to manage drinking and irrigation water, to accomplish their functioning works until their merging according to the article 3 of the present law in a gradual way. This merging should be completed within a period of two years beginning from this law enactment date.

Article 9:

Application details of this law will be fixed by decrees taken in the Council of Ministers upon the Minister of Hydraulic and Electric Resources proposal.

Article 10:

All legislative texts and by-laws in contradiction with this law's Clauses and stipulations are considered as null and void.

Article 11:

Enactment of the present law will become effective immediately after its publishing in the Official Gazette

The President of Council of Ministers Baabda May 29th ,2000

Signed : Selim El Hoss Signed: Emile Lahoud

Promulgated by the President of the Republic The President of Council of Ministers

Signed: Selim El Hoss.

Law N° 241 Material Error correction in the Article 3 of the law 221 dated on May 29th, 2000

(Organisation of the Water Sector)

The Parliament approved and the President of the Republic promulgates the following law.

Unique Article:

Article 3 of the law N° 221, dated on May 29th, 2000 (Organisation of the Water Sector) is corrected and its text will be read as following :

Article 3: Water Exploitation Public Establishments (WEPEs)

WEPEs will be created and their names and main offices will be as following:

Beirut - Mount Lebanon Water Establishment – main office: Beirut

North – Lebanon Water Establishment – main office: Tripoli

Bekaa Water Establishment – main office: Zahleh

South- Lebanon Water Establishment – main office: Saida

These mentioned Establishments will have the status of moral person and operate in an administrative and financial autonomy; their operating perimeter is fixed in the map attached to the present Law.

Enactment of the present Law will become effective, immediately after its publishing in the Official Gazette.

The President of Council of Ministers Baabda August 7th , 2000

Signed: Selim El Hoss Signed: Emile Lahoud

Promulgated by the President of the Republic The President of Council of Ministers

Signed: Selim El Hoss.

## ANNEX 3

Draft Law Water Sector Reorganisation (November 1998)

### Section 1: General Principles

Article 1:

Water constitutes an important common resource of the Lebanese society. Thus the protection and the development of this natural resource is at the heart of the protection of the environment and ecosystems that benefit general interest

Article 2:

The purpose of this law is to set up water resources management by providing an adequate supervision on the basis of the following principles by:

1. Managing water resources in a rational and scientific manner;
2. Stressing the concept of economic return relative to the protection, development, allocation and distribution of water resources in accordance to the needs of society and to the economic activity;
3. Ensuring prompt, speedy and quality service to water beneficiaries;
4. Strengthening and encouraging private sector participation in the provision of services;
5. Protecting the ecological balance throughout the Lebanese territory and reclaiming this balance in regions that suffered degradation;
6. Protecting aquifers and rain water form pollution, and taking appropriate steps to prevent pollution and to treat polluted waters;
7. Establishing an appropriate institutional framework to implement a national water policy

Article 3

Subject to the responsibilities assigned to the MWRE (in the electricity area) as defined in article 1 of the 20/66 law and article 4 relative to the water sector mentioned there-under:

Development enterprises for drinking, irrigation, and waste water will be established and will be entrusted with organising, managing and supervising water investment provided that the national Authority of the Litani river will be entrusted with the management of the irrigation investment area (North and South Bekaa)

## Section 2: MWRE Responsibilities

### Article 4: MWRE duties and responsibilities

MWRE duties and responsibilities will be entrusted, but not restricted to undertake the following:

1. Assessing aquifers and running water;
2. Assessing residential, drinking, industrial, agricultural, and general water needs;
3. Allocating and distributing water resources in a rational and practical way;
4. Setting up and modernising a national direction plan on a periodic basis;
5. Spelling out conditions for private sector participation in the water area;
6. Supervising aquifers and running water quality;
7. Improving water river, sources, wells and aquifers quality on a continuous basis;
8. Monitoring and determining minimum relative acceptable water distributed both in terms of quality and quantity, as well as the maximum waste water level;
9. participating in the setting up of water control systems to ensure water quality;
10. Charging polluters, as well as the beneficiaries of a cleaner environment, a fee;
11. Preparing and issuing property ownership regulations;
12. Paying attention to water rights, conciliation, and participation in water disputes resolution in general;
13. Putting up strategies, objectives, and texts to ensure cost recovery and drinking, waste water, irrigation, and industrial water tariffs;
14. Evaluating and approving work programs put out by independent water investment enterprises;
15. Evaluating the performance of independent investment water enterprises and making proposals while taking appropriate steps;
16. Enacting a water code and updating it on a periodic basis;
17. Providing adequate protection from floods whether this affects people or property while respecting the laws in force;
18. Providing appropriate bodies to monitor floods and give proper warnings;

19. Delivering water investment permits and licenses subject to existing laws;
20. Delivering mines and investment permits and presenting Opinions on stone quarries if there is an impact on water resources subject to existing laws;
21. Spelling out protection and investment conditions and rules for aquifer and running water;
22. Designing, studying, implementing, and incorporating in investment larger water enterprises having a common interest such as dams;
23. Supervising existing electricity concessions subject to existing provisions;
24. providing necessary information and public relations efforts to enable the citizens o support water investment enterprises and management activities;
25. Collecting and publishing all hydrometric and hydrogeological data;
26. Informing people of water resources projects as well as legal organisational texts, among other things.

### Section 3:Drinking, irrigation, and waste water investment enterprises

#### Article 5

Drinking, irrigation and waste water public enterprises established by virtue of decrees no. 9626, 9627, 9628, 9629, 9630 enacted on 12/13/1996 will become investment enterprise. These are:

- Northern Lebanon drinking, irrigation and waste water investment enterprise
- Southern Lebanon drinking, irrigation and waste water investment enterprise
- Beirut Mount Lebanon drinking, irrigation and waste water investment enterprise
- Northern Bekaa drinking, irrigation and waste water investment enterprise
- Southern Bekaa drinking, irrigation and waste water investment enterprise

These enterprises will be governed by commercial law and the provision contained in this law.

Upon publication of this law, these Authorities will merge and their committees will be absorbed by the investment enterprises. The transitory process should no exceed three years. Above mentioned Investment water committees will endeavour to seek private sector participation in their activities. In any case, these committees will select and accounting firm which will undertake its activities in accordance with international recognised accounting principles.

#### Article 6

Northern Lebanon drinking, irrigation and waste water investment enterprise will, each within its area of competence be responsible for providing equipment, distribution and treatment of drinking water, collecting and treating waste water, and managing irrigation water. In the course of its work, investment enterprises can have recourse to the various forms of internationally acceptable management practices. For example, it will, among other things, participate, direct management, or any combination of the above.

#### Article 7 : Investment enterprise duties

Northern Lebanon drinking, irrigation and waste water investment enterprises duties include but are limited to the following:

1. Designing, studying, and implementing local and municipal (plans) in accordance with MWRE general national water master plan;
2. Establishing, operating, and ensuring the maintenance of all drinking, irrigation and waste water infrastructure;
3. Managing user services falling under its authority;
4. Deciding a tariff policy based upon the work program and proceeds;
5. Developing human resources and managing user network
6. Resorting to the private sector in some area activities such as management, operations, and maintenance of equipment and investment to name a few;
7. Monitoring drinking, irrigation water quality and drainage;
8. Preparing and keeping updated annual reports and submitting them to MWRE for consideration and approval;
9. Requesting MWRE approval relative to water exploitation (publicly owned), or drainage;
10. Implementing necessary means pertaining to water distribution meters;
11. Designing major irrigation projects in accordance with MWRE national master plan;
12. Studying primary and secondary water implementation networks and major enterprises for water retention and pumping;
13. Operating and maintaining primary and secondary water irrigation networks;
14. Selling irrigation water among farmers' unions and devising a tariff policy based upon a work programme and proceeds;
15. Leaving tertiary building and maintenance networks (as a part of water exploitation) to farmers' unions and investors who would define water tariffs upon farms and landowners;

#### Article 8: Tariffs

The board will determine a drinking, irrigation, and waste water tariff policy based upon the cost. An additional acceptable profit margin will be allowed so as to give incentives to the private sector participation in the activities of investment enterprises taking into consideration inhabitants social conditions;

The implementation of these tariffs will be subject to prior approval of the MWRE financial structure committee.

#### Article 9: Boards of directors

The board will be composed seven (7) members to be appointed by the Council of Ministers upon recommendation of MWRE. The board will include representatives of the state, consumers, municipalities, and the private sector to be defined in a decree enacted by the Council of Ministers upon MWRE recommendation, This decree will determine competence and qualification of the board members.

The board will function in accordance with the provisions of commercial law. If private sector participation is included, a decree issues by the Council of Ministers upon recommendation MWRE will define private sector participation modalities the enterprise, and the regulations of joint enterprise.

The mandate of the board is three years that are renewable.

#### Article 10: Boards Duties

Water Investment enterprises boards duties are those recognised duties undertaken by any board operating under commercial law. This includes bu is not limited to the following:

1. Proposing and approving regulations
2. Proposing and approving work mechanisms that enable investment enterprise to reach its objectives;
3. Issuing users' regulations and defining appointment principles, vacation, and salaries;
4. Making an inventory of assets and appraisal them,. along with property evaluation;
5. Borrowing to further the financing of necessary appropriations of activities regarding investment enterprises

#### Article 11: Management organisation

The board upon MRWE recommendation puts into place the internal administrative organisation of the investment enterprise. Should the private sector participation in capital or in the management of enterprise, the Council of Ministers sets out the bylaws and approves them. The council can delegate power to the board for enacting and amending administrative structure.

### Section 4: Tariffs committee

#### Article 12

A tariffs committee will be established within MWRE. The function of the committee is to study and agree to drinking, irrigation, and waste water investment enterprises proposed tariff to determine the financial impact.

The tariffs committee will be composed of three members: A representative of MWRE, the ministry

of finance, and a financial analyst from the private sector with a high level of expertise. The committee will propose and justify the tariffs to MWRE.

### Section 5: Transitory measures

#### Article 13

All laws will be abrogated whenever they contradict the present law upon entering in force except for provision pertaining to the area of electricity.

#### Article 14

The decrees of implementation relative to this law and the details therewith will be enacted as an appropriate time in the Council of Ministers upon MWRE recommendation.

#### Article 15

This law will enter into force upon ratification and publication in the national gazette.

## ANNEX 4

Regulations encouraging intensified land-use (Krijnen, 2010).

Type of Incentive	Regulation	Date issued	Content
Increasing building allowances	Decree 2791	October 15, 1992	Amendment to implementation decree of the building law, easing the construction of high-rises.
	Law 646 & implementation decree 15874	December 11, 2004 & 2005	<p>New building law, most important changes:</p> <ul style="list-style-type: none"> <li>-Increase in total exploitation area by allowing for more areas to be deducted: such as staircases, elevators, technical floors, double walls, maid's room and parking grounds. -25% of apartment size in balconies, increased from 20%, can be added.</li> <li>-Increase of the factor used to calculate the building envelope (gabarit) from (2*road width + setback) to (2.5* road width + setback)</li> <li>-Increase of same factor for the back of the building from (4*road width + setback) to 5*road width + setback)</li> <li>-Increase the 'retour de gabarit'<sup>41</sup> from 24 to 30m.</li> <li>-Increase of maximum height for technical floors from 1.8 to 1.9m, while not counting them towards exploitation.</li> <li>-Buildings up to 50m can obtain their permit directly from the Municipality, from 40m previously. -An excavation permit can be issued for projects waiting for a building permit.</li> </ul>

<sup>41</sup>The retour de gabarit works as follows: when a building is on a corner and thus on two streets, the height allowed before a developer needs to recede is smaller on the narrower of the streets. The retour de gabarit allows a developer to go 30 meters in depth from the wider street and apply to those 30 meters, which are on the narrower road, the factor used to calculate the building envelope as 5\*road width + setback, instead of 2.5.

Type of Incentive	Regulation	Date issued	Content
	Law 402 <sup>42</sup>	January 12, 1995	Hotels are allowed to double their Total Area Exploitation (built-up area). Given by decree
	Law 339	August 6, 2001	A five-year extension of law 402 mentioned above
Facilitating foreign Investments	Law 296 Amending decree 11614 of 1969	Law 296 Amending decree 11614 of 1969	<p>Foreigners can acquire up to 3000m<sup>2</sup> of property without seeking permission from the Council of Ministers. A total of 3% of each caza and 10% of Beirut can be owned by foreigners.</p> <p>-Exemptions can be requested from the Council of Ministers.<sup>43</sup></p> <p>-Areas can be acquired in regions previously off-limits (such as the Syrian- Lebanese border region).</p> <p>-Real estate registration fees are lowered to 5% for both Lebanese and foreigners.</p>
	Law 771 Amending Law 144 of 1959	2006	Exempts joint-stock companies that have a contract with the Investment Development Authority Lebanon from the requirement of having a majority of Lebanese on their boards.
	Law 772 Amending Decree Law 45, 1983	November, 2006	Exempts holdings from the requirement of having at least two Lebanese nationals on their boards.
			Holdings can have their capital in foreign currency.
			A non-resident foreign chairman of a holding company does not need a working permit.
			If a holding has more than 20% of the capital in a company, it cannot provide loans, unless it is a foreign investment.
		September 5, 2008	If a holding has more than 20% of the capital in a company, it cannot provide loans, unless it is a foreign investment.

<sup>42</sup>According to the Author this information is partly derived from an interview and partly from data researched by a research assistant ( Abir Saksouk).

<sup>43</sup>The Council of Ministers has been more than willing to grant exemptions for foreigners acquiring property in Lebanon. From a report (BI-ME, 2005, citing numbers by Ramco real estate consultants): 'Between January 2001 and May 2003 for example, 80 investors from the Gulf acquired 1.8 million square meters of land, mainly in Mount Lebanon. (...) The top 23 of these investors each bought an average of 64,467 square meters of land (83% of the total), a size clearly indicating the intended use is commercial rather than personal.'

Type of Incentive	Regulation	Date issued	Content
	Law no. 19 Amending Decree Law #46 from 1983	September 5, 2008	Removing the requirements of having two Lebanese nationals on the board of an off-shore company -A non-resident chairman of an off-shore company does not need a working permit. <sup>44</sup>
	IMF-plan	2006	The government signed a plan with the IMF to facilitate registration procedures for companies.
Providing tax breaks	Decree Law #45	June 24, 1983	Holding companies are exempt from paying income taxes and their capital is regressively taxed: 6% for capital up to 50 million Lebanese lira (LL), 4% for capital between LL50 and 80 million and 2% if their assets are over LL80 million, with a maximum of LL5 million
	New customs law <sup>54</sup>	April 23, 2001	Hotel equipment is exempt from custom duties.
	New customs law	April 23, 2001	Tourist transportation busses are exempt from taxes.
			50% discount on income tax for joint-stock and limited liability companies on profits made from residential real estate development. <sup>45</sup>

<sup>44</sup> Author's source: [www.mattarlaw.com/offshore-companies-lebanon.htm](http://www.mattarlaw.com/offshore-companies-lebanon.htm). A full-text version of the law is available at [doumanico.com/file/Law%20No\\_19%20amendment%20offshore%20regulation.pdf](http://doumanico.com/file/Law%20No_19%20amendment%20offshore%20regulation.pdf). Accessed February 15, 2010.

<sup>45</sup> Author's source: From [www.idal.com.lb/WhyLebanon.aspx?ID=66](http://www.idal.com.lb/WhyLebanon.aspx?ID=66), accessed 4 November 2009 and [www.professionalsaa.com/tax/Additional%20Tax%20information%20in%20Lebanon.htm](http://www.professionalsaa.com/tax/Additional%20Tax%20information%20in%20Lebanon.htm)

# List of Interviews

Interview with	Date	Relevant information
Abdallah, Chadi	06.03.2011	National Center for Scientific Research, Hydrogeologist
Abd el Al, Imane	12.03.2013	Executive officer, Association of the Friends of Ibrahim Abd el Al
Abd el Al, Imane	12.10.2010	Executive officer, Association of the Friends of Ibrahim Abd el Al
Abdelnour, Gaby	25.06.2012	Engineer & Consultant (private sector), Gicome
Abdelnour, Nasri	08.12.2010	Engineer & Consultant (private sector), Khatib el Alame
Aboud, Ali	18.06.2012	Director of the Litani River Authority
Aboulassali, Naji	04.12.2012	Engineer & Consultant (private sector), Liban Consult
Ayoub, Georges	12.04.2011	American University of Beirut, Water and Waste Water Engineer
Baroud, Mahmoud	04.03.2013	Interim Director of the General Department of Exploitation
Basha, Habib	15.08.2010	American University of Beirut, Hydrologist
Cassat, Denis	16.12.2011	Director of AFD Lebanon
Catafago, Selim	22.12.2010	President of the Board of the LRA
Chalak, Ali	12.10.2011	American University of Beirut, Agronomist
Chalak, Fadl	19.10.2011	Former President of the CDR
Chamas, Amal	09.12.2010	GTZ Programme officer
Charafeddine, Waffa	11.04.2011	Financial Affairs Director, CDR
Chemaly, Nabil	21.12.2010	GTZ Programme officer
Comair, Fadi	06.01.2011	Director of General Department of Hydraulic and Electrical Resources
Chouweiri, Elias	31.10.2011	FAO programme officer
Christiaens, Peter	02.03.2012	Eu delegation officer, responsible of infrastructure projects
Cortas, Adel	18.04.2011	Former Minister of Agriculture
Cochrane, Paul	20.01.2012	Business Journalist
Coxon, Sam	21.01.2013	DAI Head of Mission
Daccache, Danielle	20.10.2012	UNICEF programme officer
Darwish, Ali	06.04.2011	Greenline NGO director
el Khazen, Imad	21.12.2010	GTZ Programme officer
Faour, Ghaleb	06.03.2011	National Center for Scientific Research, GIS specialist
Farajallah, Nadim	15.04.2011	American University of Beirut, Agronomist
Faycal, Samir	04.12.2012	Engineer & Consultant (private sector), Liban Consult

Interview with	Date	Relevant information
Freiha, Rizk	21.06.2012	Former Director of Beirut Water Office, consultant on draft water code
Ghadban Elias	09.11.2011	Agronomist
Ghadban Elias	09.10.2013	Agronomist
Giantirs, Phil	29.02.2013	Valuadd, head of mission
Hawa, Hussam	21.06.2012	Water Resource Management professional, employed by IRG
Jaber Bassam	20.06.2012	Former Director of GDE, Consultant for IRG, MOTGE/Safege
Jaber, Bassam	30.11.2010	Former Director of GDE, Consultant for IRG, MOTGE/Safege
Mr. Jebara	12.12.2011	President of the Municipality of Jdeideh
Kanj, Wissam	23.12.2011	Director of the irrigation department at the MEW
Karam, Youssef	2013	Head of Water and Waste Water Programme CDR
Karam, Youssef	18.12.2011	Head of Water and Waste Water Programme CDR
Khalaf, Fadi	10.12.2011	Director of Bourj Hammoud office of BMTLWE
Khansa, Mohammad	22.12.2011	Adviser to the Minister of Agriculture
Khayyat, Ziad	26.06.2012	UNDP programme officer, LWMPP
Khoury, Raymond	14.12.2011	Green Plan, Head of Hassad programme, agronomist
Klingbeil, Ralf	19.09.2010	ESCWA, water programme officer
Klingbeil, Ralf	15.01.2013	ESCWA, water programme officer
Majdelani, Michel	15.11.2012	Engineer & Consultant, BTD
Majdelani, Zeina	30.11.2010	Office of the Prime Minister, Water programme officer
Makki, Ismail	08.10.2010	CDR, Water and Irrigation programme officer, CDR
Mallat, Hyam	13.06.2012	Lawyer and consultant, Water Reform Law
Mangassarian, Arpine	24.11.2011	Head of the urban planning department Municipality Bourj Hammoud
Margane, Armin	02.10.2010	BGR, Head of Mission, Protection of Jeita Spring
Margane, Armin	19.06.2012	BGR, Head of Mission, Protection of Jeita Spring
Margane, Armin	25.02.2014	BGR, Head of Mission, Protection of Jeita Spring
Maternowski, Eileen	21.10.2010	BGR, ESCWA programme on transboundary waters
Maternowski, Eileen	26.09.2013	Swiss Development Agency, programme officer
Najem, Wajdi	18.03.2011	University Saint Joseph, hydrologist
Nassif, Marie-Helen	26.06.2012	Programme officer with IRG and UNDP
Neuwirth, Daniel	28.10.2010	KFW representative in Lebanon
Nizzam, Ahmad	05.03.2011	Director of the SLWE
Nizzam, Ahmad	17.09.2011	Director of the SLWE
Qabbani, Mohammad	22.06.2012	President of the Parliamentary Committee on Public Works, Water and Energy
Qaraa, Kamal	14.12.2010	Head of irrigation department, LRA (retired)
Qaraa, Kamal	20.10.2010	Head of irrigation department, LRA (retired)
Renck, Andreas	21.10.2010	BGR, ESCWA programme on transboundary waters
Rizk, Georges	02.23.2011	Head of infrastructure department at MEW

Interview with	Date	Relevant information
Rizkallah, Marwan	21.06.2012	UNDP programme officer
Roukos, Salim	09.12.2011	Head of irrigation department, Ministry of Agriculture
Saadeh, Mark	08.06.2012	Engineer & Consultant, ACE, former consultant LRA
Saadeqeh, Mohamad	04.11.2010	Head of Mission, Kuwait Fund for Arab Economic Development
Salame Antoine	04.04.2011	Engineer & Consultant, GICOME, Former Employee of LRA
Salame Antoine	15.06.2012	Engineer & Consultant, GICOME, Former Employee of LRA
Salame Antoine	16.10.10	Engineer & Consultant, GICOME, Former Employee of LRA
Salame Antoine	17.02.2011	Engineer & Consultant, GICOME, Former Employee of LRA
Scheu, Manfred	29.09.2010	Head of Mission GTZ/GIZ, Water Sector Support Programme
Scheu, Manfred	30.01.2013	Head of Mission GTZ/GIZ, Water Sector Support Programme
Tayar, Abdo	27.10.2011	Advisor to the Minister of Energy and Water, National Water Sector Strategy
Tayar, Abdo	05.11.2012	Advisor to the Minister of Energy and Water, National Water Sector Strategy
Thomassini, Barbara	06.12.2011	Head of EUWI-MED programme in Lebanon, GWP-MED
Viala, Eric	09.11.2010	Head of mission, IRG - Litanit River Basin Management Support
Yabroudi, Jean-Pierre	25.11.2010	Head of mission, Ondeo Liban, MOTGE/Safege
Yazbek, Roy	19.10.2011	Programme management unit, Baalbek Waste Water and Water Supply Project CDR/WB
Zakhrou, Ziad	19.11.2012	Advisor to the Minister of Energy and Water, Dams
Zammar, Jimmy	02.20.2013	DAI programme Officer

# List of Conferences

1. 2010, 20-21 September; “Impact of Global Warming on Water Resources in the Middle East and North Africa: The Fifth Environmental Symposium of German Arab Scientific Forum for Environmental Studies”. Organised by German-Arab Scientific Forum for Environmental Studies and Lebanese American University, Byblos, Lebanon.
2. 2010, 22 October; Workshop on “The Improvement of Water Supply and Waste Water in the Municipalities”. Organised by UNICEF, el Abda, Akkar, Lebanon.
3. 2010, 24-27 October; “3rd BEIRUT WATER WEEK”. Organised by the Notre Dame University-Louaize, Ministry of Energy and Water, GWP-Med. Louaize, Lebanon.
4. 2010, 20 December, “Lebanon’s Economic Project: Lessons from the Past and Challenges for the Future” - Presentation by Dr. Mazen Soueid and discussion. Organised by The Lebanese Economic Association – LEA and the Friedrich Naumann Foundation. Beirut Lebanon.
5. 2011, 22 March, “World Water Day 2011”. Organised by ESCWA, BGR, Association of Friends of Ibrahim Abd el Al, Beirut Lebanon.
6. 2011, 14 October, “The Lebanon Water Resources: Challenges and Opportunities”. Organised by American University of Beirut, Lebanon.
7. 2011, 28-20 November, “Pour une Gestion durable de notre Territoire”. Organised by Le Comité National Libanais du Forum Francophone des Affaires (FFA), l’Ecole Supérieure des Affaires, Beirut, Lebanon.
8. 2012, 9 October; “Public Engagement in Water Management Project (PEWM)”. Organised by Association of Friends of Ibrahim Abd el Al, Arab Water Council, World Bank, Beirut, Lebanon.
9. 2012, 7 December, “The Second Conference on Waste Water Treatment Plants in Kesrwan Ftouh “. Organised by Friedrich Ebert Stiftung - Lebanon, Mubadarat- Development Initiatives. Harissa, Lebanon.
10. 2013, 20-22 February; “4th BEIRUT WATER WEEK Technological Tools and Financing Mechanisms for IWRM: Complementing Hydrodiplomacy & Climate Change Adaptation Efforts”. Organised by the Notre Dame University-Louaize, Ministry of Energy and Water, GWP-Med. Louaize, Lebanon.

# References

- Abdulrazzak, M. & Kobeissi, L. (2002). UNDP-ESCWA Initiative on National Framework for Water Resources Management in Lebanon. *Unpublished Report, UN-House, Beirut, Lebanon*. Retrieved 2014-03-30, from <http://reseau.crdi.ca/uploads/user-S/10637285431ESCWATarifPaper.doc>
- Abou-Mosleh, F. (2013, December 18). *Lebanon's Blue Gold Project: Vote to Privatize Your Water - Al Akhbar English*. Retrieved 2014-04-08, from <http://english.al-akhbar.com/content/lebanon%E2%80%99s-blue-gold-project-vote-privatize-your-water>
- Abou-Mosleh, F. (2014, March 22). Blue Gold project: the deceitful plan to commodify water in Lebanon. *Al Akhbar English*. Retrieved 2014-04-17, from <http://english.al-akhbar.com/content/blue-gold-project-deceitful-plan-commodify-water-lebanon>
- Abou Zeid, M. (2005). *Baseline Study for Table Grapes and Potatoes in Lebanon* (Tech. Rep. No. GTFS/REM/070/ITA). Beirut, Lebanon: Ministry of Agriculture.
- Achcar, G. (2013). *The people want: a radical exploration of the Arab uprising*. Berkeley: University of California Press.
- Adwan, C. (2005). *Corruption in reconstruction: the cost of national consensus in post-war lebanon* (Tech. Rep.). Beirut, Lebanon: The Lebanese Transparency Organization.
- AFIAL. (n.d.). *Ibrahim Abd el Al - Oeuvres Complètes*. Beirut, Lebanon: Edition de l'Association des Amis d'Ibrahim Abd el Al.
- Akkaya, S., Junge, N. & Mansour, W. (2009). *Lebanon - Social Impact Analysis for the Electricity and Water Sectors* (Tech. Rep.). Washington, D.C.: World Bank.
- Al-Akhbar. (2012a, February 23). Charbel Nahas: The End of an Experiment? *Al Akhbar English*. Retrieved 2013-04-27, from <http://english.al-akhbar.com/content/charbal-nahas-end-experiment>
- Al-Akhbar. (2012b, February 21). Lebanese labor minister resigns after apparent last minute change of heart. *Al Akhbar English*. Retrieved 2013-04-27, from <http://english.al-akhbar.com/content/lebanese-labor-minister-resigns-after-last-minute-change>
- al Khayat, N. (2008). *Self-help urban services in informal settlements: the case of water and electricity services in Raml Al-'Ali* (Master's Thesis). American University of Beirut, Beirut, Lebanon.
- Allan, J. A. (2001). *The Middle East Water Question: Hydropolitics and the Global Economy*. London: I. B. Tauris.
- Allan, J. A. (2006). IWRM: The New Sanctioned Discourse? In A. Mollinga Peter P. and Dixit & K. Athukorala (Eds.), *Integrated water resources management: global theory, emerging practice, and local needs* (pp. 38–63). India: SAGE Publications Ltd.
- Alles, C. (2007). *La question du retour de l'Etat libanais dans l'ancienne zone occupee par Israel:*

- l'exemple du Bassin versant du Hasbani-Wazzani* (Master's Thesis). Université Lyon II, Lyon.
- Alles, C. (2010, October). La reforme du secteur de l'eau au Liban-Sud face a l'urgence de la reconstruction apres la guerre de juillet 2006. *Geocarrefour*, 85(2), 141–151. Retrieved 2011-08-15, from <http://geocarrefour.revues.org/7852>
- Alles, C. (2012). The Private Sector and Local Elites: The Experience of Public - Private Partnership in the Water Sector in Tripoli, Lebanon. *Mediterranean Politics*, 17(3), 394 – 409. Retrieved 2014-03-28, from <http://www.tandfonline.com/doi/abs/10.1080/13629395.2012.725303>
- Al Mashnouk, M. (1995, June 23). Water and the complicated peace in the Middle East. *Annahar*. American Universities Field Staff. (1977). *Patrons and clients in Mediterranean societies* (E. Waterbury John; Gellner, Ed.). London: Duckworth.
- Amery, H. (2000, January). Assessing Lebanon's Water Balance. In D. B. Brooks & O. Mehmet (Eds.), *Water balances in the eastern mediterranean* (pp. 13–28). Ottawa: International Development Research Center.
- Amery, H. (2002). Irrigation Planning in Lebanon: Challenges and opportunities. In O. Mehmet & H. A. Biçak (Eds.), *Modern and traditional irrigation technologies in the eastern mediterranean* (pp. 111–124). Ottawa: International Development Research Center.
- Andraos, N. (1998, October 16). Water catchments and (where the river ends) are a crucial issue in the region's struggles. *Annahar*.
- Annahar. (1996, April 23). Reactions condemning Israeli assaults. *Annahar*.
- Annahar. (2002, October 16). The legal foundation for the conflict over Wazzani. *Annahar*.
- Assaf, H. (2009, August). Climate Change in the Levant and North Africa Region. Beirut, Lebanon: Issam Fares Institute for Public Policy and International Affairs, American University of Beirut. Retrieved 2014-03-29, from [http://www.academia.edu/3408949/Climate\\_Change\\_in\\_the\\_Levant\\_and\\_North\\_Africa\\_Region\\_an\\_assessment\\_of\\_implications\\_for\\_water\\_resources\\_regional\\_state\\_of\\_awareness\\_and\\_preparedness\\_and\\_the\\_road\\_ahead](http://www.academia.edu/3408949/Climate_Change_in_the_Levant_and_North_Africa_Region_an_assessment_of_implications_for_water_resources_regional_state_of_awareness_and_preparedness_and_the_road_ahead)
- Assaf, H. (2010). Water Resources and Climate Change. In *Water: Sustainable management of a scarce resource, arab forum for environment and development* (pp. 25–38). Retrieved 2014-03-29, from <http://www.afedonline.org/Report2010/pdf/En/Chapter2.pdf>
- Assafir. (2002, October). Lebanon drinks from the Wazzani waters. *Assafir*.
- Ayyash, A. (1996, March 26). World Bank source: Israel is behind the Litani project and the aim is the Middle-Eastern[ess] project. *Annahar*.
- Bakalowicz, M. (2009). *Assessment and Management of Water Resources with an empahsis on prospects of climate change* (Tech. Rep.). Lebanon: Mediterranean Component of the EU Water Initiative.
- Bakker, K. (2003). *An Uncooperative Commodity: Privatizing Water in England and Wales*. Oxford: Oxford University Press.
- Bakker, K. (2005). Neoliberalizing Nature? Market Environmentalism in Water Supply in England and Wales. *Annals of the Association of American Geographers*, 95(3), 542–565. Retrieved 2014-01-23, from <http://www.tandfonline.com/doi/abs/10.1111/j.1467-8306.2005.00474.x> doi: 10.1111/j.1467-8306.2005.00474.x
- Bakker, K. (2007). The "Commons" Versus the "Commodity": Alter-globalization, Anti-privatization and the Human Right to Water in the Global South. *Antipode*, 39(3),

- 430–455. Retrieved 2013-04-12, from <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8330.2007.00534.x/full>
- Bakker, K. (2010). *Privatizing Water: Governance Failure and the World's Urban Water Crisis*. Cornell University Press.
- Bakker, K. (2012, August). Water: Political, biopolitical, material. *Social Studies of Science*, 42(4), 616–623. Retrieved 2014-03-23, from <http://sss.sagepub.com/content/42/4/616> doi: 10.1177/0306312712441396
- Bakker, K. (2013). Constructing 'public' water: the World Bank, urban water supply, and the biopolitics of development. *Environment and Planning D: Society and Space*, 31(2), 280–300. Retrieved 2014-03-23, from <http://www.envplan.com/abstract.cgi?id=d5111> doi: 10.1068/d5111
- Bakker, K. & Bridge, G. (2006). Material worlds? Resource geographies and thematter of nature'. *Progress in human geography*, 30(1), 5–27. Retrieved 2014-04-12, from <http://phg.sagepub.com/content/30/1/5.short>
- Banque du Liban. (2012). *Quarterly Bulletin - Second Quarter 2012 - Statistical Annex* (Tech. Rep. No. QB 133). Beirut Lebanon: Banque du Liban. Retrieved from <http://www.bdl.gov.lb/pub/index.htm>
- Baroudi, S. E. (2002). Continuity in economic policy in postwar Lebanon: The record of the Hariri and Hoss governments examined, 1992-2000. *Arab studies quarterly*, 63–90. Retrieved 2014-03-25, from <http://www.jstor.org/stable/41858404>
- Baumann, H. (2012). *Citizen Hariri and neoliberal politics in postwar Lebanon* (Doctoral dissertation, SOAS, University of London, London). Retrieved 2013-04-28, from <http://eprints.soas.ac.uk/14240/>
- Baviskar, A. (2007). *Waterscapes: The cultural politics of a natural resource*. Permanent Black New Delhi. Retrieved 2014-04-14, from <http://library.wur.nl/WebQuery/clc/1938346>
- Bello, W. (2006). The rise of the relief-and-reconstruction complex. *Journal of International Affairs*, 59(2), 281.
- Benoit, B. (2006, July). Merkel plays down prospect of troops for Lebanon. *Financial Times*. Retrieved 2014-04-08, from <http://www.ft.com/intl/cms/s/0/4b5ecedc-1ffe-11db-9913-0000779e2340.html?siteedition=intl>
- Berberi, S. (2013, December). "Water is more dangerous than electricity" - NOW online. Retrieved 2014-04-17, from <https://now.mmedia.me/lb/en/reportsfeatures/524892-environmental-terrorism-threatens-lebanons-water>
- Biswas, A. K. (2004). Integrated water resources management: a reassessment. *Water International*, 29(2), 248–256.
- Blaikie, P. M. (1985). *The Political Economy of Soil Erosion in Developing Countries*. London: Longman.
- Blaikie, P. M. & Brookfield, H. (1987). *Land Degradation and Society*. London: Methuen.
- Boelens, R. & Wegerich, K. (2008). *Water institutions, reforms and equity (WIRE)*. Wageningen University, Irrigation and Water Engineering Group, Environmental Sciences Group.
- Boelens, R. & Zwarteveen, M. (2005). Prices and politics in Andean water reforms. *Development and Change*, 36(4), 735–758.
- Bou-Zeid, E. & El-Fadel, M. (2002, September). Climate Change and Water Resources in Lebanon and the Middle East. *Journal of Water Resources Planning and Management*, 128(5), 343–355. Retrieved 2014-03-29, from <http://eprints.soton.ac.uk/53011/> doi: 10.1061/

- (ASCE)0733-9496(2002)128:5(343)
- Braun, B. (2006). Towards a New Earth and a New Humanity: Nature, Ontology, Politics. In N. Castree & D. Gregory (Eds.), *David harvey a critical reader* (pp. 191–222). Malden, MA; Oxford: Blackwell Pub.
- Braun, B. & Castree, N. (1998). The Construction of Nature and the Nature of Construction. In B. Braun & N. Castree (Eds.), *Remaking reality: Nature at the millenium* (pp. 3–42). London: Routledge.
- Brenner, N. (2001). The limits to scale? Methodological reflections on scalar structuration. *Progress in human geography*, 25(4), 591–614. Retrieved 2014-04-14, from <http://phg.sagepub.com/content/25/4/591.short>
- Brenner, N., Peck, J. & Theodore, N. (2010a). After neoliberalization? *Globalizations*, 7(3), 327–345. Retrieved 2014-04-19, from <http://www.tandfonline.com/doi/abs/10.1080/14747731003669669>
- Brenner, N., Peck, J. & Theodore, N. (2010b). Variegated neoliberalization: geographies, modalities, pathways. *Global Networks*, 10(2), 182–222. Retrieved 2010-05-25, from <http://dx.doi.org/10.1111/j.1471-0374.2009.00277.x> doi: 10.1111/j.1471-0374.2009.00277.x
- Brenner, N. & Theodore, N. (2002). Cities and the Geographies of "Actually Existing Neoliberalism". *Antipode*, 34(2), 349–379.
- Brenner, N. & Theodore, N. (2005, April). Neoliberalism and the urban condition. *City*, 9(1), 101–107. Retrieved from <http://www.informaworld.com/openurl?genre=article&doi=10.1080/13604810500092106&magic=crossref||D404A21C5BB053405B1A640AFFD44AE3> doi: 10.1080/13604810500092106
- Briellmann, H. (2008). *Recharge and discharge mechanism and dynamics in the mountainous northern Upper Jordan River Catcment, Israel*. LMU Muenchen: Faculty of Goesciences.
- Brophy, Z. (2013, February). *Where is the private sector?* [Magazine]. Retrieved 2014-03-31, from <http://www.executive-magazine.com/economics-policy/privatization-lebanon>
- Bryant, R. L. & Bailey, S. (1997). *Third World Political Ecology*. London: Routledge.
- Budds, J. (2004). Power, nature and neoliberalism: the political ecology of water in Chile. *Singapore Journal of Tropical Geography*, 25(3), 322–342.
- Budds, J. & Hinojosa-Valencia, L. (2012). Restructuring and rescaling water governance in mining contexts: the co-production of waterscapes in Peru. *Water Alternatives*, 5(1), 119–137. Retrieved 2013-04-12, from <http://oro.open.ac.uk/32484/>
- Bush, R. (2007). *Poverty and neoliberalism: persistence and reproduction in the global south*. Pluto Press.
- Bush, R., Bujra, J. & Littlejohn, G. (2011). The accumulation of dispossession. *Review of African Political Economy*, 38(128), 187–192. Retrieved 2014-04-28, from <http://www.tandfonline.com/doi/full/10.1080/03056244.2011.582752>
- Bush, R., Martiniello, G. & Mercer, C. (2011). Humanitarian imperialism. *Review of African political economy*, 38(129), 357–365. Retrieved 2014-04-28, from <http://www.tandfonline.com/doi/full/10.1080/03056244.2011.602539>
- Butterworth, J., Warner, J., Moriarty, P., Smits, S. & Batchelor, C. (2010). Finding practical approaches to integrated water resources management. *Water Alternatives*, 3(1), 68–81. Retrieved 2013-04-12, from [http://www.water-alternatives.org/index.php?option=com\\_docman&task=doc\\_download&gid=77%3E](http://www.water-alternatives.org/index.php?option=com_docman&task=doc_download&gid=77%3E)
- CAS. (2004). *Census of Building CBDE*. Retrieved 2014-04-02, from <http://www.cas.gov.lb/>

- index.php/census-of-building-cbde-en
- CAS. (2005). *Household expenditures 2004-2005* (Tech. Rep.). Lebanon, Beirut: Central Administration for Statistics Republic of Lebanon.
- CAS. (2010). *Central Administration of Statistics - Monthly Data by Year*. Retrieved 2014-03-29, from <http://cas.gov.lb/index.php/monthly-data#2010>
- Castree, N. (2001). Socializing nature: Theory, practice, and politics. *Social nature: Theory, practice, and politics*, 1–21. Retrieved 2014-03-26, from [http://www.blackwellpublishers.co.uk:443/content/BPL\\_Images/Content\\_store/Sample\\_chapter/9780631215677/castree.pdf](http://www.blackwellpublishers.co.uk:443/content/BPL_Images/Content_store/Sample_chapter/9780631215677/castree.pdf)
- Castree, N. (2002). False antitheses? Marxism, nature and actor-networks. *Antipode*, 34(1), 111–146. Retrieved 2013-04-12, from <http://onlinelibrary.wiley.com/doi/10.1111/1467-8330.00228/abstract>
- Castree, N. (2008a). Neoliberalising nature: processes, effects, and evaluations. *Environment and planning. A*, 40(1), 153. Retrieved 2014-04-14, from <http://core.kmi.open.ac.uk/download/pdf/6968393.pdf>
- Castree, N. (2008b). Neoliberalising nature: the logics of deregulation and reregulation. *Environment and planning. A*, 40(1), 131. Retrieved 2014-04-14, from <http://envplan.com/epa/fulltext/a40/a3999.pdf>
- Castree, N. (2010a). Neoliberalism and the biophysical environment 1: What ‘neoliberalism’ is, and what difference nature makes to it. *Geography Compass*, 4(12), 1725–1733. Retrieved 2014-04-14, from <http://onlinelibrary.wiley.com/doi/10.1111/j.1749-8198.2010.00405.x/full>
- Castree, N. (2010b). Neoliberalism and the biophysical environment 2: Theorising the neoliberalisation of nature. *Geography Compass*, 4(12), 1734–1746. Retrieved 2014-04-14, from <http://onlinelibrary.wiley.com/doi/10.1111/j.1749-8198.2010.00407.x/full>
- Castree, N. & Braun, B. (2001). *Social nature: Theory, practice, and politics*. Blackwell Publishers Oxford, Malden, MA. Retrieved 2014-03-26, from <http://eu.wiley.com/WileyRemoteAPI/Title.rapi?0631215670>
- Catafago, S. (2005). Restructuring water sector in Lebanon Litani river authority-facing the challenges of good water governance. In *Food security under water scarcity in the middle east problems and solutions*. Bari: CIHEAM. Retrieved 2014-03-25, from <http://om.ciheam.org/om/pdf/a65/05002197.pdf>
- Catafago, S. & Jaber, B. (2001a). *Monographies de l'eau au Liban* (Tech. Rep. No. 1). Sophia Antipolis, France: Plan Bleu.
- Catafago, S. & Jaber, B. (2001b). *Prospective de l'eau au Liban* (Tech. Rep. No. 1). Sophia Antipolis, France: Plan Bleu.
- CDR. (1993). *Horizon 2000 for Reconstruction and Development - Main Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (1994). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (1996). *Progress Report- Special Issue Achievements 1992–1996* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (1997). *Progress Report- Update July 1997* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.

- CDR. (1998a). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (1998b). *Updating July 1998* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (1999). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (2000). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (2001). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (2002). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (2003). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (2004). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (2005). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (2007). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (2008). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (2009). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (2010). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (2011). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (2012). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- CDR. (2013). *Progress Report* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- Chaaban, J., Ghattas, H., Habib, R., Hanafi, S., Sahyoun, N., Salti, N., ... Naamani, N. (2010). Socio-economic survey of Palestinian refugees in Lebanon. *American University of Beirut*. Retrieved 2014-03-29, from [http://fafsweb.aub.edu.lb/aub-unrwa/files/aub\\_unrwa\\_report\\_final\\_draft.pdf](http://fafsweb.aub.edu.lb/aub-unrwa/files/aub_unrwa_report_final_draft.pdf)
- Changpertitum, K. (2008, May). *Lebanon on brink of 'major catastrophe:' dire water crisis*. Retrieved 2014-04-17, from <http://www.dailystar.com.lb/News/Lebanon-News/2008/May-20/51758-lebanon-on-brink-of-major-catastrophe-dire-water-crisis.ashx>
- Choueiri, E. (2002a). *Strategie et Politique Agricole - Analyse de Filières, La ceraliculture* (Tech. Rep.). Beirut, Lebanon: Ministry of Agriculture / Food and Agriculture Organisation.
- Choueiri, E. (2002b). *Strategie et Politique Agricole - Etude de L'Existant Annex II, Ressources hydrauliques et pratiques de l'irrigation* (Tech. Rep.). Beirut, Lebanon: Ministry of Agriculture / Food and Agriculture Organisation.
- Choueiri, E. (2002c). *Strategie et Politique Agricole - Etude de L'Existant Annex I, Recueil*

- des themes sur les structures de la production* (Tech. Rep.). Beirut, Lebanon: Ministry of Agriculture / Food and Agriculture Organisation.
- CIH. (2013). *Bluegold book – Bluegold Lebanon*. Retrieved 2014-04-06, from <http://bluegoldlebanon.com/bluegold-book>
- Cleaver, F. (2008). *Distilling or Diluting? Negotiating the Water Research-Policy Interface* [Article]. Retrieved 2010-02-24, from <http://eprints.soas.ac.uk/5888/>
- Cleaver, F., Franks, T., Boesten, J. & Kiire, A. (2005). Water governance and poverty: What works for the poor. *Bradford Centre for International Development*.
- Comair, F. (2005). La Geopolitique de l'eau au Liban. l'Observatoire d'études géopolitiques.
- Comair, F. (2007). *Water Sector in Lebanon: An Operational Framework for Undertaking Legislative and Institutional Reforms*. Beirut, Lebanon: United Nations Economic and Social Commission for Western Asia.
- Comair, F. (2010a). *Fadi Georges Comair: Distinction de Chevalier de l'Ordre National du Mérite*. Retrieved 2014-04-28, from <http://www.fadicomair.com/2010/10/distinction-de-chevalier-de-lordre.html>
- Comair, F. (2010b). *Water Management and Hydrodiplomacy in Lebanon*. Louaize, Lebanon: Notre Dame University.
- Comair, F., Donzier, J.-F., Lainé, H. & Mino, E. (2010, May). *A "Mediterranean Water Agency" to move from strategy to action*. Retrieved 2014-04-26, from <http://www.ipemed.coop/en/publications-r17/reports-synthesis-c108/a-%E2%80%9Cmediterranean-water-agency%E2%80%9D-to-move-from-strategy-to-action-a888.html>
- Corm, G. (2005). *Le Liban contemporain: histoire et société* (Ed. actualisée ed.) (No. 214). Paris: Decouverte.
- CRI. (2003). *Competition in the Lebanese economy* (Tech. Rep.). Beirut, Lebanon: Consultation and Research Institute/ Ministry of Economy and Trade.
- Dah, A., Dibeh, G. & Shahin, W. N. (1999). *The distributional impact of taxes in Lebanon* (Vol. 6). Lebanese Center for Policy Studies.
- DAI. (2007). *USAID -Lebanon Water Policy Program LWPP - FINAL REPORT* (Tech. Rep.). Beirut, Lebanon: DAI - Development Alternatives, Inc.
- DAI - Development Alternatives, Inc. (2008, September). *South Lebanon Water Establishment Business Plan 2009–2013* (Tech. Rep.). Lebanon: South Lebanon Water Establishment.
- Dakroub, H. (2012, January 30). *Aouns tirade against Hariri era draws ire*. Retrieved 2013-04-27, from <http://www.dailystar.com.lb/News/Politics/2012/Jan-30/161515-aouns-tirade-against-hariri-era-draws-ire.ashx>
- Dakroub, H. (2014, January 31). *Bassil refuses to budge on Energy Ministry*. Retrieved 2014-03-06, from <http://www.dailystar.com.lb/News/Lebanon-News/2014/Jan-31/245924-bassil-refuses-to-budge-on-energy-ministry.ashx>
- Daouk, M. (1997a, November 3). *Hariri is hoping to secure investment during Tokyo visit*. Retrieved 2014-04-08, from <http://www.dailystar.com.lb/News/Lebanon-News/1997/Nov-03/13121-hariri-is-hoping-to-secure-investment-during-tokyo-visit.ashx>
- Daouk, M. (1997b, November 6). *Japan will 'study' increasing its help*. Retrieved 2014-04-08, from <http://www.dailystar.com.lb/News/Lebanon-News/1997/Nov-06/13160-japan-will-study-increasing-its-help.ashx>
- Dar al Handasah (Shaer and Partners) – IAURIF. (2005). *National Physical Master Plan of the*

- Lebanese Territory Final Repor* (Tech. Rep. No. L0215-RPT-13 REV 0). Beirut, Lebanon: Council for Development and Reconstruction in collaboration with the General Directorate of Urban Planning.
- Dar al Handasah (Shaer and Partners)–CNBureau s.a.r.l. - IAURIF. (2006). *Development Program 2006–2009 - Water Supply Sector* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction.
- Darwish, T., Khater, C., Jomaa, I., Stehouwer, R., Shaban, A. & Hamze, M. (2011). Environmental impact of quarries on natural resources in Lebanon. *Land Degradation & Development*, 22(3), 345–358. Retrieved 2014-04-03, from <http://onlinelibrary.wiley.com/doi/10.1002/ldr.1011/full>
- Darwish, T. M., Stehouwer, R., Khater, C., Jomaa, I., Miller, D., Sloan, J., . . . Hamze, M. (2010). Rehabilitation of Deserted Quarries in Lebanon to Initial Land Cover or Alternative Land Uses. In *Land degradation and desertification: Assessment, mitigation and remediation* (pp. 333–345). Springer. Retrieved 2014-04-03, from [http://link.springer.com/chapter/10.1007/978-90-481-8657-0\\_25](http://link.springer.com/chapter/10.1007/978-90-481-8657-0_25)
- Das, R. & Davidson, J. (2011). *Profiles of poverty: the human face of poverty in Lebanon* (N. Fleming-Farrell, Ed.). Mansourieh: Dar Manhal-al-Hayat.
- Debié, F., Pieter, D. & Verdeil, E. (2003). *La paix et la crise: le Liban reconstruit?* (1re éd. ed.). Paris: Presses universitaires de France.
- Dessus, S., Ghaleb, J. & Malouche, M. (2006). *Lebanon: Trade and Competition Policies for Growth: a General Equilibrium Analysis*. World Bank. Retrieved 2014-04-04, from [http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2006/08/28/000160016\\_20060828172525/Rendered/PDF/371010MNAOWP14301PUBLIC1.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2006/08/28/000160016_20060828172525/Rendered/PDF/371010MNAOWP14301PUBLIC1.pdf)
- Dibeh, G. (2005). The political economy of postwar reconstruction in Lebanon. Retrieved 2014-03-25, from [http://works.bepress.com/cgi/viewcontent.cgi?article=1000&context=ghassan\\_dibeh](http://works.bepress.com/cgi/viewcontent.cgi?article=1000&context=ghassan_dibeh)
- Dibeh, G. (2007). Foreign Aid and Economic Development in Postwar Lebanon. Retrieved 2014-03-25, from [http://works.bepress.com/cgi/viewcontent.cgi?article=1001&context=ghassan\\_dibeh](http://works.bepress.com/cgi/viewcontent.cgi?article=1001&context=ghassan_dibeh)
- Dockery, S. (2012, March 22). *Water crisis looms, officials search for solution*. Retrieved 2014-04-17, from <http://www.dailystar.com.lb/News/Lebanon-News/2012/Mar-22/167542-water-crisis-looms-officials-search-for-solution.ashx>
- Dockery, S. (2013, March 5). Ministry approves dam despite Jeita warning. *The Daily Star*. Retrieved 2014-04-26, from <http://www.dailystar.com.lb/Article.aspx?id=208838>
- Doummar, J., Noedler, K., Geyer, T. & Sauter, M. (2012). *Assessment and Analysis of Micropollutants (2010-2011)* (Special Report No. 13). Raifoun: German Lebanese Technical Cooperatino Project of Jeita Spring BGR.
- Duffield, M. (2001). Governing the borderlands: decoding the power of aid. *Disasters*, 25(4), 308–320. Retrieved 2014-03-24, from <http://onlinelibrary.wiley.com/doi/10.1111/1467-7717.00180/full>
- EC. (2007). *Support to Sector Programmes Covering the three financing modalities: Sector Budget Support, Pool Funding and EC project procedures* (Guidlines No. 2). Brussels: European Commission.
- Economic Accounts Mission. (2010). *Economic Accounts of Lebanon Retrospective 1997-2007* (Tech. Rep.). Beirut, Lebanon: Presidency of the Council of Ministers Economic Accounts

- Mission.
- Eid-Sabbagh, K. (2007). *Reconstructions in Lebanon neoliberalism and spatial production* (Master's Thesis, American University of Beirut, Beirut, Lebanon). Retrieved 2014-03-28, from <https://scholarworks.aub.edu.lb/handle/10938/7547>
- ELARD. (2013, April). *Tracer Test in Seraaita Well* (Final Report). Beirut, Lebanon: Khatib El Alame.
- El Ezzi, G. (1990). *L'Invasion Israélienne Du Liban (1982): Origines, Finalités Et Effets Pervers*. Paris: L'Harmattan.
- El-Fadel, M., Maroun, R., Semerjian, L. & Harajli, H. (2003, July). Drinking Water Quality in Lebanon: A Health-Based Socio-Economic Assessment. In K. J. Mortimer (Ed.), *Water, energy and environment* (pp. 27–43). Zouk Mosbeh, Lebanon: Notre Dame University Press.
- El-Husseini, R. & Perthes, V. (2004). Lebanon: Building political dynasties. In *Arab elites: Negotiating the politics of change* (pp. 239–266). Boulder, Colorado: Lynne Rienner Publishers.
- el Raey, M. (2009). Impact of Climate Change: Vulnerability and Adaptation Coastal Areas. In N. Saab & M. Tolba (Eds.), *Arab environment climate change: Impact of climate change on arab countries*. Beirut Lebanon: Arab Forum for Environment and Development.
- Escobar, A. (1995). *Encountering Development: The Making and Unmaking of the Third World*. Princeton, N.J: Princeton University Press.
- ESCWA. (2009, September). *Foreign Direct Investment Report* (Tech. Rep. No. E/ESCWA/EDGD/2009/Technical Paper.2). New York: United Nations.
- ESCWA. (2011, August). *Foreign Direct Investment Report* (Tech. Rep. No. E/ESCWA/EDGD/2011/Technical Paper. 3). New York: United Nations.
- EU. (2002). *Lebanon Country Strategy Paper 2002–2006 and National Indicative Programme 2002–2004* (Tech. Rep.). Brussels: European Commission.
- EU. (2013). *European Union - EEAS (European External Action Service) | Political framework*. Retrieved 2014-04-28, from [http://eeas.europa.eu/delegations/lebanon/eu\\_lebanon/political\\_relations/political\\_framework/index\\_en.htm](http://eeas.europa.eu/delegations/lebanon/eu_lebanon/political_relations/political_framework/index_en.htm)
- EU-MED\_CON. (1995). *Barcelona declaration – adopted at the Euro-Mediterranean Conference - 27-28/11/95*. Euro Mediterranean Conference. Retrieved from [http://www.eeas.europa.eu/euromed/docs/bd\\_en.pdf](http://www.eeas.europa.eu/euromed/docs/bd_en.pdf)
- Executive Magazine. (2013, October). Filthy rich. *Executive Magazine*. Retrieved 2014-03-30, from <http://www.executive-magazine.com/millionaires-own-half-lebanese-wealth/>
- Falkenmark, M., Lundqvist, J. & Widstrand, C. (1989). Macro-scale water scarcity requires micro-scale approaches. In *Natural resources forum* (Vol. 13, pp. 258–267). Wiley Online Library. Retrieved 2014-03-26, from <http://onlinelibrary.wiley.com/doi/10.1111/j.1477-8947.1989.tb00348.x/abstract>
- Fattouh, B. & el Katiri. (2013, August). Lebanon: The Next Eastern Mediterranean Gas Province? *Oxford Institute for Energy Studies*(93). Retrieved 2014-03-31, from <http://www.oxfordenergy.org/2013/10/issue-93-august-2013/>
- Fayad, A., Mallat, H., Freiha, R. & Khoury, A. (1996). *Eaux de Beyrouth 1870–1996, Centenaire de l'Usine de Dbayeh 1896–1996*. Beirut, Lebanon: The Artshop s.a.r.l.
- Ferguson, J. (1994). *The Anti-Politics Machine: 'development', Depoliticization, and Bureaucratic Power in Lesotho*. Cambridge: Cambridge University Press.
- Forsyth, T. (2003). *Critical Political Ecology: The Politics of Environmental Science*. London:

- Routledge.
- Forsyth, T. (2008, March). Political ecology and the epistemology of social justice. *Geoforum*, 39(2), 756–764. Retrieved 2014-03-26, from <http://www.sciencedirect.com/science/article/pii/S0016718507000036> doi: 10.1016/j.geoforum.2006.12.005
- Foster, J. B. (1999). *Marx's Ecology: Materialism and Nature*. New York, London: Monthly Review.
- Freiha, R. (2009). *Organisation of Institutions and Human Resources* (Tech. Rep.). Lebanon: Mediterranean Component of the EU Water Initiative.
- Galey, P. (2011, March). *Lebanon to face severe water crisis if key steps aren't taken*. Retrieved 2014-04-17, from <http://www.dailystar.com.lb/News/Lebanon-News/2011/Mar-23/134946-lebanon-to-face-severe-water-crisis-if-key-steps-arent-taken.ashx>
- Gandy, M. (2004, December). Rethinking urban metabolism: water, space and the modern city. *City*, 8(3), 363–379. Retrieved from <http://www.informaworld.com/openurl?genre=article&doi=10.1080/1360481042000313509&magic=crossref||D404A21C5BB053405B1A640AFFD44AE3> doi: 10.1080/1360481042000313509
- Gaspard, T. (2004). *A Political economy of Lebanon, 1948-2002* (Vol. 92). Leiden - Boston: Brill.
- Gedeon, S. (2008). *ISHIMM project: Case studies synthesis Lebanon* (Tech. Rep.). Institutional and Social Innovations in Irrigation Mediterranean Management.
- Gemayel, M. (1951). *La valorisation du Liban, plans et programmes*.
- Ghandour, T. (2012, January 25). Lebanon: Fault Lines Inside Aouns Fort. *Al Akhbar English*. Retrieved 2013-04-27, from <http://english.al-akhbar.com/content/lebanon-fault-lines-inside-aoun%E2%80%99s-fort>
- Ghiotti, S. (2004). *La réforme de la politique de l'eau au Liban les enjeux territoriaux de la reorganisation institutionnelle* (post-doctoral). Beirut, Lebanon: CNRS, laboratoire Mutations des Territoires en Europe, UMR 5045.
- Ghiotti, S. & Riachi, R. (2013). Eaux, foncier et territoires au Liban. *Mediterranee*, 119(2), 35 – 43. Retrieved 2014-03-28, from [http://art-dev.cnrs.fr/IMG/pdf/wpARTDev\\_2013\\_03.pdf](http://art-dev.cnrs.fr/IMG/pdf/wpARTDev_2013_03.pdf)
- Ghiotti, S. & Riachi, R. (2014). La gestion de l'eau au Liban: une réforme confisquée? *Etudes rurales*, 192(2), 135–152. Retrieved 2014-03-28, from [http://www.cairn.info/resume.php?ID\\_ARTICLE=ETRU\\_192\\_0135](http://www.cairn.info/resume.php?ID_ARTICLE=ETRU_192_0135)
- Glasze, G. (2003). *Die fragmentierte Stadt: Ursachen und Folgen bewachter Wohnkomplexe im Libanon* (No. 89). Opladen: Leske + Budrich.
- Gleick, P. H. (1996). Basic Water Requirements for Human Activities: Meeting Basic Needs. *Water International*, 21(2), 83–92. Retrieved 2014-03-04, from <http://www.tandfonline.com/doi/abs/10.1080/02508069608686494> doi: 10.1080/02508069608686494
- Goldman, M. (2005). *Imperial nature: The World Bank and struggles for social justice in the age of globalization*. Yale University Press.
- Goldman, M. (2007, September). How "Water for All!" policy became hegemonic: The power of the World Bank and its transnational policy networks. *Geoforum*, 38(5), 786–800. Retrieved 2014-03-26, from <http://www.sciencedirect.com/science/article/pii/S0016718506001382> doi: 10.1016/j.geoforum.2005.10.008
- Graham, S. & Marvin, S. (2001). *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition*. London: Routledge. (UCL lib, senate house, LSE, Brit

- Lib.)
- GTZ/GIZ. (2008a, June). *Minutes of Meeting – Coordination Group for the Water Sector 1*. GTZ/GIZ.
- GTZ/GIZ. (2008b, August). *Minutes of Meeting – Coordination Group for the Water Sector 3*. GTZ/GIZ.
- GTZ/GIZ. (2008c, September). *Minutes of Meeting – Coordination Group for the Water Sector 4*. GTZ/GIZ.
- GTZ/GIZ. (2009, March). *Minutes of Meeting – Coordination Group for the Water Sector 9*. GTZ/GIZ.
- GWP. (2010). *What is IWRM? THE CHALLENGE*. Retrieved 2014-03-24, from <http://www.gwp.org/The-Challenge/What-is-IWRM/>
- Habib, O. (2003, June). Schools row may be jeopardizing projects. *The Daily Star Newspaper - Lebanon*. Retrieved 2014-03-31, from <http://www.dailystar.com.lb/Business/Lebanon/2003/Jun-19/38393-schools-row-may-be-jeopardizing-projects.ashx>
- Haddad, M. (1995, April 8). Why would the Litani turn into a Lebanese crisis? *Annahar*.
- Hakim, S. R. & Andary, S. (1997). The Lebanese Central Bank and the Treasury Bills Market. *The Middle East Journal*, 230–241. Retrieved 2014-04-06, from <http://www.jstor.org/stable/4329055>
- Halabi, S. (2010, October). *Propping up the State*. Retrieved 2014-04-06, from <http://www.executive-magazine.com/economics-policy/propping-up-the-state>
- Halabi, S. (2011a, February). Oil Law: Missing the tide. *Executive Magazine*. Retrieved 2014-03-06, from <http://www.executive-magazine.com/economics-policy/oil-law-missing-the-tide>
- Halabi, S. (2011b). *Plans to bring Qaraoun reservoir to Beirut have sprung a leak* / *Executive Magazine*. Retrieved 2014-01-20, from <http://www.executive-magazine.com/economics-and-policy/3052/pricy-prospect-for-pipe-dreams>
- Halawi, D. (2010, November). *Comair: water projects need private backing*.
- Hall, D. & Lobina, E. (2007, September). Profitability and the poor: Corporate strategies, innovation and sustainability. *Geoforum*, 38(5), 772–785. Retrieved 2014-03-26, from <http://www.sciencedirect.com/science/article/pii/S0016718506001321> doi: 10.1016/j.geoforum.2006.08.012
- Hall, D., Lobina, E. & De La Motte, R. (2005). Public resistance to privatisation in water and energy. *Development in Practice*, 15(3), 286–301.
- Hamieh, R. (2011, December 19). Lebanon's Litani Pollution Levels Threaten Agricultural Sector. *Al Akhbar English*. Retrieved 2014-04-03, from <http://english.al-akhbar.com/content/lebanon%E2%80%99s-litani-pollution-levels-threaten-agricultural-sector>
- Hamieh, R. (2012, September 24). Palestinian Refugees in Lebanon Struggle for Water. *Al Akhbar English*. Retrieved 2014-04-03, from <http://english.al-akhbar.com/content/palestinian-refugees-lebanon-struggle-water>
- Hamzeh, A. N. (2001, July). Clientalism, Lebanon: Roots and Trends. *Middle Eastern Studies*, 37(3), 167.
- Hardt, M. & Negri, A. (2009). *Empire*. Harvard University Press.
- Harvey, D. (1985). *The Urbanization of Capital* (No. 2). Oxford: Blackwell.
- Harvey, D. (1996). *Justice, Nature, and the Geography of Difference*. Cambridge, Mass: Blackwell Publishers.

- Harvey, D. (2003). *The New Imperialism*. Oxford: Oxford University Press.
- Harvey, D. (2005). *A Brief History of Neoliberalism*. Oxford: Oxford University Press.
- Helbling, T. & Eken, S. (1999). *Back to the Future: Postwar Reconstruction and Stabilization in Lebanon* (Tech. Rep.). International Monetary Fund. Retrieved 2014-03-25, from <http://ideas.repec.org/p/imf/imfocp/176.html>
- Heynen, N. C. (2003). The scalar production of injustice within the urban forest. *Antipode*, 35(5), 980–998.
- Honeine, L. (2000, January). Services publics - Reflet des realites socio politiques - Malaise persistant dans les offices des eaux. *L'Orient le Jour*.
- Houri, A. & El Jeblawi, S. (2007). Water quality assessment of Lebanese coastal rivers during dry season and pollution load into the Mediterranean Sea. *Journal of water and health*, 5(4), 615–623. Retrieved 2014-03-30, from <http://www.iwaponline.com/jwh/005/jwh0050615.htm>
- Hreiche, A., Najem, W. & Bocquillon, C. (2007). Hydrological impact simulations of climate change on Lebanese coastal rivers/Simulations des impacts hydrologiques du changement climatique sur les fleuves côtiers Libanais. *Hydrological Sciences Journal/Journal des Sciences Hydrologiques*, 52(6), 1119–1133. Retrieved 2014-03-29, from <http://www.tandfonline.com/doi/abs/10.1623/hysj.52.6.1119>
- Hudson, M. C. (1997). Trying again: Power-sharing in post-civil war Lebanon. *International Negotiation*, 2(1), 103–122. Retrieved 2014-04-18, from <http://www.springerlink.com/index/W90FJAADRAV5RW4D.pdf>
- IPEMED. (2012, April). *Ipemed's Governance*. Retrieved 2014-04-26, from <http://www.ipemed.coop/en/ipemed-r21/ipemed%E2%80%99s-governance-c71/>
- Jacobs Gibb. (2002). *Privatisation of the Water and Wastewater Sector - Demand and Tariff Report* (Draft). Beirut, Lebanon: Societe Generale de Banque au Liban S.A.L and Societe Generale S.A. Joint Venture / Ministry of Energy and Water / High Council for Privatisation.
- Jaoude, I. B., Karanouh, R., Momjian, N., Chehadeh, A. & Hussein, S. C. (2010). Understanding the Leaks in Chabrouh Dam Through Detailed Hydrogeological Analysis of the Qana Plateau (Lebanon). In *Advances in research in karst media* (pp. 407–413). Springer. Retrieved 2014-04-29, from [http://link.springer.com/chapter/10.1007/978-3-642-12486-0\\_63](http://link.springer.com/chapter/10.1007/978-3-642-12486-0_63)
- Jennings, M. (2008). *Surrogates of the State: NGOs, Development, and Ujamaa in Tanzania*. Bloomfield, CT: Kumarian Press.
- Jennings, M. (2009, March). Building better people: modernity and utopia in late colonial Tanganyika. *Journal of Eastern African Studies*, 3(1), 94–111. Retrieved 2013-04-12, from <http://www.tandfonline.com/doi/abs/10.1080/17531050802682838> doi: 10.1080/17531050802682838
- Jessop, B., Brenner, N. & Jones, M. (2008). Theorizing sociospatial relations. *Environment and planning. D, Society and space*, 26(3), 389. Retrieved 2014-04-14, from [http://crossroads-asia.de/fileadmin/user\\_upload/Literatur/Area\\_Studies/Jessop\\_et\\_al2008\\_Theorizing\\_sociospatial\\_relations.pdf](http://crossroads-asia.de/fileadmin/user_upload/Literatur/Area_Studies/Jessop_et_al2008_Theorizing_sociospatial_relations.pdf)
- Johnson, M. (1986). *Class & client in Beirut: the Sunni Muslim community and the Lebanese state, 1840-1985*. London: Ithaca.
- Kaika, M. (2003). Constructing Scarcity and Sensationalising Water Politics: 170 Days That Shook Athens. *Antipode*, 35(5), 919–954. Retrieved 2010-02-24, from <http://dx.doi.org/10.1111/j.1467-8330.2003.00365.x> doi: 10.1111/j.1467-8330.2003.00365.x

- Kanaan, N. (2012, January 4). Shura Council kingmaker on Lebanon wage battle. *Al Akhbar English*. Retrieved 2013-04-27, from <http://english.al-akhbar.com/content/shura-council-kingmaker-lebanon-wage-battle>
- Karaa, K., Karam, F. & Raad, R. (2010). *Modernization of irrigation systems: measures to reduce pressure on water demand in Lebanon*. Retrieved 2014-03-30, from [http://www.meliaproject.eu/administrative-management/workgroup.2006-08-28.4909720949/workshop-n.2/proceedings-of-melia-2nd-workshop/final-version-options-a88/OM%20A88%20p%20241\\_254.pdf](http://www.meliaproject.eu/administrative-management/workgroup.2006-08-28.4909720949/workshop-n.2/proceedings-of-melia-2nd-workshop/final-version-options-a88/OM%20A88%20p%20241_254.pdf)
- Karaa, K., Karam, F. & Tarabey, N. (2004a). Attempts to determine some performance indicators in Qasmieh Ras-el-Ain irrigation Scheme (Lebanon). *Irrigation Systems Performance*, 154. Retrieved 2014-03-30, from [http://www1.iamb.it/download/options/options\\_B52.pdf#page=164](http://www1.iamb.it/download/options/options_B52.pdf#page=164)
- Karaa, K., Karam, F. & Tarabey, N. (2004b). Participatory water saving management and water cultural heritage: Lebanon country report. *Options Méditerranéennes. Série B: Etudes et Recherches (CIHEAM)*. Retrieved 2014-03-30, from [http://www.researchgate.net/publication/228749423\\_Participatory\\_water\\_saving\\_management\\_and\\_water\\_cultural\\_heritage\\_Lebanon\\_country\\_report/file/e0b4951b9584ce78aa.pdf](http://www.researchgate.net/publication/228749423_Participatory_water_saving_management_and_water_cultural_heritage_Lebanon_country_report/file/e0b4951b9584ce78aa.pdf)
- Karaa, K., Karam, F. & Tarabey, N. (2004c). Wastewater Treatment and Reuse in Lebanon: Key Policies and Future Scenarios. *Options Méditerranéennes series B*, 53, 215–216.
- Karaa, K., Karam, F. & Tarabey, N. (2006a). Harmonization and Integration of Water Saving Options in Lebanon. *CI HEAM*, 117. Retrieved 2014-03-30, from [http://www1.iamb.it/iamb2005/programmi/documentale/publications/wasamed/options\\_B59.pdf#page=117](http://www1.iamb.it/iamb2005/programmi/documentale/publications/wasamed/options_B59.pdf#page=117)
- Karaa, K., Karam, F. & Tarabey, N. (2006b). Harmonization and Integration of Water Saving Options in Lebanon. *CI HEAM*, 117. Retrieved 2014-03-30, from [http://www1.iamb.it/iamb2005/programmi/documentale/publications/wasamed/options\\_B57.pdf#page=117](http://www1.iamb.it/iamb2005/programmi/documentale/publications/wasamed/options_B57.pdf#page=117)
- Karaa, K., Karam, F. & Tarabey, N. (2007). Improving water use efficiency of field crops through regulated deficit irrigation. *Options mediterraneennes*, 1, 143–151. Retrieved 2014-03-30, from [http://om.ciheam.org/om/pdf/b56\\_1/00800108.pdf](http://om.ciheam.org/om/pdf/b56_1/00800108.pdf)
- Kasparian, R. (2006, May). *Economic Accounts of Lebanon 2003* (Tech. Rep.). Beirut, Lebanon: Presidency of the Council of Ministers Economic Accounts Mission.
- Kasparian, R. (2007, February). *Economic Accounts of Lebanon 2004* (Tech. Rep.). Beirut, Lebanon: Presidency of the Council of Ministers Economic Accounts Mission.
- Kasparian, R. (2009, October). *Economic Accounts of Lebanon 2008* (Tech. Rep.). Beirut, Lebanon: Presidency of the Council of Ministers Economic Accounts Mission.
- Kasparian, R. (2010, October). *Economic Accounts of Lebanon 2009* (Tech. Rep.). Beirut, Lebanon: Presidency of the Council of Ministers Economic Accounts Mission.
- Kasparian, R. (2011, October). *Economic Accounts of Lebanon 2010* (Tech. Rep.). Beirut, Lebanon: Presidency of the Council of Ministers Economic Accounts Mission.
- Kaufman, A. (2006, October). Between Palestine and Lebanon: Seven Shi'i Villages as a Case Study of Boundaries, Identities, and Conflict. *Middle East Journal*, 60(4), 685–706. Retrieved 2011-08-15, from <http://www.jstor.org/stable/4330318> (ArticleType: research-article / Full publication date: Autumn, 2006 / Copyright © 2006 Middle East Institute)

- Kawas, N. (2003, June 17). *Lahoud determined to halt political infighting*. Retrieved 2014-03-31, from <http://www.dailystar.com.lb/News/Lebanon-News/2003/Jun-17/39129-lahoud-determined-to-halt-political-infighting.ashx>
- Keefer, P. & Khemani, S. (2005, March). Democracy, Public Expenditures, and the Poor: Understanding Political Incentives for Providing Public Services. *The World Bank Research Observer*, 20(1), 1–27. Retrieved 2014-03-05, from <http://wbro.oxfordjournals.org/content/20/1/1> doi: 10.1093/wbro/lki002
- Khair, K., Aker, N., Haddad, F., Jurdi, M. & Hachach, A. (1994). The environmental impacts of humans on groundwater in Lebanon. *Water, air, and soil pollution*, 78(1-2), 37–49. Retrieved 2014-03-30, from <http://link.springer.com/article/10.1007/BF00475666>
- Khalaf, S. (1977). Changing Forms of Political Patronage in Lebanon. In E. Gellner & J. Waterbury (Eds.), *Patrons and clients in mediterranean societies*. London: Duckworth.
- Khatib and Alami. (2013, May). *Tracer Test Campaign – Seraaita well* (Tech. Rep.). Beirut, Lebanon: Khatib and Alami - MEW.
- Kiely, R. (2007). *The New Political Economy of Development: Globalization, imperialism, Hegemony*. Basingstoke: Palgrave Macmillan.
- Kingston, P. (2001). Patrons, Clients and Civil Society: A Case Study of Environmental Politics in Postwar Lebanon. *Arab Studies Quarterly*, 23(1), 55.
- Knutson, C. (2012, November). *Middle Eastern Billionaires and Family Ties – Forbes*. Retrieved 2014-04-28, from <http://www.forbes.com/sites/forbesinsights/2012/04/11/middle-eastern-billionaires-and-family-ties/>
- Korfali, S. & Jurdi, M. (2011). Suitability of Surface Water for Domestic Water Use: Awali River Case Study. *European Water*, 35, 3–12. Retrieved 2013-05-17, from [http://www.ewra.net/ew/pdf/EW\\_2011\\_35\\_01.pdf](http://www.ewra.net/ew/pdf/EW_2011_35_01.pdf)
- Korfali, S. I. & Jurdi, M. (2007). Assessment of domestic water quality: case study, Beirut, Lebanon. *Environmental monitoring and assessment*, 135(1-3), 241–251. Retrieved 2014-04-03, from <http://link.springer.com/article/10.1007/s10661-007-9646-x>
- Korfali, S. I. & Jurdi, M. (2009, April). Provision of safe domestic water for the promotion and protection of public health: a case study of the city of Beirut, Lebanon. *Environmental Geochemistry and Health*, 31(2), 283–295. Retrieved 2014-04-03, from <http://link.springer.com/article/10.1007/s10653-008-9218-1> doi: 10.1007/s10653-008-9218-1
- Korfali, S. I. & Jurdi, M. (2010). Deterioration of coastal water aquifers: causes and impacts. *European waters*, 29, 3–10. Retrieved 2014-03-29, from [http://www.ewra.net/ew/pdf/EW\\_2010\\_29\\_01.pdf](http://www.ewra.net/ew/pdf/EW_2010_29_01.pdf)
- Krijnen, M. (2010). *Facilitating real estate development in Beirut a peculiar case of neoliberal public policy* (Master's Thesis). American University of Beirut, Beirut, Lebanon.
- Kubursi, A. A. (1999). Reconstructing the economy of Lebanon. *Arab studies quarterly*, 69–95. Retrieved 2014-03-25, from <http://www.jstor.org/stable/41858277>
- KUNA. (2006, October). Lebanese speaker grateful to Kuwait's Amir and people. *Kuwait News Agency*. Retrieved from 158.50.10.7/ArticlePrintPage.aspx?id=1683533&language=en
- Kunigk, E. (1999). Policy transformation and implementation in the water sector in Lebanon: The role of politics. In *Ocassional paper no 27*. London: School of Oriental and African Studies.
- Käkönen, M. & Hirsch, P. (2009). The anti-politics of Mekong knowledge production. In F. Molle, T. Foran & M. Käkönen (Eds.), *Contested waterscapes in the mekong region: Hydropower*,

- livelihoods and governance* (pp. 333–365). Earthscan.
- Laithy, H. E., Abu-Ismail, K. & Hamdan, K. (2008). *Poverty, Growth and Income Distribution in Lebanon* (Country Study No. 13). International Policy Centre for Inclusive Growth. Retrieved 2013-04-18, from <http://ideas.repec.org/p/ipc/cstudy/13.html>
- Latour, B. (1993). *We have never been modern*. Harvard University Press.
- Latour, B. (2005). *Reassembling the social: an introduction to actor-network-theory*. Oxford; New York: Oxford University Press.
- Leenders, R. (2004a). Nobody having too much to answer for: laissez-faire, networks and postwar reconstruction in Lebanon. In *Networks of privilege in the middle east. the politics of economic reform revisited*, (pp. 169–200). New York and Basingstoke (Great Britain): Palgrave MacMillan. Retrieved 2013-04-28, from <http://jft-newspaper.aub.edu.lb/reserve/data/pspa304-wh-leenders/leenders.pdf>
- Leenders, R. (2004b). *The politics of corruption in post-war Lebanon*. London.
- Leitner, H., Peck, J. & Sheppard, E. S. (2007). *Contesting neoliberalism: urban frontiers*. Guilford Press. Retrieved 2014-04-02, from [http://books.google.com/books?hl=en&lr=&id=Xb8rKxg3jbIC&oi=fnd&pg=PA1&dq=neoliberal+city&ots=u0c6yYp0iE&sig=UNn-d49t002\\_2Nze185CDFGiIZE](http://books.google.com/books?hl=en&lr=&id=Xb8rKxg3jbIC&oi=fnd&pg=PA1&dq=neoliberal+city&ots=u0c6yYp0iE&sig=UNn-d49t002_2Nze185CDFGiIZE)
- Liban, Ambassade de France au Liban, IPSOS-STAT, Ingenieurs Conseil et Economistes Associe (ICEA) & CORAIL Association (Eds.). (2004). *Les Libanais et l'eau potable: enquetes socio-economiques*. Beyrouth: Ministere de l'Energie et de l'Eau.
- Lictevout, E. (2010, March). *Water, Sanitation and Hygiene sector review - Executive summary- Unpublished draft report* (Tech. Rep.). Lebanon: United Nation Children's Fund.
- Linton, J. (2008). Is the hydrologic cycle sustainable? A historical–geographical critique of a modern concept. *Annals of the Association of American Geographers*, 98(3), 630–649. Retrieved 2014-04-13, from <http://www.tandfonline.com/doi/abs/10.1080/00045600802046619>
- Linton, J. (2010). *What is water?: The history of a modern abstraction*. UBC Press. Retrieved 2014-04-13, from <http://books.google.com/books?hl=en&lr=&id=BeqZWTF3clIC&oi=fnd&pg=PR9&dq=jamie+linton&ots=DSbVd9y0-T&sig=Q1FmoDVPIPuxndsAHtxpvkaKD4A>
- Linton, J. & Budds, J. (2013). The hydrosocial cycle: Defining and mobilizing a relational-dialectical approach to water. *Geoforum*, n.a.(n.a.), n.a. Retrieved 2014-03-24, from <http://www.sciencedirect.com/science/article/pii/S0016718513002327>
- Loftus, A. (2006). Reification and the dictatorship of the water meter. *Antipode*, 38(5), 1023–1045. Retrieved 2014-04-14, from <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8330.2006.00491.x/full>
- Loftus, A. (2009, July). Rethinking Political Ecologies of Water. *Third World Quarterly*, 30(5), 953–968. Retrieved 2010-02-10, from <http://search.ebscohost.com.ezproxy.soas.ac.uk/login.aspx?direct=true&AuthType=cookie,ip,url,shib&db=aph&AN=41130519&site=ehost-live> doi: 10.1080/01436590902959198
- Loftus, A. & Lumsden, F. (2008). Reworking hegemony in the urban waterscape. *Transactions of the Institute of British Geographers*, 33(1), 109–126. Retrieved 2014-04-14, from <http://onlinelibrary.wiley.com/doi/10.1111/j.1475-5661.2007.00280.x/full>
- L'Orient le Jour. (2001a, November 21). Greve ouverte des fonctionnaires - des offices des eaux dans la Bekaa. *L'Orient le Jour*.

- L'Orient le Jour. (2001b, February). Greve ouverte des Les enseignants du public et les employes des offices autonomes en greve pour 24 heures - des offices des eaux dans la Bekaa. *L'Orient le Jour*.
- L'Orient le Jour. (2010, March 10). Une table ronde discute du partenariat public-privé dans le secteur de l'eau. *L'Orient-Le Jour*. Retrieved 2014-04-18, from [http://www.lorientlejour.com/article/649763/Une\\_table\\_ronde\\_discute\\_du\\_partenariat\\_public-privé\\_dans\\_le\\_secteur\\_de\\_l%27eau.html](http://www.lorientlejour.com/article/649763/Une_table_ronde_discute_du_partenariat_public-privé_dans_le_secteur_de_l%27eau.html)
- Lyonnaise des Eaux Dumez. (1994a, March). *Audit des Offices des Eaux* (Tech. Rep. No. Document 2). Beirut: Ministry of Hydraulic and Electirical Resources, Lyonnaise des Eaux Dumez.
- Lyonnaise des Eaux Dumez. (1994b, March). *Enquetes Techniques* (Tech. Rep. No. Document 5). Beirut: Ministry of Hydraulic and Electirical Resources, Lyonnaise des Eaux Dumez.
- Lyonnaise des Eaux Dumez. (1994c, March). *Visites aux Directeur des Offices des Eaux* (Tech. Rep. No. Document 4). Beirut: Ministry of Hydraulic and Electirical Resources, Lyonnaise des Eaux Dumez.
- Lyonnaise des Eaux Dumez. (1995, February). *Evaluation des Besoins et Ressources en Eau du Liban - Etude Preliminaire* (Tech. Rep.). Beirut, Lebanon: Ministry of Hydraulic and Electirical Resources, Lyonnaise des Eaux Dumez.
- MacLeod, G. (2002). From urban entrepreneurialism to a "revanchist city"? On the spatial injustices of Glasgow's renaissance. *Antipode*, 34(3), 602–624. Retrieved 2014-04-01, from <http://onlinelibrary.wiley.com/doi/10.1111/1467-8330.00256/abstract>
- MacLeod, G. & Goodwin, M. (1999). Space, scale and state strategy: rethinking urban and regional governance. *Progress in Human Geography*, 23(4), 503.
- Maila, J. (1992). *The Document of National Understanding: a commentary* (No. 4). Oxford: Centre for Lebanese Studies.
- Majzoub, T. (1994). *Les fleuves du Moyen-Orient*. Paris: L'Harmattan.
- Makdisi, K. (2007). Towards a human rights approach to water in Lebanon: implementation beyond 'reform'. *Water Resources Development*, 23(2), 369–390. Retrieved 2014-03-25, from <http://www.tandfonline.com/doi/abs/10.1080/07900620701189434>
- Makdisi, S. (1997). Laying claim to Beirut: urban narrative and spatial identity in the age of Solidere. *Critical Inquiry*, 23, 664–705. Retrieved 2014-04-01, from [http://jft-newspaper.aub.edu.lb/reserve/data/arch331-mf-wk14/Makdis\\_Sareei-1997.pdf](http://jft-newspaper.aub.edu.lb/reserve/data/arch331-mf-wk14/Makdis_Sareei-1997.pdf)
- Makdisi, S. A. (2004). *The lessons of Lebanon*. London [u.a.]: Tauris.
- Makhoul, J. & Harrison, L. (2002). Development perspectives: views from rural Lebanon. *Development in Practice*, 12(5), 613–624. Retrieved 2014-03-25, from <http://www.tandfonline.com/doi/abs/10.1080/0961452022000017623>
- Mallat, H. (1997). *Le droit de l'urbanisme, de la construction, de l'environnement et de l'eau au Liban* (1st ed.). Bruylant, Delta, L.G.D.J.
- Mallat, H. (2003). *Le droit de l'urbanisme, de la construction, de l'environnement et de l'eau au Liban* (2nd ed.). Bruylant, Delta L.G.D.J.
- Margane, A. (2012a). *Environmental Risk Assessment of the Fuel Stations in the Jeita Spring Catchment* (Special Report No. 14). Raifoun: German Lebanese Technical Cooperatino Project of Jeita BGR.
- Margane, A. (2012b). *Quantification of infiltration into the Lower Aquifer (J4) in the Upper nahr Ibrahim Valley* (Advisory Service Document No. 1). Raifoun: German Lebanese Technical Cooperatino Project of Jeita BGR.

- Margane, A. (2012c). *Review of Feasibility Study for Janneh Dam* (Review). Raifoun, Lebanon: Bundesanstalt für Geowissenschaften und Rohstoffe/ Ministry of Energy and Water.
- Margane, A. (2013a). *Groundwater Vulnerability in the Groundwater Catchment of Jeita Spring and Delineation of Groundwater Protection Zones Using the COP Method* (Technical Report No. 7). Raifoun: German Lebanese Technical Cooperatino Project of Jeita BGR.
- Margane, A. (2013b). *Hydrogeology of the Groundwater Contribution Zone of Jeita Spring* (Technical Report No. 5). Raifoun: German Lebanese Technical Cooperatino Project of Jeita BGR.
- Margane, A. & Schuler, P. (2013). *Water Balance for the Groundwater Contribution Zone of Jeita Spring using WEAP* (Technical Report No. 6). Raifoun: German Lebanese Technical Cooperatino Project of Jeita BGR.
- Marston, S. A., Jones, J. P. & Woodward, K. (2005). Human geography without scale. *Transactions of the Institute of British Geographers*, 30(4), 416–432.
- Marston, S. A. & Smith, N. (2001). States, scales and households: limits to scale thinking? A response to Brenner. *Progress in Human Geography*, 25(4).
- Maternowski, E. (2006). *Die Wasserverteilungsproblematik zwischen Israel und Libanon am Beispiel des Hasbani/Wazzani Konflikts* (Unpublished doctoral dissertation). Universität Potsdam, Potsdam, Germany.
- Maternowski, E. (2009, February). *Local Private Sector Participation in the Lebanese Water Sector* (Tech. Rep.). Beirut, Lebanon: GTZ.
- Meguerditchian, V. (2012, February 16). *Beirut River mysteriously runs blood red*. Retrieved 2014-03-31, from <http://www.dailystar.com.lb/News/Lebanon-News/2012/Feb-16/163449-beirut-river-mysteriously-runs-blood-red.ashx>
- Merrey, d. J., Meinzen-Dick, R., Mollinga, P. & Karar, E. (2007). Policy and institutional reform: the art of the possible. In D. Molden (Ed.), *Water for food, water for life* (pp. 193–231). London and Colombo: Earthscan/International Water Management Institute. Retrieved 2014-04-15, from <http://bscw.ihe.nl/pub/bscw.cgi/S4afd6d5b/d2840581/5-Policy-Institution.pdf>
- MEW. (2010a). *National Strategy for the Wastewater Sector* (Tech. Rep.). Lebanon: Ministry of Energy and Water.
- MEW. (2010b, December). *National Water Sector Strategy* (Tech. Rep.). Lebanon: Ministry of Energy and Water.
- Mishra, N. (2010). *'A Watershed in Watershed Governance' Democracy and Depoliticization of Development in India*. Saarbruuecken: Suedwestdeutscher Verlag fuer Hochschulschriften.
- Mitchell, T. (2002). *Rule of Experts: Egypt, Techno-politics, Modernity*. Berkeley: University of California Press.
- MOA. (1999). *Agricultural Census* (Tech. Rep.). Beirut, Lebanon: Ministry of Agriculture.
- MOA. (2010). *Agriculture in Lebanon 2008–2009* (Tech. Rep.). Beirut, Lebanon: Ministry of Agriculture / Food and Agriculture Organisation.
- MOA/FAO. (2005). *Atals agricole du Liban* (Tech. Rep.). Beirut, Lebanon: Ministry of Agriculture / Food and Agriculture Organisation.
- MOE/UNDP/ECODIT. (2011). *State and Trends of the Lebanese Environment* (Tech. Rep.). Beirut, Lebanon: Ministry of the Environment / United Nations Development Programme.
- MOF. (2014). *Public Debt Time Series* (Tech. Rep.). Ministry of Finance. Retrieved 2014-03-06, from <http://www.finance.gov.lb/en-US/finance/PublicDebt/>

Pages/PublicDebtTimeSeries.aspx

- Molle, F. (2007, December). Scales and power in river basin management: the Chao Phraya River in Thailand. *The Geographical Journal*, 173(4), 358–373.
- Molle, F. (2008). Nirvana Concepts, Narratives and Policy Models: Insights from the Water Sector. *Water Alternatives*, 1(1), 131–156.
- Molle, F. (2011). Politique agraires et surexploitation de l'eau au Maghreb et au Machrek. In T. Dahou, M. Elloumi, F. Molle, M. Gassab & B. Romagny (Eds.), *Pouvoirs, sociétés et nature au sud de la méditerranée* (pp. 109–130). Paris: Karthala. Retrieved 2014-04-03, from <http://www.documentation.ird.fr/hor/fdi:010054974>
- Molle, F. & Berkoff, J. (2006). *Cities versus agriculture: Revisiting intersectoral water transfers, potential gains and conflicts* (Tech. Rep.).
- Molle, F., Foran, T. & Käkönen, M. (Eds.). (2009). *Contested waterscapes in the Mekong region: Hydropower, livelihoods and governance*. Earthscan.
- Molle, F. & Mollinga, P. P. (2003). Water poverty indicators: conceptual problems and policy issues. *Water Policy*, 5(5), 529–544.
- Molle, F., Mollinga, P. P. & Wester, P. (2009). Hydraulic Bureaucracies and the Hydraulic Mission, Flows of Water, Flows of Power. *Water Alternatives*, 2(3), 328–349.
- Molle, F., Wester, P. & Hirsch, P. (2010). River basin closure: Processes, implications and responses. *Agricultural Water Management*, 97(4), 569–577.
- Mollinga, P. P. (2008). Water, politics and development: Framing a political sociology of water resources management. *Water alternatives*, 1(1), 7–23. Retrieved 2014-03-26, from <http://www.ibcperu.org/doc/isis/8847.pdf>
- Mollinga, P. P., Meinzen-Dick, R. S. & Merrey, D. J. (2007). Politics, plurality and problemsheds: A strategic approach for reform of agricultural water resources management. *Development Policy Review*, 25(6), 699–719.
- Mollinga, P. P., Molle, F. & Meinzen-Dick, R. (2008). Water, Politics and Development: Introducing Water Alternatives. *Water Alternatives*, 1(1), 1 – 6.
- Mosse, D. (2003). *The Rule of Water: Statecraft, Ecology and Collective Action in South India*. New Delhi: Oxford University Press.
- Mosse, D. (2008, December). Epilogue: The Cultural Politics of Water – A Comparative Perspective. *Journal of Southern African Studies*, 34(4), 939–948. Retrieved 2013-04-12, from <http://www.tandfonline.com/doi/abs/10.1080/03057070802456847> doi: 10.1080/03057070802456847
- Muhanna, E. (2011). *Coup-Coup in Lebanon: Minister Baroud Resigns Over Telecoms-ISF Showdown*. Retrieved 2013-11-27, from <http://qifanabki.com/2011/05/27/coup-coup-in-lebanon-minister-baroud-resigns-over-telecoms-isf-showdown/>
- Muhanna, E. (2014). *Lebanon Spent Nearly Two of Last Four and a Half Years Without a Government*. Retrieved 2014-03-05, from <http://qifanabki.com/2014/02/02/lebanon-spent-nearly-two-of-last-four-and-a-half-years-without-a-government/>
- Murdoch, J. (1997). Towards a geography of heterogeneous associations. *Progress in Human Geography*, 21(3), 321.
- Naba, R. (1999). *Rafic Hariri: un homme d'affaires premier ministre*. Paris: Harmattan.
- Naccache, A. (1936). A la Recherche d'une Economie Nationale - L'eau, premier problem. *L'Orient*.

- Nahas, C. (2000). *Economic function of the Lebanese banking sector* (Tech. Rep.). Beirut, Lebanon. Retrieved 2013-04-18, from <http://beta.charbelnahas.org/?p=608>
- Nahas, C. (2009). The Lebanese Socio-economic System: 1985-2005. In L. Guazzone & D. Pioppi (Eds.), *Arab state and neo-liberal globalization : The restructuring of state power in the middle east* (pp. 125 – 157). Reading, GBR: Ithaca Press.
- Najem, T. P. (2000). *Lebanon's renaissance* (1. ed ed.). Reading: Ithaca Press.
- NDU, Harb, J., Yazigi, S., Abi Fadel, J. & Zind, Z. (2009). *The Study of Nahr el Kalb Watershed – Results* (Tech. Rep.). Louaize, Lebanon: Water Energy and Environment Research Center, Notre Dame University.
- Nehmeh, A. (2001). *Poverty and wealth disparities Lebanon*. Retrieved 2013-04-26, from <http://www.socialwatch.org/node/10767>
- Norman, E. S., Bakker, K. & Cook, C. (2012). Introduction to the Themed Section: Water Governance and the Politics of Scale. *Water Alternatives*, 5(1).
- Office of the Minister of State for Administrative Reform. (2001). *Strategy for the Reform and Development of the Public Administration in Lebanon* (Tech. Rep.). Beirut, Lebanon: Office of the Minister of State For Administrative Reform. Retrieved 2014-03-30, from [http://www.omsar.gov.lb/SiteCollectionDocuments/www.omsar.gov.lb/PDF%20Files/ICT%20Strategies%20and%20Master%20Plans/Strategy\\_Reform\\_and\\_Development\\_English.pdf](http://www.omsar.gov.lb/SiteCollectionDocuments/www.omsar.gov.lb/PDF%20Files/ICT%20Strategies%20and%20Master%20Plans/Strategy_Reform_and_Development_English.pdf)
- OFWAT. (2010). *Ofwat - About Ofwat - Who we are*. Retrieved 2013-08-08, from <http://www.ofwat.gov.uk/aboutofwat/structure/>
- Oger International. (1992, September). *Emergency Recovery Program Damage Assessment of Water Supply Engineering Works - Rapport de Synthèse* (Tech. Rep.). Beirut, Lebanon: Council for Development and Reconstruction, Oger International.
- OIEAU. (2008, May). *Towards a Mediterranean Information and Resource Network in the water sector (Mediterranean water knowledge hub) – Discussion Paper for IPEMED*. International Office for Water. Retrieved from [http://www.emwis.org/initiatives/mediterranean-union/IPEMED/annexe-1-creation-dun-centre-de-ressources-dans/download/1/IPEMed-AnnexOIEau\\_Water\\_Knowledge\\_Hub-MedEau\\_V8\\_29052008.1.pdf](http://www.emwis.org/initiatives/mediterranean-union/IPEMED/annexe-1-creation-dun-centre-de-ressources-dans/download/1/IPEMed-AnnexOIEau_Water_Knowledge_Hub-MedEau_V8_29052008.1.pdf)
- OIEAU. (2012). *Le Conseil d'Administration*. Retrieved 2014-04-27, from <http://www.oieau.fr/oieau/qui-sommes-nous/l-organisation-de-l-oieau-statuts/a/le-conseil-d-administration?lang=fr>
- Olanya, D. R. (2012). From Global Land Grabbing for Biofuels to Acquisitions of African Water for Commercial Agriculture. Retrieved 2014-04-28, from <http://www.diva-portal.org/smash/record.jsf?pid=diva2:569149>
- Pachauri, R. & Reisinger (Eds.). (2007). *Climate Change 2007: Synthesis Report* (Synthesis Report No. 4). Geneva, Switzerland: IPCC.
- Paulson, S., Gezon, L. L. & Watts, M. (2005). Politics, Ecologies, Genealogies. In S. Paulson & L. L. Gezon (Eds.), *Political ecology across spaces, scales, and social groups*. New Brunswick, NJ: Rutgers University Press.
- Peck, J. (2002, July). Political Economies of Scale: Fast Policy, Interscalar Relations, and Neoliberal Workfare. *Economic Geography*, 78(3), 331–360. Retrieved 2010-05-25, from <http://www.jstor.org.ezproxy.soas.ac.uk/stable/4140813> (ArticleType: primary\_article / Full publication date: Jul., 2002 / Copyright © 2002 Clark University)
- Peck, J., Theodore, N. & Brenner, N. (2009). Neoliberal Urbanism: Models, Moments, Mutations.

- SAIS Review of International Affairs*, 29(1), 49–66. Retrieved 2014-04-02, from [http://muse.jhu.edu/journals/sais\\_review/v029/29.1.peck.html](http://muse.jhu.edu/journals/sais_review/v029/29.1.peck.html) (<p>Volume 29, Number 1, Winter-Spring 2009</p>) doi: 10.1353/sais.0.0028
- Peet, R. (2003). *Unholy trinity: the IMF, World Bank and WTO*. Zed Books. Retrieved 2014-04-13, from [http://books.google.com/books?hl=en&lr=&id=jkPh9Hc96UAC&oi=fnd&pg=PR7&dq=peet+world+bank&ots=wpCSm2Lnm9&sig=Wli\\_gYWLszJR1Hk8\\_afTgpk0TEg](http://books.google.com/books?hl=en&lr=&id=jkPh9Hc96UAC&oi=fnd&pg=PR7&dq=peet+world+bank&ots=wpCSm2Lnm9&sig=Wli_gYWLszJR1Hk8_afTgpk0TEg)
- Petras, J. & Veltmeyer, H. (2001). *Globalization unmasked: Imperialism in the 21st century*. Zed Books.
- Petras, J. & Veltmeyer, H. (2002). Age of Reverse Aid: Neo-liberalism as Catalyst of Regression. *Development and Change*, 33(2), 281–293. Retrieved 2014-04-13, from <http://onlinelibrary.wiley.com/doi/10.1111/1467-7660.00254/abstract>
- Picard, E. (2002). *Lebanon, a shattered country: myths and realities of the wars in Lebanon* (Rev. ed. ed.). New York [u.a.]: Holmes & Meier.
- Postel, S. (1992). *The last oasis*. Earthscan.
- Purcell, M. (2003). Islands of practice and the Marston/Brenner debate: toward a more synthetic critical human geography. *Progress in Human Geography*, 27(3), 317–332. Retrieved 2014-04-14, from <http://phg.sagepub.com/content/27/3/317.short>
- Qassem, Q. (2013, February 21). Lebanon's Electoral Infidelity Law. *Al Akhbar English*. Retrieved 2013-04-18, from <http://english.al-akhbar.com/content/lebanons-electoral-infidelity-law>
- Reisner, M. (1993). *Cadillac Desert: The American West and Its Disappearing Water* (Rev. and updated ed.). New York, N.Y., U.S.A: Penguin Books.
- Reuters. (2006, October). *Lebanon's top Shi'ite cleric: UN force only protects Israel* *Israel News | Haaretz*. Retrieved 2014-04-28, from <http://www.haaretz.com/news/lebanon-s-top-shi-ite-cleric-un-force-only-protects-israel-1.201576>
- Riachi, R. (2013). *Institutions et régulation d'une ressource naturelle dans une société fragmentée: théorie et applications à une gestion durable de l'eau au Liban* (Doctoral dissertation, Grenoble, Grenoble). Retrieved 2014-03-28, from <http://www.theses.fr/s95311>
- Riachi, R. & Chaaban, J. (2010). *The Agricultural Sector in Lebanon Economical Features and Challenges* (Tech. Rep.). Beirut, Lebanon: American University of Beirut / University of Ottawa /IDRC.
- Robbins, P. T. (2003, November). Transnational corporations and the discourse of water privatization. *Journal of International Development*, 15(8), 1073–1082. Retrieved from <http://doi.wiley.com/10.1002/jid.1054> doi: 10.1002/jid.1054
- Saadeh, M. (2008). *Influence of overexploitation and seawater intrusion on the quality of groundwater in greater Beirut* (Doctoral dissertation, Universitätsbibliothek). Retrieved 2014-04-03, from <http://darwin.bth.rwth-aachen.de/opus/volltexte/2008/2205/>
- Sachs, W. (2010). *Development Dictionary, The: A Guide to Knowledge as Power* (2nd ed.). London; New York: Zed Books.
- Sakr, E. (2013, December 11). Blue Gold promises to monetize water wealth. *The Daily Star*. Retrieved 2014-04-06, from <http://www.dailystar.com.lb/Business/Lebanon/2013/Dec-11/240611-blue-gold-promises-to-monetize-water-wealth.ashx>
- Sanyu Consultants Inc. & Yachiyo Engineering Co. Ltd. (2003). *The Study on Water Resources Management Master Plan in the Republic of Lebanon - Interim Report - Main Report* (Tech. Rep.). Japan - Lebanon: Japanese International Cooperation Agency (CDR, MEW -

- Republic of Lebanon).
- Saravanan, V. S., McDonald, G. T. & Mollinga, P. P. (2009, February). Critical review of Integrated Water Resources Management: Moving beyond polarised discourse. *Natural Resources Forum*, 33(1), 76–86. doi: 10.1111/j.1477-8947.2009.01210.x
- Schimmelpfennig, A. & Gardner, E. H. (2008). *Lebanon-Weathering the Perfect Storms* (Vol. 8). International Monetary Fund.
- Schmidt, J. J. S. (2014). Historicising the hydrosocial cycle. *Water Alternatives*, 7(1), 220–234.
- Schuler, P. (2011). *Hydrological Balance of the Jeita Spring Catchment* (Master's Thesis). University of Jordan / Cologne University of Applied Science, Amman, Jordan/ Cologne, Germany.
- Sene, K. J., Marsh, T. J. & Hachache, A. (1999). An assessment of the difficulties in quantifying the surface water resources of Lebanon. *Hydrological sciences journal*, 44(1), 79–96. Retrieved 2014-03-25, from <http://www.tandfonline.com/doi/abs/10.1080/02626669909492204>
- Shaban, A. (2009). Indicators and aspects of hydrological drought in Lebanon. *Water resources management*, 23(10), 1875 – 1891. Retrieved 2014-03-25, from <http://link.springer.com/article/10.1007/s11269-008-9358-1>
- Sinha, S. (2008). Lineages of the Developmentalist State: Transnationality and Village India, 1900 – 1965. *Comparative Studies in Society and History*, 50(01), 57–90. Retrieved 2010-02-24, from <http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=1631940> doi: 10.1017/S0010417508000054
- Sklair, L. (2002). The Transnational Capitalist Class and Global Politics: Deconstructing the Corporate: State Connection. *International Political Science Review / Revue internationale de science politique*, 23(2), 159–174. Retrieved 2013-09-22, from <http://www.jstor.org/stable/1601254> doi: 10.2307/1601254
- Sklair, L. (2005). The Transnational Capitalist Class and Contemporary Architecture in Globalizing Cities. *International Journal of Urban and Regional Research*, 29(3), 485–500.
- Smith, J. (2012). The GDP Illusion: Value Added versus Value Capture. *Monthly Review*, 64(3), 86–102. Retrieved 2014-04-03, from <https://monthlyreview.org/2012/07/01/the-gdp-illusion>
- Smith, N. (1984). *Uneven Development: Nature, Capital, and the Production of Space*. New York, NY: Blackwell.
- Smith, N. (2008). *Uneven Development: Nature, Capital, and the Production of Space*. University of Georgia Press.
- Smyth, H. (2013). *Marketing the city: the role of flagship developments in urban regeneration*. Taylor & Francis.
- SOGESID. (2005, November). *Local Water Supply, Sanitation and Sewage Country Report Lebanon* (Tech. Rep.). EMWIS -Euro-Mediterranean Information System on Know-How in the Water Sector.
- Stewart, D. J. (1996). Economic recovery and reconstruction in postwar Beirut. *Geographical Review*, 487–504. Retrieved 2015-01-16, from <http://www.jstor.org/stable/215929>
- Summer, D. (2005). *Neo-liberalizing the city: Transitional investment networks and the circulation of urban images in Beirut and Amman* (Master's thesis). American University of Beirut, Beirut Lebanon.
- Swatuk, L. A. (2008). A Political Economy of Water in Southern Africa. *Water Alternatives*, 1(1), 24–47.

- Swyngedouw, E. (1992). Territorial organization and the space/technology nexus. *Transactions of the Institute of British Geographers*, 17(4), 417–433.
- Swyngedouw, E. (1997). Neither global nor local: 'glocalization' and the politics of scale. *Spaces of Globalization: Reasserting the Power of the Local*, 137, 140–42.
- Swyngedouw, E. (1999). Modernity and Hybridity: Nature, Regeneracionismo, and the Production of the Spanish Waterscape, 1890–1930. *Annals of the Association of American Geographers*, 89(3), 443–465.
- Swyngedouw, E. (2003). Privatising H<sub>2</sub>O Turning Local Water Into Global Money. *Journal für Entwicklungspolitik*, 19(4), 10–33.
- Swyngedouw, E. (2004a, April). Globalisation or 'glocalisation'? Networks, territories and rescaling. *Cambridge Review of International Affairs*, 17(1), 25–48. Retrieved 2013-04-12, from <http://www.informaworld.com/openurl?genre=article&doi=10.1080/0955757042000203632&magic=crossref||D404A21C5BB053405B1A640AFFD44AE3> doi: 10.1080/0955757042000203632
- Swyngedouw, E. (2004b). *Social power and the urbanization of water: flows of power*. Oxford; New York: Oxford University Press.
- Swyngedouw, E. (2005, March). Dispossessing H<sub>2</sub>O: the contested terrain of water privatization. *Capitalism Nature Socialism*, 16(1), 81–98. Retrieved 2013-04-12, from <http://www.informaworld.com/openurl?genre=article&doi=10.1080/1045575052000335384&magic=crossref||D404A21C5BB053405B1A640AFFD44AE3> doi: 10.1080/1045575052000335384
- Swyngedouw, E. (2006). Circulations and metabolisms:(hybrid) natures and (cyborg) cities. *Science as Culture*, 15(2), 105–121. Retrieved 2013-04-12, from <http://www.tandfonline.com/doi/abs/10.1080/09505430600707970>
- Swyngedouw, E. (2009, August). The Political Economy and Political Ecology of the Hydro-Social Cycle. *Journal of Contemporary Water Research & Education*, 142(1), 56–60. Retrieved 2014-04-13, from <http://onlinelibrary.wiley.com/doi/10.1111/j.1936-704X.2009.00054.x/abstract> doi: 10.1111/j.1936-704X.2009.00054.x
- The Daily Star. (1998a, August 11). Lebanon loses loans from other donors as World Bank pulls out. *The Daily Star*.
- The Daily Star. (1998b, September 28). Water confab opens as parched Middle East grows even drier. *The Daily Star*.
- The Daily Star. (1999a, August 30). Traboulsi: Water strikes were politically motivated. *The Daily Star*.
- The Daily Star. (1999b, September 21). Water unions threaten to pull plug on water supply. *The Daily Star*.
- The Daily Star. (1999c, June 24). Water workers strike to press pay demand. *The Daily Star*.
- The Daily Star. (2000a, June 23). Challenge to Privatization Law fails (news Brief). *The Daily Star*.
- The Daily Star. (2000b, August 18). Water works employees protest over short wages. *The Daily Star*.
- The Daily Star. (2001, December 6). Water workers protest against unpaid wages. *The Daily Star*.
- The Daily Star. (2002, July 3). Water union presses minister on entitlements, amalgamation (News Brief). *The Daily Star*.

- The Daily Star. (2011, December 30). *Qabbani to question cabinet over nation's water strategy*. Retrieved 2013-04-27, from <http://www.dailystar.com.lb/News/Politics/2011/Dec-30/158346-qabbani-to-question-cabinet-over-nations-water-strategy.ashx>
- The Daily Star. (2012, March 23). *Khalil: Majority of firms that sell drinking water are unlicensed*. Retrieved 2014-04-03, from <http://www.dailystar.com.lb/News/Lebanon-News/2012/Mar-23/167654-khalil-majority-of-firms-that-sell-drinking-water-are-unlicensed.ashx>
- The Daily Star. (2013a, May 8). Cement firms assure profits with state cover. *The Daily Star*. Retrieved 2013-05-13, from <http://www.dailystar.com.lb/Business/Lebanon/2013/May-08/216247-cement-firms-assure-profits-with-state-cover.ashx>
- The Daily Star. (2013b, July 26). MP slams ministry over Janna dam project. *The Daily Star*. Retrieved 2014-04-26, from <http://www.dailystar.com.lb/Business/Lebanon/2013/Jul-26/225110-mp-slams-ministry-over-janna-dam-project.ashx>
- The Daily Star. (2014, January 26). Bassil: Keeping Energy Ministry strategic for Christians. *The Daily Star Newspaper - Lebanon*. Retrieved 2014-03-06, from <http://www.dailystar.com.lb/News/Lebanon-News/2014/Jan-26/245327-bassil-keeping-energy-ministry-strategic-for-christians.ashx>
- Therese, S. (2006, September 16). Beirut tries to ease tensions, limit implications of 1701. *The Daily Star*. Retrieved 2014-04-28, from <http://www.dailystar.com.lb/News/Lebanon-News/2006/Sep-16/42839-beirut-tries-to-ease-tensions-limit-implications-of-1701.ashx>
- Tidiere, A. (2009). *Sanitation Needs and Management* (Tech. Rep.). Lebanon: Mediterranean Component of the EU Water Initiative.
- Townsend, J. G., Porter, G. & Mawdsley, E. (2004, November). Creating Spaces of Resistance: Development NGOs and their Clients in Ghana, India and Mexico. *Antipode*, 36(5), 871-889. Retrieved 2014-04-13, from <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8330.2004.00459.x/abstract> doi: 10.1111/j.1467-8330.2004.00459.x
- Traboulsi, F. (2007). *A history of modern Lebanon*. London [u.a.]: Pluto Press.
- Trottier, J. (1999). *Hydropolitics in the West Bank and Gaza Strip*. PASSIA, Palestinian Academic Society for the Study of International Affairs.
- Tvedt, T. (1998). *Angels of Mercy or Development Diplomats?: NGOs & Foreign Aid*. Trenton, NJ (USA): Africa World Press.
- Tvedt, T., Jakobsson, E. & Oestigaard, T. (Eds.). (2006). *A History of Water*. London: I. B. Tauris.
- UNDP. (1997). *Living Conditions of Households in Lebanon in 1997*. United Nations Development Program. Retrieved 2013-04-26, from <http://www.undp.org.lb/programme/pro-poor/poverty/povertyinlebanon/conditions97.cfm>
- UNDP/UNHabitat. (2010). *Investigating Grey Areas: Acces to basic Urban Services in the Adjacent Areas of palestinian Refugee Camps in Lebanon* (Tech. Rep.). Beirut, Lebanon: United Nations Development Programme /United Nations Human Settlements Programme (UN-HABITAT).
- UNHabitat. (2011). *Lebanon Urban Profile: a Desk Review Report* (Tech. Rep.). Beirut, Lebanon: United Nations Human Settlements Programme (UN-HABITAT).
- United Nations Development Programme. (2011). *Lebanon's second national communication to*

- the UNFCCC (Tech. Rep.). Beirut: Ministry of the Environment.
- USEK. (1998). *Congrès international sur l'eau : programme, Université Saint Esprit de Kaslik, 18–20 June 1998*. Kaslik, Lebanon: Université Saint Esprit de Kaslik. Retrieved 2014-03-28, from [http://funredes.org/agua/french/progent\\_fr.html](http://funredes.org/agua/french/progent_fr.html)
- Valdés, A. & Foster, W. (2010). Reflections on the role of agriculture in pro-poor growth. *World Development*, 38(10), 1362–1374. Retrieved 2014-04-03, from <http://www.sciencedirect.com/science/article/pii/S0305750X10001026>
- Van Eeghan, W. (1993a). *Lebanon Stabilization and Reconstruction Volume II: Sectoral annexes* (Tech. Rep. No. 11406-LE). Middle East and North Africa: World Bank.
- Van Eeghan, W. (1993b). *Lebanon Stabilization and Reconstruction Volume I: Text and Statistical Appendix* (Tech. Rep. No. 11406-LE). Middle East and North Africa: World Bank.
- Verdeil, E. (2002). *Une Ville Et Ses Urbanistes Beyrouth En Reconstruction* (Unpublished doctoral dissertation).
- Verdeil, E. (2006, December). Les enjeux spatiaux de la réforme au Liban. In *L'accès aux services urbains dans les villes libanaises*. Beirut, Lebanon: Lebanese University, Université Lyon 2.
- von Schnitzler, A. (2008, December). Citizenship Prepaid: Water, Calculability, and Techno-Politics in South Africa. *Journal of Southern African Studies*, 34(4), 899–917. Retrieved 2013-04-12, from <http://www.tandfonline.com/doi/abs/10.1080/03057070802456821> doi: 10.1080/03057070802456821
- Warner, J. (2008). Contested Hydrohegemony, Hydraulic Control and Security in Turkey. *Water Alternatives*, 1(2), 271–288.
- Warner, J. & Wester, P. (2002). River basin management reconsidered. In A. Turton & R. Henwood (Eds.), *Hydropolitics in the developing world: a southern african perspective* (pp. 61 – 71). African Water Issues Research Unit (AWIRU).
- Watts, M. & Peet, R. (2004a). Liberating Political Ecology. In M. Watts & R. Peet (Eds.), *Liberation ecologies: Environment, development, social movements* (2nd ed ed.). London: Routledge.
- Watts, M. & Peet, R. (Eds.). (2004b). *Liberation Ecologies: Environment, Development, Social Movements* (2nd ed ed.). London: Routledge.
- Wehbe, M. (2014, February 14). Beirut for the Rich Only: An Average of \$1m for a Residential Apartment. *Al Akhbar English*. Retrieved 2014-04-03, from <http://english.al-akhbar.com/content/beirut-rich-only-average-1m-residential-apartment>
- Wester, P. (2009, June). Capturing the waters: the hydraulic mission in the Lerma-Chapala Basin, Mexico (1876–1976). *Water History*, 1(1), 9–29. Retrieved from <http://www.springerlink.com/index/10.1007/s12685-009-0002-7> doi: 10.1007/s12685-009-0002-7
- World Bank. (1991). *Republic of Lebanon Recent Economic Developments and Emergency Rehabilitation and Technical Assistance Needs in Selected Priority Sectors* (Tech. Rep. No. 10126 - LE). Washington, D.C.: World Bank.
- World Bank. (1994). *Memorandum of the President of the IBRD to the Executive Directors on a Country Assistance Strategy of the World Bank Group for Lebanon* (Tech. Rep. No. 13085-LE). Beirut, Lebanon: World Bank.
- World Bank. (1998, November). *Urban Water and Wastewater Sector Note Public expenditure Review - Unpublished report* (Tech. Rep.). Washington, D.C.: World Bank.
- World Bank. (2001, January). *Lebanon - Coastal Pollution Control and Water Supply Project* (Tech. Rep. No. 21772). The World Bank. Retrieved 2014-

- 03-25, from <http://documents.worldbank.org/curated/en/2001/01/891724/lebanon-coastal-pollution-control-water-supply-project>
- World Bank. (2002, August). *Lebanon - Emergency Reconstruction and Rehabilitation Project* (Tech. Rep. No. 24728). Washington, D.C.: World Bank. Retrieved 2014-03-28, from <http://documents.worldbank.org/curated/en/2002/08/1997769/lebanon-emergency-reconstruction-rehabilitation-project>
- World Bank. (2003). *Lebanon: Policy Note on Irrigation Sector Sustainability* (Tech. Rep.). Washington, D.C.: World Bank. Retrieved 2013-05-12, from <https://openknowledge.worldbank.org/handle/10986/2727>
- World Bank. (2004). *Irrigation Rehabilitation and Modernization Project* (Tech. Rep. No. 27815). Washington, D.C.: World Bank. Retrieved from <http://documents.worldbank.org/curated/en/2004/05/3656370/lebanese-republic-irrigation-rehabilitation-modernization-project>
- World Bank. (2005, March). Lebanon : Public Expenditure Review, Reform Priorities for Fiscal Adjustment, Growth and Poverty Alleviation. Retrieved 2013-05-12, from <https://openknowledge.worldbank.org/handle/10986/8480>
- World Bank. (2006). *Technical Assistance for Revenue Enhancement and Fiscal Management* (Implementation Completion Report No. 36626). Washington, D.C.: World Bank.
- World Bank. (2007). *Making the Most of Scarcity: Accountability for Better Water management Results in the Middle East and North Africa* (Tech. Rep.). Washington, D.C.: World Bank. Retrieved from <https://openknowledge.worldbank.org/handle/10986/6845>
- World Bank. (2009, June). *Lebanon - Social impact analysis : electricity and water sectors* (Tech. Rep. No. 48993). Washington, D.C.: World Bank. Retrieved 2014-04-03, from <http://documents.worldbank.org/curated/en/2009/06/10842557/lebanon-social-impact-analysis-electricity-water-sectors>
- World Bank. (2010a). *Country Partnership Strategy for Lebanese Republic for the Period Fy11–Fy14* (Tech. Rep. No. 54690-LB). Washington, D.C.: World Bank.
- World Bank. (2010b, January). Lebanon Agriculture Sector Note : Aligning Public Expenditures with Comparative Advantage. Retrieved 2013-05-12, from <https://openknowledge.worldbank.org/handle/10986/12581>
- World Bank. (2010c, October). *Lebanon - Greater Beirut Water Supply Project* (Tech. Rep. No. 56341). Washington, D.C.: World Bank.
- World Bank. (2010d, May). Republic of Lebanon - Water sector : public expenditure review. Retrieved 2013-05-12, from <https://openknowledge.worldbank.org/handle/10986/2877>
- World Bank. (2012a, December). *Lebanon - Ba'albeck Water and Wastewater Project* (Tech. Rep. No. ICR1799). Washington, D.C.: World Bank. Retrieved 2014-03-25, from <http://documents.worldbank.org/curated/en/2012/12/17141251/lebanon-baalbeck-water-wastewater-project>
- World Bank. (2012b, April). Lebanon : Country Water Sector Assistance Strategy, 2012–2016. Retrieved 2013-05-12, from <https://openknowledge.worldbank.org/handle/10986/12622>
- Yousfi, H. (2011). LE PPP a l'épreuve des différences culturelles. Etude de cas du Liban. In A. Blanc & S. Botton (Eds.), *Services d'eau et secteur privé dans les pays en développement perceptions croisées et dynamique des réflexions*. Paris: Agence Française de Développement.
- Zeitoun, M. (2008). *Power and water in the Middle East: The hidden politics of the Palestinian-*

*Israeli water conflict*. IB Tauris.

- Zeitoun, M. & Allan, J. A. (2008, July). Applying hegemony and power theory to transboundary water analysis. *Water Policy*, 10(S2), 3. Retrieved from <http://www.iwaponline.com/wp/010S2/wp010S20003.htm> doi: 10.2166/wp.2008.203
- Zeitoun, M., Eid-Sabbagh, K., Dajani, M. & Talhami, M. (2012a). *Hydro-political Baseline of the Upper Jordan River* (Tech. Rep.). Beirut, Lebanon: Association of the Friends of Ibrahim Abd el Al.
- Zeitoun, M., Eid-Sabbagh, K., Dajani, M. & Talhami, M. (2012b). Hydro-political baseline of the upper Jordan River. *Association of the Friends of Ibrahim Abd el Al, Beirut*. Retrieved 2014-03-28, from [https://ueaeprints.uea.ac.uk/37960/1/UJR\\_HydroPol\\_Baseline\\_-\\_Executive\\_Summary\\_%5Bslim%5D\\_\(2012\).pdf](https://ueaeprints.uea.ac.uk/37960/1/UJR_HydroPol_Baseline_-_Executive_Summary_%5Bslim%5D_(2012).pdf)
- Zeitoun, M., Eid-Sabbagh, K. & Loveless, J. (2014). The analytical framework of water and armed conflict: a focus on the 2006 Summer War between Israel and Lebanon. *Disasters*, 38(1), 22 – 44. Retrieved 2014-03-28, from <http://onlinelibrary.wiley.com/doi/10.1111/disa.12039/full>
- Zeitoun, M., Eid-Sabbagh, K., Talhami, M. & Dajani, M. (2013). Hydro-Hegemony in the Upper Jordan Waterscape: Control and Use of the Flows. *Water Alternatives*, 6(1). Retrieved 2014-03-28, from <http://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=19650175&AN=90454881&h=EuTmyGjFLybjv0Jj4Wh0%2FScjC5IaG%2FvtbSXZhIdYFzPNcnwil0mSwopE89xAZr8mXalmPXExHbUSY4psdxkdxw%3D%3D&crl=c>
- Zurayk, R. (2011). *Food, farming, and freedom: sowing the Arab spring*. Charlottesville, Virginia: Just World Books.