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STRIVING FOR GOOD ENVIRONMENTAL INFORMATION:
CIVIC SENTINELS OF OIL POLLUTION IN THE SOUTH OF THE NORTH

Anna Berti Suman

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1

INTRODUCTION

Basilicata, a region located in the Southern part of Italy, is a European hub for oil extraction.¹ This has generated over time adverse impacts on the environment with no substantial benefits for the local economy, which remains one of the poorest in Europe, as demonstrated by Iacono² and by Pellegrini and others.³ In particular, Pellegrini and others studied how Basilicata's economy would have evolved in the absence of the oil extraction business (i.e. the comparison unit, developed using synthetic control techniques). They report negligible differences between current economic parameters in Basilicata and the comparison unit, suggesting that oil extraction had no detectable effect on improving Basilicata's economy. On the other hand, oil extraction led to serious environmental externalities, such as degradation of air, water, and soil quality.⁴ Ailments associated with oil extraction activities are reported by the local population and an increased mortality rate is registered around oil extraction sites

compared to other areas of the region.⁵ Inhabitants living in the surroundings of extractive sites frequently complain about oil pollution on agricultural land and oil-associated waste on private properties.⁶

In 2015, a group of local dwellers started carrying out forms of civic environmental monitoring, i.e., 'citizen sensing' activities, in order to collect evidence supporting their claims.⁷ These actors will be referred to in this piece as 'civic sentinels', i.e. local citizens acting as alerts reporting environmental problems from the ground. These activities can fall under the scope of broader 'citizen science', that is, the active engagement of lay people in scientific research.⁸ The local people also launched a crowdfunding campaign from below to financially sustain their analyses.⁹ The campaign, titled 'Analizziamo la Basilicata' ('Analyze Basilicata')¹⁰ collected hundreds of subscriptions in just a few

1 Cecilia Erba, 'Oil extraction in Italy and "collateral" damage' (Politheor, 21 March 2018) <<https://politheor.net/oil-extraction-in-italy-and-collateral-damage/>>.

2 Roberto Iacono, 'No blessing, No Curse? On the benefits of being a Resource-rich Southern Region of Italy' (2016) 70 *Research in Economics*. 348.

3 Lorenzo Pellegrini, Luca Tasciotti and Andrea Spartaco, 'A Regional Resource Curse? A Synthetic-control Approach to Oil Extraction in Basilicata, Italy' (2021) 185 *Ecological Economics* 107041.

4 Rosy Battaglia, 'Centro ENI in Val d'Agri: Cronaca di un disastro ambientale' (Valori, 13 May 2019) <<https://valori.it/centro-eni-in-val-dagri-cronaca-di-un-disastro-ambientale/>>.

5 In particular for the relation between the environmental degradation and population health impacts, see Comune di Viggiano e di Grumento Nova, 'Studi sul territorio e sulla popolazione dei comuni di Viggiano e Grumento Nova in Val d'Agri Progetto per la valutazione di impatto sulla salute' (2016) <www.comune.grumentonova.pz.it/docvar/Sintesi_VIS_VdA_092017.pdf>; Istituto Superiore di Sanità and Regione Basilicata, 'La descrizione del profilo di salute delle popolazioni della Val d'Agri attraverso lo studio dei dati sanitari correnti' (2015) <<http://cdca.it/wp-content/uploads/2016/04/Profilo-salute-popolazione-Val-dAgri-Dati-mortalit%C3%A0-e-ospedalizzazione-al-2010-rev-gennaio-2015-2.pdf>>.

6 Movimento Tutela Val Basento <<http://movimentovalbasento.altervista.org/>>, Cova Contro <<https://covacontro.org/>> and Libero Osservatorio Val d'Agri <<https://liberosservatoriovaldagri.wordpress.com/dati-2/>>.

7 'La campagna', Cova Contro <<https://covacontro.org/la-campagna/>>. For an English resource: Anna Berti Suman, 'Civic resistance to environmental failure from the South (...of the North): The Analyze Basilicata initiatives' (Data Active Blog, 14 December 2018) <<https://data-activism.net/2018/12/civic-resistance-to-environmental-failures-from-the-south-of-the-north-the-analyzebasilicata-initiative/>>.

8 Aisling Irwin, 'No PhDs Needed: How Citizen Science is Transforming Research' (Nature, 23 October 2018) <<https://www.nature.com/articles/d41586-018-07106-5>>.

9 'Analyze Basilicata', Open Collective <<https://opencollective.com/analyzebasilicata>>.

10 'La campagna', Cova Contro (n 7).

months. The funds were used by local citizens to purchase the equipment (e.g. sensors to detect radiations; drones; cameras; water analysis kits) for carrying out sampling in critical areas of the region and for performing chemical analyses.¹¹ Other measurements performed by the local sentinels instead did not require special equipment as they could be carried out with bare senses (e.g. smell, sight etc.).

This article adopts three analytical lenses to examine the said grassroots environmental activism in Basilicata. First, the ‘citizen sensing’ lens, analyses how communities crowdsource resources and skills to produce and share environmental information with peer citizens, authorities and the media. These activities, in turn, shape/realize new local and shared imaginaries and become a way to claim breaches of human environmental rights. The ‘citizen sensing’ dimension will be analysed across the article drawing on literature from citizen science and sensing, which will create part of the theoretical frame in which to insert the empirical findings. The case will be discussed as exemplary of a reactive form of citizen science (this is why this lens will also be qualified as ‘reactive’), drawing on the literature that contextualizes grassroots forms of citizen science as forms of social protests and resistance.¹²

Results from civic monitoring often triggered investigative reports from media, public prosecutors’ offices, and even official enforcement actions. While monitoring ‘from below’ is not new, the initiative is an example of an increasing trend of citizens who use the information they collected for (demanding) law enforcement. By doing so, the local volunteers show to have committed themselves to address regulatory failures on the ground and demonstrate the willingness to face the environmental conflict, rejecting a passive victim role. As it ‘appropriates’ governance modes to

stimulate interventions, civic monitoring can be regarded as a manifestation of a ‘regulatory pluralism’.¹³ New actors enter the environmental enforcement arena and, as noted by Gunningham and Sinclair, such interaction of different categories of regulatory instruments may end up being productive (e.g. enriching it with new sources of information) or counterproductive (e.g. undermining its legitimacy) for the whole governance system, yet bearing in mind the context specificity.¹⁴

The second analytical lens is therefore that of ‘regulatory pluralism’. This links to the work of Verbruggen, who builds on Black’s concept of ‘regulatory enrolment’¹⁵ and notes that, in a situation of regime complexity, ‘the capacity for regulatory governance is dispersed among a variety of actors, none of which holds such a central position in the regulatory arena that they can unequivocally determine outcomes’.¹⁶ The regulatory pluralism lens may help assessing the potential of initiatives like Analyze Basilicata to challenge traditional allocation of roles (i.e., the appointed institutions providing environmental information to the recipient citizens). Furthermore, the lens suggests questioning whether such initiatives can push for the recognition of a broader right – not only the right to access environmental information but also contribute to its formation.

A third analytical lens applied in this paper is that of ‘resource colonialism’. The region from which data and observations are drawn for the analysis is situated in Italy, a country in the Global North. However, its

¹¹ ‘Le analisi’, Cova Contro <<https://covacontro.org/le-analisi/>>. For a display of selected analysis on UMap see <https://umap.openstreetmap.fr/ja/map/analizziamo-la-basilicata_156088#9/40.5952/16.0785>.

¹² Christopher Kullenberg, ‘Citizen Science as Resistance: Crossing the Boundary between Reference and Representation’ (2015) 1 *Journal of Resistance Studies* 50.

¹³ Neil Gunningham and others, *Smart Regulation: Designing Environmental Policy* (Oxford University Press 1998).

¹⁴ Neil Gunningham and Darren Sinclair, ‘Regulatory Pluralism: Designing Policy Mixes for Environmental Protection’ in Peter S Menell (ed) *Environmental Law* (2nd edn, Ashgate Publishing Ltd 2002) 49, 50.

¹⁵ Julia Black, ‘Enrolling Actors in Regulatory Systems: Examples from UK Financial Services Regulation’ (2003) *Public Law* 63.

¹⁶ Paul Verbruggen, ‘Understanding the “New Governance” of Food Safety: Regulatory Enrolment as a Response to Change in Public and Private Power’ (2016) 5 *Cambridge Journal of International and Comparative Law* 418, 419.

structural inequalities demonstrate that the region, as is the case with many other areas in overall wealthy countries, can be better framed as ‘the south of the ‘Global North’. Existing studies have already linked environmental crises in the Global North to trends more common in the South of the world. For example, Clarke discusses water poverty in Flint and Detroit, Michigan, as having parallelisms with South African water struggles.¹⁷ In the case of Basilicata, the exploitative approach to local resources and land echoes trends frequent in particular in Latin America. Parallelisms can be identified between colonialism and resources extraction in certain areas of Europe and in Latin America, whereas this is more difficult with African countries as most of them only gained independence after a recent decolonisation process. Instead, Latin American countries gained independency earlier and share with Europe some features such as heavy industrialisation, the consequent loss of connection with land and traditional culture, the rise of nationalism, and large migration flows.

Notably, the founder of the Analyze Basilicata initiative, Giorgio Santoriello, in his book ‘Colonia Basilicata’ defines the region as a ‘colony’ making an evocative metaphor on how the land was colonized by the oil companies.¹⁸ The reality that Santoriello depicts demonstrates this sense of ‘being colonized’ by private (or semi-public) corporations. Under this lens, the need to preserve local resources also through local knowledge comes to the fore. Civic monitoring becomes a way to give back agency to local actors that felt deprived of it and to put their knowledge at the centre. The entitlement of local inhabitants to provide information and shape the knowledge base on which environmental decisions are based will be discussed here also in light of the consequent legal implications and adaptations needed.

The analysis of the data collected ultimately stresses the essential need that humans have to access (good)

information when faced with environmental distress, especially when they feel that their basic environmental rights, both substantial and procedural – as recognized by national constitutions and by international conventions – are being violated. In particular, the legal system provided by the United Nations Economic Commission for Europe (UNECE)’s Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, adopted in Aarhus, Denmark, in 1998 (above and hereinafter referred to as ‘the Aarhus Convention’)¹⁹ will be the key legal frame of this study.

This study also uncovers the emerging trend of civic actors using the information they collect, when they perceive that they cannot access – or trust – official/mainstream information, for demanding enforcement and for facing the conflict. Thus, it challenges existing civic rights in the environmental law realm to conceive new ones such as a ‘the right to contribute to environmental information’ when the official information is scarce or lacking, to be recognized as a fourth right under the Aarhus Convention.²⁰ The conclusion hints at the legal and social adaptations needed to ensure that civic monitoring can fulfil its aims in ‘extreme’ contexts such as in the case of frontline communities facing the oil industry. The article aims to stimulate a critical reflection on the need to reframe the current socio-legal approaches in relation to (production and access of) environmental information.²¹

17 Cristy Clark, ‘Race, Austerity and Water Justice in the United States’ in Farhana Sultana and Alex Loftus (eds), *Water Politics* 179 (Routledge 2019).

18 Giorgio Santoriello, *Colonia Basilicata (COVA Contro 2019)*.

19 Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (25 June 1998) 38 ILM 517.

20 A forthcoming analysis on this fourth right in juxtaposition with the evolving governance of environmental issues can be found in Anna Berti Suman and others, ‘When Concerned People Produce Environmental Information: A Need to Re-think Existing Legal Frameworks and Governance Models?’ (2022 forthcoming) *Citizen Science Theory and Practice*, Special issue on Citizen Science & the Law.

21 The analysis contained in an early version of this piece was discussed in occasion of the ‘Early Career Workshop: Critical Perspectives on Global Law and the Environment’ hosted by the School of Law and Human Rights Centre, University of Essex, April 2021.

2 METHODOLOGY & APPROACH

The article uses the outlined theoretical frame to analyse the primary data collected on site. It combines theoretical inquiry into relevant literature – from citizen science and sensing, regulatory pluralism, and colonialism – with a focus on a single case study, i.e., that of the civic sentinels in Basilicata, read through theory and through a legal framework based on human environmental rights, legal provisions and case law, in particular stemming from the Aarhus Convention framework. The study is interdisciplinary as it lays at the intersection of socio-legal studies, governance and regulatory theories, and complements literature review with ethnography.

The case analysis discusses first hand data and secondary data mostly obtained on site. These were collected during field visits as a researcher for the Sensing for Justice project (SensJus)²² in fall 2020 and in summer 2021.²³ The fieldwork entailed: (1) site visits with civic actors from the Analyze Basilicata initiative; (2) interviews with local dwellers (mostly, farmers and shepherds) both structured and while shadowing them on site; (3) participant observations of civic monitoring activities on site mostly conducted by the Analyze Basilicata initiative; (4) interviews with local people that were knowledgeable of the case, e.g. for having performed research/inquests on it, or having a professional role in handling the problem (e.g. scientists, medical doctors, policy-makers from the local environmental protection agency, lawyers, journalists); (5) communication in the form of email exchanges, physical interviews and phone calls with environmental and human rights associations and

non-governmental organizations that deal with the studied or adjacent issues in Basilicata.²⁴ During fieldwork that took place in summer 2021, also spokespeople from one of the main oil companies present on the region could be consulted in person, specifically on their consideration towards civic environmental monitoring. This article however focuses on the drives that move the civic sentinels. The overarching question that guided the empirical research is why some civic actors (and only some) react to environmental stressors through forms of grassroots-driven monitoring, as a way to resist to extractivism. The study also explores how the affected local dwellers are using own senses and sensing tools to detect environmental issues and push for law enforcement by the competent authorities. The data collected enrich the piece with the struggles, motivations and goals of such civic sentinels, i.e., in short their shared imaginaries.

The information in the case study description mainly draws on field diaries. Those passages adopt to a certain extent a story-telling approach, but connecting back the quotes to the theoretical lenses of analysis. The approach adopted is mainly inductive, making inferences based on observations on site, and connecting them to theoretical knowledge. Being on site enriched the research with insights into the daily lives of the sentinels and their lived experiences of inhabiting drilled lands. The observed actors were selected through a ‘snow-balling’ approach, i.e., starting from a core theme and from there searching for key actors who in turn provided further contacts. This approach has the limitation of not being fully representative of the actors and context studied.

Presence in the field also enabled the collection of a number of supporting documents including references to lawsuits, scientific studies, and statements as well as ongoing initiatives from local civil society organizations, which - mostly - have not been directly

22 Sensing for Justice - SensJus <<https://sensingfor-justice.webnode.it/>>.

23 The SensJus project and this specific field research in Basilicata received ethical clearance by the Research Ethics Board (REB) of the European Commission Joint Research Centre in August 2020. Field notes and recordings (taken in Italian) can be made available upon request contacting the author.

24 In particular ReCommon <www.recommon.org/en/>; Source International <www.source-international.org/>; ASud <<https://asud.net/>>; Movimento Tutela Val Basento <<http://movimentovalbasento.-altervista.org/>>; Libera Val d’Agri <<https://www.facebook.com/liberavaldagriottaviadeluise/>>; and Osservatorio Popolare per la Val d’Agri <<https://www.facebook.com/osservatoriopopolarevaldagri/>>.

used for the present analysis and rather served for introducing the context and for future research.

3

THE CASE STUDY THROUGH THE LEGAL AND ANALYTICAL LENSES

3.1 Citizen Sensing and Environmental Human Rights

Existing literature has started analyzing the possible intersections of broader environmental citizen science (and more specifically citizen sensing) with the legal system. In particular, an emerging scholarly discussion revolves around the citizen science interplay with the rights granted under the Aarhus Convention,²⁵ with environmental justice,²⁶ and with law enforcement by appointed agencies.²⁷ Furthermore, literature mostly from the US has dealt with the legal implications of civic monitoring and more in general of volunteered geographic information.²⁸ If on one side citizen sensing can be a way of claiming and enforcing (existing and even new) rights, on the other side participants may be exposed to liability associated with exercising the entitlement to monitor the land, as the case of Basilicata shows. Under this perspective, the recognition of civic monitoring as a legitimate contribution to the system (in the suggested form of

a ‘right to contribute to environmental information’) could shield the sentinels against possible legal risks, such as the Strategic Lawsuits Against Public Participation, particularly frequent in the U.S.²⁹

It is worth stressing that also in the Global North (thus including Basilicata), the sentinels can be at risk of legal consequences for performing ‘undesired’ data collection. This has been witnessed in the field. One day, during a visit to the headquarters of a local newspaper in Basilicata, a journalist affirmed: ‘Silence is the self-protection of the citizens who are afraid of losing their job, social support, or retaliation’. However, the journalist also pointed to a way out. ‘Recognizing the right to contribute to environmental information would legitimise the action of investigative journalists and citizens acting as informers’. On the visited newspaper’s headquarters, yikes (such as crosses) made by unknown individuals appeared overnight as intimidation. Other sentinels recounted defamation claims they have to face for having published inconvenient data on public and social media. These and others are the consequences that the sentinels may face and for which a recognition of the legitimacy of civic monitoring is needed.

As the case study analysis demonstrates, the local sentinels are already able to ‘read’ and strategically use existing legal provisions. For example, an activist from a local organisation encountered during fieldwork mentioned to have filed appeals to the regional and European Ombudsman, and to have performed numerous consultations of the European Pollutant Release and Transfer Register, indicating a proactive use of the tools offered by the Aarhus Convention. Thus, a new right eventually recognized under the Aarhus framework could concretely boost and support the sentinels’ actions.

25 Anna Berti Suman, *The Policy Uptake of Citizen Sensing* (2021b Edward Elgar); Anna Berti Suman, ‘Citizen Sensing from A Legal Standpoint: Legitimizing the Practice under the Aarhus Framework’ (2021a) 18 *The Journal of European Environmental Planning and Law* 8.

26 Muki Haklay and Louise Francis, ‘Participatory GIS and Community-based Citizen Science for Environmental Justice Action’ in Jayajit Chakraborty and others (eds), *The Routledge Handbook of Environmental Justice* 298 (Routledge 2018).

27 Bailey Smith, *Agency Liability Stemming from Citizen-Generated Data* (Policy Memo Series 3, The Wilson Center).

28 Andriy Rak and others, ‘Legal Liability Concerns Surrounding Volunteered Geographic Information Applicable to Canada’ in Abbas Rajabifard and David Coleman (eds), *Spatially Enabling Government, Industry and Citizens* 129,135 (GSDI Association Press 2012).

29 The term SLAPP refers to lawsuits aimed at punishing civil society advocates, community leaders, whistleblowers, journalists, and ordinary people that speak out against the establishment. For more information on SLAPP litigations, visit <<https://www.protecttheprotest.org/category/resource-categories/what-is-slapp/>>. For an ongoing EU initiative aims to protect journalists and human rights defenders in SLAPPs, visit <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13192-EU-action-against-abusive-litigation-SLAPP-targeting-journalists-and-rights-defenders_en>.

In terms of citizen sensing as an exercise of rights, the practice can be regarded as a manifestation of claims based on the right to live in a healthy environment and the right to access environmental information.³⁰ This mention to alleged breaches of existing environmental human rights was frequently witnessed during field work. Such rights at stake are enshrined – among the others – respectively in Articles 1, 4 and 5 of the Aarhus Convention. The said provisions are complemented by the Kyiv Protocol on Pollutant Release and Transfer Registers (PRTRs), in force as of 2009, mandating the establishment of coherent, nationwide records of pollution release and transfer. Interestingly, the outcomes of the last Meeting of the Parties (MoPs), the main governing body of the Aarhus Convention) endorsed civic monitoring and broader citizen science as supportive of the realization of the Convention's goals. In particular, such an endorsement was inserted in the Strategic Plan for the Convention's Parties for 2022-2030; the Recommendations on the more effective use of electronic information tools; and the Addendum to the Recommendations.³¹

The European Union (EU) and its Member States³² are parties to the Aarhus Convention since May 2005.³³ The EU has recognized the rights and principles enshrined in the Convention in a series of legal interventions. In particular, the right to information's pillar was implemented through the enactment of Directive 2003/4/EC on public access to environmental information.³⁴ The public participation pillar was instead recognized by Directive 2003/35/

EC³⁵ providing for public participation in respect of the definition of certain plans and programmes relating to the environment. The Directive at hand amended the Environmental Impact Assessment Directive (85/337/EEC)³⁶ which later became Directive 2014/52/EU,³⁷ and the Integrated Pollution Prevention and Control Directive (96/61/EC)³⁸ which later became the Industrial Emissions Directive (2010/75/EU).³⁹ Provisions for public participation in environmental decision-making are also contained in numerous other directives, such as Directive 2001/42/EC on the assessment of certain plans and programmes on the environment⁴⁰ and Directive 2000/60/EC establishing a framework for Community action in the field of water policy, i.e., the 'Water Framework Directive'.⁴¹

The mentioned EU legal interventions made the Aarhus Convention judicially reviewable in domestic courts. The Court of Justice of the EU (CJEU) has often expanded this reviewability, in particular dealing with claims based on the right to access environmental information. The decision of 16 December 2010 by the CJEU in the proceeding opposing the Dutch environmental NGO, Stichting Natuur en Milieu

30 Anna Berti Suman (2021a) (n 25) 30.

31 See respectively <https://unece.org/sites/default/files/2021-08/ECE_MP.PP_2021_22_E.pdf>; <https://unece.org/sites/default/files/2021-08/ECE_MP.PP_2021_20_E.pdf>; and <https://unece.org/sites/default/files/2021-08/ECE_MP.PP_2021_20_Add.1_E.pdf>.

32 For an insight into the right of access to environmental information (framed as 'passive access') in the Italian legal system, see Emanuele F Rosi Grippaudo, 'The Right of Access to Environmental Information in the Italian Legal System' (2020) *Diritto e Processo* 309.

33 Decision on conclusion of the Aarhus Convention by the EC (17 February 2005) No. 2005/370/EC.

34 Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information, repealing Council Directive 90/313/EEC.

35 Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment, amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC.

36 Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment. OJ L 175, 5.7.1985, pp. 40-48.

37 Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment Text with EEA relevance.

38 Council Directive 96/61/EC of 24 September 1996/61 concerning integrated pollution prevention and control.

39 Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) Text with EEA relevance.

40 Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment.

41 Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

(Foundation Nature and Environment) and others to the Dutch College voor de toelating van bestrijdingsmiddelen (Board for the authorization of plant protection products and biocides) is remarkable under this aspect.⁴² The plaintiffs challenged a decision of the Dutch government setting a new threshold for the maximum permitted residue level for a certain pesticide on or in lettuce, as requested by the company Bayer. They asked the government to provide them with all the information which formed the basis for the decision. The Dutch College rejected the request based on confidentiality provisions in the Law on Pesticides of 1962. The applicants responded bringing an action against the decision before the Dutch College, which requested to the CJEU a preliminary ruling. The Court ruled (paras. 42, 43, operative part 1 of the decision) that the information at issue regarded elements of the environment which may affect human health, thus falling within the scope of Article 2 of the Directive 2003/4/EC.⁴³

This encompassing interpretation of Article 2 of the Directive seems applicable to citizen sensing as the data collected through these initiatives may not directly capture the consequences of certain contaminants or pollution on human health, but rather provide information on environmental factors that can affect human health.⁴⁴ Therefore, the information produced by the monitoring citizens could – through an interpretative effort – fall under environmental information complementary to that held by public authorities, when such authorities fail or struggle to properly disclose or provide environmental information. Consequently, the guarantees of Article 2 may be extended to the case of environmental data coming from the grassroots for peer citizens and for member states. This reasoning can also support the argumentation that lay people can legitimately produce environmental information to integrate official environmental reporting, and that such information could be ‘covered’ by the Aarhus Convention.

42 CJEU, *Stichting Natuur en Milieu and Others v College voor de toelating van gewasbeschermingsmiddelen en biociden* [2010] C-266/09, EU:C:2010:779.

43 More information on the case in Court of Justice of the European Union, Fact Sheet: Public Access to Environmental Information (2017), 4-5 <https://curia.europa.eu/jcms/upload/docs/application/pdf/2018-05/fiche_thematique_-_environnement_-_en.pdf>.

44 Anna Berti Suman (2021a) (n 25) 23.

Information for the grassroots could fill institutional environmental reporting gaps which occur often. Recently, ClientEarth published a legal guide titled ‘Access to justice in European Union Law’ with the aim to assess the implementation of EU environmental policies and regulation in the European environmental sector.⁴⁵ The guide denounces that EU provisions and the case law of the EU Court of Justice are not applied and respected consistently throughout the Union. Interestingly, the text reads: ‘Relying only on appointed public authorities to overcome the implementation deficit will not yield the needed results, therefore facilitating the intervention of civil society (...) is essential to support or even substitute actions from governmental actors’.

The insertion of a fourth right under the Aarhus Convention – which would then become binding for its signing Parties – could practically be proposed (and then voted) during one of the recurring Meetings of the Parties (MoPs). In recent MoPs, the role of the civic contribution to enforcing the Convention has been already recognized. The amendment could set the conditions (e.g. quality of the data, systematic modalities of data collection, adherence to protocols, existence of official reporting gaps) under which the data produced by lay people are to be considered by authorities for interventions and incorporated in their official monitoring and reporting portals.

3.2 Imaginaries and Resistance in Citizen Sensing Practices

3.2.1 Citizen Sensing for Shared Imaginaries

Citizen sensing – i.e., a distinctive manifestation of broader citizen science – can be regarded as a form of environmental monitoring performed primarily by lay people using their own senses (sight, smell etc.) or low cost/home-made sensors, often functional to advance civic claims.⁴⁶ De Albuquerque and de Almeida

45 ClientEarth, *Access to Justice in European Union Law - A Legal Guide on Access to Justice in Environmental Matters* (Edition 2021) <<https://www.clientearth.org/latest/documents/access-to-justice-in-european-union-law-a-legal-guide-on-access-to-justice-in-environmental-matters-edition-2021/>>.

46 For a definition of citizen sensing, see Anna Berti Suman, *Sensing the Risk. A Case for Integrating Citizen Sensing into Risk Governance* (Open Press TiU 2020).

inspected the ‘encounter’ between two dimensions that citizen sensing entails: that of scientific inquiry, and that of the emersion of counter-hegemonic views and more inclusive information spaces.⁴⁷ The authors develop a reflection on the ambivalent effects of citizen sensing which could either generate empowerment but also instrumentality (to the aims of e.g. ‘academic scientists’ or government actors). This lens, understandable in principle, is rejected here as it recreates a dichotomy between expert and lay knowledge that should be overcome. In fact, the distinctive case of citizen sensing in Basilicata explored here demonstrates that citizen sensing can be ‘instrumental’ but not only to external actors, serving also own claims of the local community. It also shows how local dwellers became experts by doing, as noted below.

Citizen sensing brings the promise to include in the debate over environmental matters (such as the governance of the risks associated with oil extraction) local epistemologies traditionally excluded from the scientific and decisional arena.⁴⁸ On one side, ‘knowledge equity’ (or, in other words, epistemic justice), that is, the valorisation of local wisdom on a given matter is promoted by citizen sensing as more ‘knowledges’ enter the debate and can enrich it with multiple perspectives of affected actors. On the other side, an openness paradox may arise because, to actively participate in civic monitoring for a person who never participated in science before, can be very challenging as it entails, for example, understanding how a research is carried out or what are the scientific protocols to follow.⁴⁹ Nonetheless, in the case discussed, the local citizens, mainly farmers, breeders and shepherds,

became ‘experts by experience’, that is, they became proficient in civic monitoring out of daily practice and of need.

The sentinels also resist a so-called ‘environmental amnesia’, citing Kahn,⁵⁰ i.e., the trend to forget the status of the environment before human intervention. Kahn refers to this idea that each generation perceives the environment into which s/he is born, ‘no matter how developed, urbanized or polluted, as the norm’.⁵¹ Therefore, ‘each generation comes to think of as ‘nature’ is relative, based on what they are exposed to’.⁵² In light of this phenomenon, meaningful interactions with nature – for example through citizen sensing – can become a way to (re)connect to and (re)define the natural world, also recognizing its transformations.⁵³ Under this viewpoint, citizen sensing becomes part of a larger and complex ecosystem where the civic monitoring is intertwined with the perception of nature, traditional practices and with social relations. In Basilicata, the land where this research is situated, the encounter between distinct epistemic communities takes place, each bringing stakes, imaginaries and desires, which converged in the shared need to assess the transformations of the surroundings.

The inhabitants of Basilicata with their traditions, knowledge and beliefs retain a unique wisdom. The degradation of the land will inevitably affect local culture. Authors exploring this relation through anthropological methods stressed how environmental issues need to be addressed making use of traditional ecological knowledge which can be ‘captured’ into data sets through civic monitoring or broader forms of citizen science. This knowledge can and should be placed in dialogue with scientific processes and policy interventions to address challenges experienced by local

47 João Porto de Albuquerque an. André Albino De Albuquerque, ‘Modes of Engagement: Reframing ‘Sensing’ and Data Generation in Citizen Science for Empowering Relationships’ in Alice Mah and Thom Davies (eds), *Toxic Truths: Environmental Justice and Citizen Science in a Post Truth Age* 268 (Manchester University Press 2019).

48 Brian Wynne, ‘May the Sheep Safely Graze? A Reflexive View of the Expert-Lay Knowledge Divide’ in Scott Lash, Bronislaw Szerszynski and Brian Wynne (eds), *Risk, Environment and Modernity* 45 (Sage 1996).

49 Discussion in occasion of the conference ‘Knowledge for Change: A decade of Citizen Science in support of the SDGs’, panel ‘Exploring human-nature-relations: Citizen Science in the Anthropocene’, Berlin and virtual, October 2020.

50 Peter H Kahn, ‘The Child’s Environmental Amnesia - It’s Ours’ (2007) 17 *Children, Youth and Environments* 199.

51 See Kahn’s work cited in Kim Eckart, ‘What Counts as Nature? It All Depends’ (UW News, 15 November 2017) <www.washington.edu/news/2017/11/15/what-counts-as-nature-it-all-depends/>.

52 *ibid.*

53 *ibid.*

communities.⁵⁴ As recently the Covid-19 pandemic demonstrated, the need for close collaborations between science, policy, business and society in addressing complex societal issues is ever more pressing.

Scientific and institutional environmental monitoring often leaves concerning gaps and missing data, especially for daily environmental injustices suffered by remote communities. A study from the 'Extreme Citizen Science' team at University College London argues that 70 per cent of the world's land exploitation impacts on local people are not officially recorded and therefore alternative, non-traditional sources of data are urgently needed.⁵⁵ The idea is that participation in environmental knowledge production should 'reach' and benefit not only those communities already well resourced (for example, in terms of media and political visibility) but also less visible fringes of society, such as local farmers, enacting a form of 'extreme' (or reactive) citizen science.⁵⁶

(Global) environmental battles can start from the monitoring conducted by the local civic sentinels on the ground, which are often the most disproportionately affected by environmental harms.⁵⁷ Science-society mediation spaces for fair engagement of communities are fundamental to have their voices emerge. Also participants with limited textual and technological literacy (as some participants in the case

of Analyze Basilicata) should be able to take part in civic environmental monitoring if they wish to. Only this way, these practices can actually be inclusive of the multiple stakes at issue and realize both social and environmental justice outcomes. This article focuses on the argument that citizen sensing enhances the ability of citizens to exercise both substantial and procedural environmental rights, especially those recognized by the Aarhus Convention. Yet, the exercise of these rights can also indirectly contribute to realize social justice expectations.

3.2.2 Reactive Civic Monitoring in the Case Study

Fieldwork in Basilicata demonstrated that the essence of a civic sentinel is represented by the local dwellers that just use their bare human senses (e.g. smell, sight...) or – when needed – low cost sensors to detect environmental stressors around them. This can be regarded as what theoretically framed above as reversing the 'environmental amnesia', citing Kahn.⁵⁸ The sentinels then situate the data collected on maps which become a form of communicating local issues (often on the internet through their web pages).



Figure 1 - The torch of an oil extraction site dominating the countryside. Suspicious flames have been reported by the residents - Corleto, October 2020

54 Raffaella Fryer-Moreira and Jerome Lewis, 'Methods in Anthropology to Support the Design and Implementation of Geographic Citizen Science' in Artemis Skarlatidou and Muki Haklay (eds), *Geographic Citizen Science Design: No One Left Behind* 89 (UCL Press 2021) 87-104.

55 Marcos Moreu, 'Whose Land? Whose Map? Land Use Mapping by Land Users in the Digital Earth Era' (UCL Excites, 4 May 2020) <<https://uclexcites.blog/2020/05/04/webinar-whose-land-whose-map-land-use-mapping-by-land-users-in-the-digital-earth-era/>>.

56 For successful examples of civic monitoring in rural areas making wise use of local knowledge, see the experience of Citizen Observatories and their Communities of Practice, We Observe <www.weobserve.eu/cops/>.

57 Meredith Minkler and others, 'Promoting Environmental Justice through Community-based Participatory Research: The Role of Community and Partnership Capacity' (2008) 35 *Health education & behavior: the official publication of the Society for Public Health Education* 11.

58 Kahn (n 51).

Another aspect that emerges from the literature discussed and witnessed during fieldwork is civic monitoring as a form of resistance to a system that tries to deprive local inhabitants of their agency and of their ability to gather evidence, while affecting their human rights.

This was witnessed in the field when – after being tailed by the private security of an oil company – a public armed force stopped us as we observed an anomalous leak of what looked like crude oil into a local stream. We were on public land, carrying out research and information activities. With us, two civic sentinels were collecting water samples still on public land to then run independent analyses. We felt treated as if we were doing something forbidden. The public police did not register the anomalous leak which could have represented a danger for public health. An activist and journalist who was travelling with us said: ‘They treat us as if we are terrorists, even when we are only doing our job of gathering and providing information’.

A couple of shepherds we met a few days later said with frustration: ‘The police forces here are playing the strong with the weak and the weak with the strong’. A farmer added: ‘I can persevere in my battle only as I have no family’. That intimidating atmosphere accompanied our journey. This highlights the importance of not letting the civic sentinels stay isolated from society and of having both scientists and legal support in their help. Society needs the civic sentinels to monitor and report local problems, but the civic sentinels in turn need support from appointed scientists, institutions and the public opinion to persevere in their actions.

3.3 Regulatory Pluralism and Citizen Sensing

3.3.1 The Sentinels as Alerts of the System

Civic monitoring has been regarded earlier in this piece as a manifestation of ‘regulatory pluralism’.⁵⁹ The local sentinels thus enter the environmental enforcement arena, as in the case of Basilicata where they often became alerts for environmental protection agencies

and public prosecutors. On this complex arena, appointed institutions lose their monopoly and regulatory governance is dispersed among a variety of actors, as a form of ‘regulatory enrolment’.⁶⁰ In this context, the sentinels can come to the fore bringing their unique knowledge and first-hand data to orient regulatory and enforcement interventions. In doing so, they can become part of the driving forces that ‘destabilize’⁶¹ the hegemonic system underpinning the ‘oil complex’, that is, the whole socio-political system behind the oil industry.⁶²

Building on Grasso’s category of ‘agents of destabilisation’,⁶³ citizen sensing can be considered as embodying a contemporary form of social movements. The monitoring individuals organized in communities and associations of concerned dwellers can be seen as a form of unstructured social movements,⁶⁴ that to date have been scarcely considered in their potential to influence (environmental) law and policy-making. Yet they do voices environmental claims that could shape decisions, and should be recognized in the regulatory system, starting from granting them their entitlement to monitor the environment under the form of a new right.

Citizen sensing can be understood as ‘a social tipping point intervention’⁶⁵ or, in other words, a small, situated series of actions that can trigger larger and rapid behavioural, social and institutional changes. Such practices are still largely underrepresented in existing social orders and in the law. Appointed institutions should start taking into account these

⁵⁹ Gunningham and others (n 13).

⁶⁰ Black (n 15) 63.

⁶¹ Marco Grasso, *From Big Oil to Big Green. Holding the Oil Industry to Account for the Climate Crisis* (MIT Press 2022).

⁶² Michael J Watts, ‘Righteous Oil?: Human Rights, the Oil Complex, and Corporate Social Responsibility’ (2005) 30 *Annual Review of Environment and Resources* 373.

⁶³ Grasso (n 61).

⁶⁴ Anna Berti Suman, Sven Schade and Yasuhito Abe, ‘Exploring Legitimization Strategies for Contested Uses of Citizen-generated Data for Policy’ (2020) 11 *The Journal of Human Rights and the Environment* 74.

⁶⁵ Ilona M Otto and others, ‘Social Tipping Dynamics for Stabilizing Earth’s Climate by 2050’ (2020) 117 *Proceedings of the National Academy of Sciences* 2354.

informal social movements and their role in contributing to environmental information. Regulatory pluralism literature already stressed the need to rely on a mix of regulatory instruments coming from different actors for the sake of environmental protection.⁶⁶ Arguably, also civic monitoring should be allowed a place at the regulatory and broader governance table.

In the literature, some advances are made in this sense, as studies on the impact of environmental data flows from below on institutional environmental governance are multiplying.⁶⁷ Also in the grey literature some forms of recognition are visible. For example, the opening statement of Chapter 40 of Agenda 21, the outcome document of the United Nations Conference on Environment and Development from 1992, reads: 'In sustainable development, everyone is a user and provider of information considered in the broad sense. That includes data, information, appropriately packaged experience and knowledge'.⁶⁸

3.3.2 Regulatory Pluralism in the Case Study

Research in this field suggests that local inhabitants of Basilicata feel no resentment neither towards other citizens who decided to work for the oil companies nor towards these companies themselves. Instead, they are disappointed by the State that has not protected them and their land. They feel and recount a regulatory and enforcement void. 'We are a people without a father: the institutions use the system to hide the situation or just remain silent', one farmer said. The local sentinels often contest the appointed institutions' (lack of) interventions based on their monitoring and manifest distrust towards the way the oil issue and related information are managed in the region.

Instead, a surprising trust in science and research was witnessed. The sentinels see researchers from academia and scientists willing to help them as potential 'allies' that could fill the void left by the absence of state intervention. Despite the many studies and analyses that have been carried out in the region, the local people are always keen on helping researchers and scientists. They do this by collecting samples of water, soil and even liver from sheep and cattle (as in our fieldwork), to assess presence of hydrocarbons in the environment and in organisms.

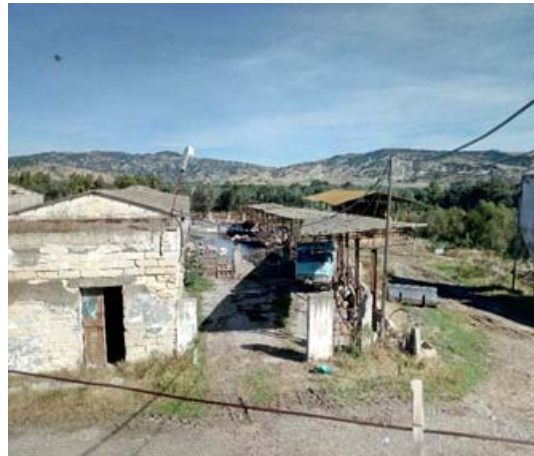


Figure 2 - Breeding centre once famous for the production of ricotta, now in a state of abandonment for the detection of carcinogenic substances in local waters and soil - Pisticci Scalo, October 2020.

The willingness to investigate of the sentinels, as well as their expertise on local matters, are impressive. They are able to demonstrate, based on the analyses they performed, violations of environmental standards. They also claim violation of their right to be provided with proper information on the status of the environment and recognize to be competing sources of information for fellow citizens, for scientists and for the same institutions, which overturns traditional allocation of roles.

Furthermore, the local sentinels still seem to have faith in the judicial system, despite the lengthiness of such court proceedings. The sentinels in the field told us that they understand little about the law, but have

⁶⁶ Gunningham and Sinclair (n 14) 50.

⁶⁷ Bio Innovation Service, Citizen Science for Environmental Policy: Development of an EU-wide Inventory and Analysis of Selected Practices (European Commission, DG Environment); George Wyeth and others, 'The Impact of Citizen Environmental Science in the United States' (2019) 3 *The Environmental Law Reporter* 10237.

⁶⁸ United Nations Conference on Environment and Development, Agenda 21 <https://sustainabledevelopment.un.org/content/dsd/agenda21/res_agenda21_40.shtml>.

relied on lawyers who confront the oil industries in the courtrooms.⁶⁹ Interestingly, the judicial power seems becoming another competing actor in the complex system of environmental governance in Basilicata. On their side, the citizens have not fully ‘delegated’ their demands of environmental justice to the courts. Beyond monitoring, they actively follow the court hearings in which at times they are involved as plaintiffs.

Lastly, the sentinels mostly showed to trust the European Union (EU) system. A farmer informed us about the carbon credits that could be earned through European funds if Basilicata preserved its trees and the unexplored potential of ecotourism. In addition, he knew and wished to resort one day to the European Court of Human Rights. This suggests that the intervention of supra-national actors is still seen as potentially effective and desirable in this complex governance ecosystem.

Yet, in a more recent (fall 2021) interaction with a civic sentinel from Basilicata, the person noted that the initiative (Analyze Basilicata) struggles to find support in EU’s actions for citizen science. For example, the sentinel noted that small-scale initiatives such as Analyze Basilicata cannot aim to funding (that often support larger citizen science projects) such as Horizon 2020 and now Horizon Europe programs. They would rather need (and could aim to) smaller amounts, repeated over time with a light administrative effort entailed. Small-scale cascade funding stemming from

EU programs at the moment seems the most accessible funding avenues for such initiatives.

The sentinel also shared their difficulties in voicing their claims and concerns to competent EU institutions, such as the European Environmental Agency. They perceive that it is hard for small local associations to exercise pressure on EU bodies compared to (oil) multinationals that can count on lobbyists in Brussels. They also do not feel represented by supranational citizen science associations such as the European Citizen Science Association, which mostly represents recognized and often well-established forms of civic monitoring. This suggests the advisability to establish a representation of such localized and small-scale, counter-system initiatives such as Analyze Basilicata, for example through a ‘union’ that could unite and voice their instances in private and public (institutional and international) fora. All this also suggests a differential access to the Aarhus participation avenues for civil society, being the smaller grassroots initiatives often in a disadvantaged position and likely less able to contribute to the formation of environmental information within institutional processes. This reinforces the above cited ClientEarth’s findings on the unsatisfactory implementation of environmental law and its participatory resorts in the EU.

3.4 Sentinels Resisting Resources Colonialism



Figure 3 - Drawing made during fieldwork displaying a breeder wondering why he found some abandoned oil barrels on his field

⁶⁹ Ongoing court cases include a lawsuit filed against Eni Basilicata, the ‘Petrogate’ case, for an alleged environmental disaster charge according to the 2015 Italian Environmental Criminal Code, and a case against Total Basilicata, the ‘Totalgate’ case, dismissed under the statute of limitations, for an alleged charge of illicit pushes to farmers to give away their lands at a reduced price.

3.4.1 Extractivism, Colonialism and Civic Monitoring

Another lens that proved to be relevant to analyse field data is the relation between resources extractivism and a colonial approach to resources-rich land. Sassen identifies this approach in the multiform 'extractivistic' strategies through which capitalism operates.⁷⁰ The way oil extraction was often deployed in Basilicata can be viewed as a manifestation of such resource colonialism. What has been framed as the 'extensive eco-violence of the neoliberal international order'⁷¹ can be juxtaposed with the fight of the local sentinels to re-appropriate land, information, resources and even rights and enforcement mechanisms. As recently affirmed by Bonney and Danielsen, civic monitoring has proved to be an effective strategy to claim rights over the land in different contexts and especially for the most disadvantaged populations.⁷² In doing so, the sentinels are not alone but they converge with other forms of social movements equally fighting for environmental preservation.

The sentinels of Basilicata in their fight for the land resemble the social mobilization of farmers ('campesinos') communities in the Global South.⁷³ Parallels can be developed between the attitude of care for the land of the sentinels and that of the campesinos, who enacted 'multispecies relations of care and conviviality in opposition to modern extractivist development through the concept of *buen vivir*'.⁷⁴ Both actors embody 'grassroots collective life projects' (which resemble the above-discussed shared imaginaries) and shape 'rights "from below" to support new practices of territorialisation that further

materialize natures' rights and community ideals'.⁷⁵ This reminds what a sentinel in the field described as the 'historical environmental memory' of the local community which can translate into a form of 'environmental intelligence' influencing decisions when needed.

Santoriello, in his book 'Colonia Basilicata' defines his land as having been colonized by the oil industries that gained political control over the region, occupying and exploiting it. He denounces how those people that try to resist this extractive trend – acting as civic sentinels – are isolated from a figurative 'army'.⁷⁶ He speaks of pollution that it is not only environmental but also of the institutions and of the complicit local society (a 'moral pollution').⁷⁷ One of the main manifestations of what Santoriello frames as institutional pollution is the recurring incomppliance with the Aarhus Convention in Basilicata.⁷⁸ He affirms that participation and transparency in environmental matters would instead be the best antidote against colonization and malfeasance.⁷⁹ Citing Saviano, author of the book 'Gomorra', Santoriello affirms that in such contexts 'knowing, understanding becomes an essential need to consider oneself a living being',⁸⁰ and this is why the civic sentinels turn to action.

3.4.2 Colonialism in the Case Study

The local sentinels in the field talked about their concerns for carcinogenic substances found in their waters and lands, stressed that their complaints were often left unheard, mentioned forced expropriations, and described sites to be cleaned up that have been waiting for long with no remediation. Local people are divided between who want to denounce and those who remain silent and oppose those who denounce. The social fabric is fragmented and captured by external interests. This reality can be read through the lens of colonialism⁸¹ and capitalism, implying violence, destruction, and appropriation.⁸² It also suggests daily breaches of environmental human rights, from the

70 Saskia Sassen, 'A Savage Sorting of Winners and Losers: Contemporary Versions of Primitive Accumulation' (2010) 7 *Globalizations* 23; Saskia Sassen, 'At the Systemic Edge: Expulsions' (2016) 24 *European Review* 89.

71 Anna Grear, 'Editorial: Decolonizing Rights: Strategies and Directions' (2021) 12 *Journal of Human Rights and the Environment* 143.

72 Bioscience Talks <<https://bioscience-talks.aibs.org/episodes/empowering-communities-through-local-monitoring>>.

73 Rosemary Coombe and David Jefferson, 'Posthuman Rights Struggles and Environmentalisms from Below in the Political Ontologies of Ecuador and Colombia' (2021) 12 *Journal of Human Rights and the Environment* 177.

74 *ibid* 177.

75 *ibid*.

76 Giorgio Santoriello (n 18) 169.

77 *ibid* 159.

78 *ibid* 176.

79 *ibid* 178.

80 *ibid* 215.

81 Grear (n 71) 173.

82 Sassen (n 70) 90.

right to health to that of accessing environmental information.

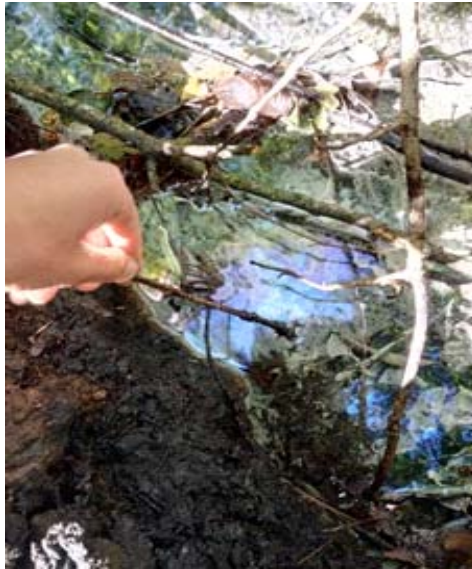


Figure 4 - Hand of a civic sentinel indicating an oily iridescence in the waters of a stream - Val d'Agri, October 2020

The sentinels recounted to perform environmental monitoring as they are worried for their own health. Many suffered health consequences from the contamination of their lands. Monitoring for them was a way not only to 'protest' against contested environmental agendas but also to care about their own health and to affirm their right to live in a healthy environment. Furthermore, as the affected inhabitants struggle to prove that their health conditions are associated with environmental exposure, civic monitoring became a way to gather evidence.

The sentinels in the case studied also have to come to terms with socio-economic conflicts between rights to health and to a healthy environment, and the economic development of a region (which is not always achieved in the end, as stressed earlier). People encountered during fieldwork experienced this trade-off between preserving the health of their families and of their animals, and the need to earn a wage to survive. Such tensions show that civic monitoring can embody social dilemmas that transcend the environmental dimension.

When on site, local inhabitants in those areas most affected by oil extraction illustrated the correlations that have been found in official studies between the onset of cancers, cardiorespiratory and neurological diseases, and the proximity to extractive or disposal sites.⁸³ They also noted the frequent presence of hydrocarbons in drinkable water.⁸⁴ Often such impacts occur on flourishing agricultural realities as Basilicata is a land with great potential for tourism. One farmer interviewed affirmed: 'I want what I am legally entitled to. It's my land, they took it away from me', referring to how the oil company contaminated their fields making them valueless. The farmer said that he feels alone. There are those who closed their business, those who moved elsewhere, and there are those who continue to produce in spite of everything and sell to large distribution chains, also because – citing what a breeder said – 'the law does not mandate to look for heavy metals in milk. If the law does not compel me, why do I have to look for such metals?' Therefore, they survive but are heartened not to have children to whom to pass the farm. This shows implications not only for human environmental and health rights but also for people's chances to develop their economic initiatives.

The juxtaposition between civic monitoring and colonialism also shows that citizen science is not always a peaceful cooperation between stakeholders for environmental research or interventions, as it is often depicted by authors.⁸⁵ Based on what recounted by the sentinels, the main barriers that the civic sentinels face is the opposition of the local companies (for example through surveillance of private security) and of the competent authorities (by means of not disclosing data or being reluctant to intervene, among the others). This silencing and intimidation reminds

83 Comune di Viggiano e di Grumento Nova; Istituto Superiore di Sanità and Regione Basilicata (n 5).

84 Among the others, see <http://movimentovalbasento.altervista.org/idrocarburi-diffusi-valbasento-anomalie-nellacqua-potabile-pisticci/?doing_wp_cron=1597641515.4504959583282470703125>. Local dwellers founded the 'Movimento Tutela Valbasento' in 2018 to defend health, environmental and work conditions of the people living in the Basento Valley, an area highly affected by the disposal of oil waste.

85 Lea Den Broeder and others, 'Citizen Science for Public Health' (2018) 1 Health Promot Int. 505.

the ‘eco-violence’ above-theorized and the tensions between (oil) capitalism and community interests.

Embracing the literature that conceptualize citizen science as resistance,⁸⁶ this analysis suggests that it is important to also research citizen science in conflictive and precarious situations, where the civic sentinels are exposed to risks both for their environmental exposure and for the potential threats associated with civic monitoring. Under this perspective, forms of legal protection granted to environmental defenders (as for example provided by the Escazú Agreement, the Aarhus Convention counterpart for Latin America and The Caribbean)⁸⁷ would be particularly desirable. Recognizing ‘a right to contribute’ to environmental information, also through civic monitoring, could shield participants against adverse legal effects as witnessed in the field, such as threats or legal actions against the civic sentinels.

4

CONCLUDING REFLECTIONS

The article aims as a first step to shed light on why people start monitoring. Field observations and interviews demonstrated that citizens are engaging with civic monitoring practices for two main reasons. First, this engagement manifests an essential need to access accurate and reliable information when faced with environmental stressors that directly affect them. Second, they do so as they perceive that they cannot access – or trust – the information that is provided by appointed institutions, or because this information lacks altogether. Furthermore, it resulted that their monitoring is essentially aimed to trigger a response. The gathering of data per se unveils the intention to stimulate an intervention from the competent authorities. The local sentinels do not have to replace

authorities, but through their actions can push them to act.

When the response does not come (in a timely manner), the conflict may escalate to the media or street protests, and even to court. Delivering a swift and targeted intervention by authorities in response to the issues spotted by the citizens may mitigate or even prevent the conflict. Under this perspective, civic monitoring initiatives could be viewed as a way to give competent institutions an opportunity to spot an environmental problem and potential conflict before it escalates. This demonstrates that citizen sensing needs an (institutional) response. Thus, as there are ‘watchful’ citizens, there also need to be authorities ready to engage in a two-directional communications with the concerned people. The regulatory pluralism lens introduced above helped framing this conclusion.

Furthermore, this study shows that civic monitoring has a strong component of resistance and contestation of the status quo. It ultimately expresses distrust towards institutions and/or their handling of environmental issues. However, people on the ground may perceive distrust towards local authorities, and instead trust institutions at a different administrative level. For example, some of the participants encountered showed trust in the judicial system and in EU institutions while manifesting strong distrust towards the local government. This may suggest that these trusted institutions should turn their eyes to the sentinels and listen to their demands, possibly playing the role of ‘mediators’ between civil society and the distrusted institutions. This conclusion was driven by the reactive civic monitoring lens of analysis adopted.

Moreover, in terms of how these people monitor, I could witness that the civic sentinels acting under the Analyze Basilicata initiative are constantly ‘on the alert’ to spot local environmental problems. If they find one, they search official data on the problem and, if these data are missing, inaccurate or inaccessible to civil society, the sentinels will run cross-check measures on the area. In case they identify a discrepancy between official data (when these are there) and their measurements, they first communicate the results to other potentially affected local people and share them through their (social) media channels. Then, they may file a formal notification to the competent

⁸⁶ Kullenberg (n 12) 50.

⁸⁷ Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean, adopted at Escazú, Costa Rica, on 4 March 2018.

environmental agency or to the public prosecutor office. In alternative, they first notify the problem to the relevant institutions and then reach the media. The choice of one or the other strategy depends on the matter at issue, its sensitivity and public concern. Such decisions often also entail legal considerations and strategic uses of existing legal resorts.

The sentinels act at times spontaneously and at times in response to a request from other concerned citizens. Rarely, are they approached by institutions requesting measurements. In general, the feedback that the initiative receives mostly comes from interested citizens rather than from the responsible institutions. The civic sentinels are, for the majority, not experts in environmental monitoring. However, they trained themselves, and benefit from the help of experts on how to collect sampling and analyse data. They also rely on accredited laboratories where they send their samples for analyses that they are not able to perform. The data collection varies, from water, soil, air and radiation monitoring to food and animal organs analyses. All the data are complemented with local wisdom and experience. This all forms a unique knowledge pool that can be very valuable both for peer citizens and institutions, which could fall under the qualification of 'environmental information' as recognized by the Aarhus Convention.

This article suggests that the study of civic monitoring in rather 'extreme' contexts is relevant for understanding citizen sensing in all its manifestations. The present study gives account of the struggles that local people who engage in civic monitoring in conflictive contexts may face, interrogates why some people do it and others do not, and what are the sentinels' hopes as well as frustrations. Citizen sensing resulted to be an act of resistance against extractive approaches to the land, which reminds struggles often witnessed in the (Global) South. What such struggles have in common is also the experience of a colonial approach to resources' extraction, which was witnessed in the field and which emerges from Santoriello's book 'Colonia Basilicata'.⁸⁸ In such 'extreme' contexts, being a civic sentinel (as well as being an environmental activist) can be dangerous. Civic monitoring, under this perspective, can be regarded as a form of civil

disobedience aimed at claiming rights and challenging existing power dynamics.

The risks that the civic actors face are relevant for the discussion on legal entitlements: who is entitled to monitor the environment? Should we conceive a 'right to contribute to environmental information'⁸⁹ when the official information is scarce or lacking? This legal concept – despite still utopian at the moment – could eventually ensure that the civic sentinels can legitimately perform their activities.⁹⁰ Legal recognition, however, can be beneficial but also challenging for the sentinels, especially in contexts of conflict and distrust. Indeed it may sound counterintuitive to ask distrusted states, the same that fuel extractivism and silence environmental defenders, to add yet another right and legal layer. Would that be really transformative? Recognition by super partes entities such as international organizations or even court arenas, such as, as said, the Aarhus Convention Meeting of the Parties, or even the Permanent Peoples' Tribunal, could be considered possible alternatives.

This study posits that, despite the conceivable difficulties to recognize legally the practice, the civic sentinels need legal support and recognition (also through the granting of a 'right to contribute to environmental information') to structurally engage in environmental monitoring. Moreover, trusted channels to exchange information among civic actors and between citizens and institutions should be established, including trusted and safe data management and data sharing infrastructures. These infrastructures could even result in being spaces for mediating the environmental conflict, starting from a shared knowledge base.

Lastly, academics from various fields, among which environmental sciences, governance, justice and social movements studies, and established organizations such as environmental non-governmental organizations should consider supporting with their research on-the-ground communities formed around

⁸⁸ Santoriello (n 18).

⁸⁹ Anna Berti Suman (2021a) (n 25); Anna Berti Suman, 'Citizen Sensing: Towards A Right to Contribute to Environmental Information' (Tilburg University Environmental Law Blog, 20 May 2020). <<https://blog.uvt.nl/environmentallaw/?p=443>>.

⁹⁰ Berti Suman, Schade and Abe (n 64) 91.

localized environmental issues which, however, mirror global struggles. Situated studies on the engagement of local citizens affected by environmental issues can ultimately enrich larger environmental and social justice debates. The presence of watchful academics in the field can also help the sentinels to not feel alone and isolated.

In conclusion, this study has hopefully fuelled a reflection on the collection of environmental data by concerned citizens as entangled with rights claims. Civic monitoring is never an end in itself but is a means to an end, that is, the goal of denouncing and investigating violations of human environmental rights (and, in certain cases, also of social and economic rights) and achieving environmental justice. The very crucial and still open avenue is exactly researching what happens when this data becomes evidence to ground civic claims and to demonstrate environmental harms.

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