The governmentality of corporate (un)sustainability: the case of the ILVA steel plant in Taranto (Italy)

Alessandro Lai, Silvia Panfilo & Riccardo Stacchezzini

Journal of Management and Governance

ISSN 1385-3457
Volume 23
Number 1

J Manag Gov (2019) 23:67-109
DOI 10.1007/s10997-019-09457-1

Springer

Journal of Management and Governance (2019) 23:67–109
https://doi.org/10.1007/s10997-019-09457-1

The governmentality of corporate (un)sustainability: the case of the ILVA steel plant in Taranto (Italy)

Alessandro Lai[1] · **Silvia Panfilo**[2] · **Riccardo Stacchezzini**[1]

Published online: 23 February 2019

Abstract

The present research aims to investigate the role of states in governing the sustainability trajectories and decisions of companies and their local communities. Drawing on Dean's (Governmentality: power and rule in modern society, SAGE, London, 2009) "analytics of government" as the theoretical framework, the paper focuses on detecting how the Italian Government "problematised" the sustainability-related risks associated with the ILVA steel plant in Taranto, whose levels of pollution have worried both the Italian authorities and the European Union Commission. The analysis also considers the "regimes of governance" under which the risks have been addressed and then explains the "utopian ideal" that the Italian Government tried to achieve by allowing the company to continue its activity, contrary to the Italian Judiciary's provision to halt the hot working area of the steel plant in July 2012. Patterns related to Dean's framework were identified through an iterative process of manual elaborative coding of the official documents ascribable to the main actors involved in governing the sustainability-related risks at ILVA. The findings show that the Italian Government took its decisions on ILVA in the name of relevant risks of unemployment, economic development and territorial competitiveness. The Italian Government adopted several practices of governance to make these risks more "visible" and to silence the environmental and health risks that, otherwise, would have emphasised the unsustainability of the business activities. The paper extends the growing body of research that investigates corporate (un)sustainability practices by showing how states may directly influence sustainability-related corporate risks in the name of a higher public interest.

Keywords Sustainability · Governmentality · Analytics of government · Social and societal risks · ILVA S.p.A. · Steel plant · State intervention

✉ Alessandro Lai
alessandro.lai@univr.it

Extended author information available on the last page of the article

1 Introduction

Companies are increasingly confronted with managing the expectations of a society that is ever more alert to the health and environmental risks associated with economic development (Benn and Dunphy 2007; Gouldson and Bebbington 2007; Wilshusen and MacDonald 2017). It has been widely recognized that the conventional relationship between environmental concerns and corporations has been openly antagonistic for a long while, and that a move towards new perspectives has been claimed (Adams 2008, p. 121). Effectively, since the 1990 s, change has been taking place in crude opposition to company activities, even by those most concerned about environmental matters. Swapping to a more sustainable production is inevitable, and to make that move at a convenient time is in the interest of individual corporations (Adams 2008, p. 122). The issue is not only environmental, as the sustainability issue is not related just to these matters, but widens to encompass the social and economic needs of modern societies, considering that companies have a social responsibility towards their territories, where they assure wealth and development for people and for future generations (Hart 1997, p. 75). However, sustainability will only rarely, if at all, coincide with corporate boundaries (Gray and Milne 2004). For this reason, political and public concern over corporate sustainability is growing (Adams 2008). Actors involved in sustainability may include experts, governments at various levels (international organizations, national government, and local government), companies, professional groups, employers' associations and citizens. A need for governance thus emerges:

> Governance for sustainability can be defined as formal and informal interactions among actors, and systems composed by them, that influence sustainability by integrating its different dimensions. It asks for knowledge integration as a means to deal with multiple dimensions of sustainability and uncertainty. Having knowledge of the inherent risks to be tackled is necessary for sustainability. Without some kind of knowledge and information about risks it is not possible to initiate action for sustainability. In general, risks to be tackled for sustainability are also multifaceted (Shiroyama et al. 2012, p. 46).

Indeed, various tradeoffs among risks must be considered in governing for sustainability (Graham and Wiener 1995) so that the sustainability concept is increasingly being translated into notions of risks (Bulkeley et al. 2013). Depending on the framing of risks, the range of actors involved in sustainability varies (Shiroyama et al. 2012). For instance, much of the risk related to environmental and social degradation associated with the economic development driven by corporations has been externalised to communities and governments have frequently been complicit in this process (Benn and Dunphy 2007). The state usually *"intervene[s] only as a regulator of last resort where issues are of such significance that guarantees are needed or where other forms of regulation fail"* (Gouldson and Bebbington 2007, p. 7). When the state intervenes as regulator

in situations of corporate unsustainability, it may face tensions between the need to encourage or enable risk-taking behaviour for economic purposes, and the need to regulate the associated risks for health or environmental purposes (Meadowcroft et al. 2005). These tensions are exacerbated by the competitive pressures that are unleashed by globalization and liberalization (Bulkeley et al. 2013).

Prior research (Bulkeley 2005; Lawhon and Patel 2013; Whitehead 2006) highlights that the framing of sustainability risks is a matter of politics. Given the tremendous ambiguity associated with the assessments of sustainability dimensions, state actions toward sustainability will be determined by the extent to which risk is socially constructed. Thus, the role of states in corporate sustainability governance will be likely determined through struggles for discursive hegemony among actors with incentives to present alternative definitions of the sustainability risks (Frickel and Davidson 2004, p. 94). Further, in the context of sustainability governance, there is a need for interaction among experts of many integrated fields and stakeholders who have different knowledge about various risks (Scholz 2011).

Prior studies investigate governance for sustainability to understand the actions that governments and other social actors have undertaken to deal with the interconnections among different dimensions of sustainability. Distinguishing between social and societal kind of risks, Asenova et al. (2015) help categorize the different dimensions of sustainability. On the one hand, social risks are related to socio-economic disadvantages for society, e.g. unemployment, national economic decline and international competitiveness. On the other hand, societal risks refer to environmental and health issues. Most of the research examines the ways in which risks are *individually* governed by single actors, i.e. a state, a local community, or a company (see Gouldson and Bebbington 2007; Tait and Chataway 2007; Gouldson et al. 2007; Phillimore et al. 2007; Power 2007). The present research takes a difference stance and focuses on the role of the state in "governing" the sustainability trajectories and decisions of companies and local communities.

The research draws on the case of the ILVA steel plant in Taranto, whose social and societal impact has not solely caused concern to Italian society and authorities for more than two decades. Given its size and the amount of pollution that the factory has produced, as well as evidence of high cancer rates in the nearest neighbouring districts, the case has also received significant attention from the EU institutions, and echoed worldwide. Such a controversial situation was highlighted by the Italian Judiciary's order to halt the "hot working area" of the steel plant. The stoppage was due to a level of pollution above the limits, and to evidence of causality between ILVA's activities and the contamination of flocks of sheep, as well as evidence of higher cancer rates in the districts nearest to the plant. Four months after the Judiciary's decision, the Italian Government allowed the company to restart its activities, declaring the steel plant site as a "Strategic National Interest Site". This meant that the governance of corporate sustainability risks faced by the ILVA steel plan was strongly influenced by the Italian Government, which finally gave ILVA a license to operate despite the high societal risks related to its activities.

Drawing on Dean's (2009) model for the analysis of governance systems (the so-called "analytics of government"), the research particularly outlines the system of governance under which the social and societal risks faced by the ILVA steel plant

were "governed" by the Italian Government. Dean's approach to the Foucauldian concept of governmentality particularly helps in elucidating the "invisible rationality" that lies behind the system of risk governance as well as the techniques that make these systems of risk governance operable. Indeed, as argued by Russell and Frame (2013, p. 103), a governmentality approach helps "illuminate the complexities surrounding sustainability issues". An interpretative stance guided by Dean's theoretical lens is adopted to interpret data collected from official documents ascribable to the main actors involved in governing the sustainability related risks of ILVA (e.g. governmental speeches and legislative acts, Judiciary verdicts, environmental scientific appraisals). A theoretically-informed narrative is then developed accordingly (Auerbach and Silverstein 2003, p. 121).

To the best of the authors' knowledge, no prior study has yet investigated the role of the state when corporate (un)sustainability involves simultaneously contrasting sustainability dimensions (i.e. social vs. societal risks). The study deals with issues that are important not only for Italy but also for numerous developing countries that have to deal with multinational companies poisoning their environment in the name of progress. Thus, the results may also empirically offer contributions to similar contexts around the world. The current study also contributes to the calls for additional investigations of the role of nation states in regulating corporate risks (Gouldson and Bebbington 2007; Russell and Frame 2013). In line with Bebbington and Unerman (2018), the paper also contributes to the limited accounting research (e.g. Russell and Thomson 2009; Spence and Rinaldi 2014) engaged in questions of how governance for sustainability takes place and the role played in this context by calculative practices (Miller 2001), hereafter intended as the variety of techniques for calculating social and societal risks.

The paper proceeds as follows: Sect. 2 contextualizes the analysis. Section 3 outlines the theoretical framework on which the study relies, while Sect. 4 presents the methodology. Section 5 presents the major findings in accordance with the theoretical framework. Finally, Sect. 6 discusses the findings and Sect. 7 presents the contributions and limitations of the study.

2 The case study company and its sustainability problematics

The ILVA steel plant in Taranto was opened in the Italian region of Apulia in 1965 by ILVA S.p.A., an Italian iron and steel factory established in 1905. The construction of the Taranto steel plant became world famous, being the first factory to use integrated cycle technology production. Extending over 15 square kilometres, it is able to transform over 20 million tons of raw materials annually. Indeed, within its boundaries, the steel plant has 190 kilometres of conveyor belts, 50 kilometres of roads and 200 kilometres of railways. It has 8 mineral parks, 2 quarries, 10 batteries to produce the coke used to power the blast furnaces, 5 blast furnaces, 5 continuous castings, 2 hot rolling mills for strips, a hot rolling mill for sheet metal, a cold rolling mill, 3 galvanizing lines and 3 pipes (Il sole 24 ore, 2012—source E.4.c in the "Appendix").

The economic and social significance of the steel plant is impressive. It produces about 40% of Italian steel production and contributes to the majority of Taranto's GDP, with most of the steel transported to Northern Italy, and a significant part exported. Further, the plant employs about 12,000 people in an area—the so-called "Mezzogiorno", i.e. Southern Italy—that is affected by very high levels of unemployment. It is also estimated that another 8000 contractors are employed within the steel plant, and other jobs are also favoured by ILVA activities, e.g. those in the Taranto harbour (European Parliament 2015—source A.1.b in the "Appendix").

However, the ILVA steel plant in Taranto is not famous merely for its economic and social significance. Its environmental emissions have concerned local, national and European authorities since the 1990s. While various measures were introduced by the Italian authorities to force ILVA to comply with the environmental legislation and to ensure that damage is remedied, the company has failed to comply with environmental standards for many years, leading to serious environmental and public health problems in the Taranto area (European Commission 2017—source A.1.d). The environmental impacts translate into negative consequences for both human and animal health. The Taranto industrial area is surrounded both by urban areas, where most of the employees live, and by rural areas made up of planted fields and pasture. Many scientific assessments were carried out over the years, mainly by national and local authorities, to investigate the impact of the steel works on the surrounding area. Even the World Health Organization conducted two studies on mortality in the Taranto outskirt areas (Mitis et al. 2005—source C.1.k). The results showed excesses of mortality rates due to all foreseeable causes, specifically for all cancers with rates higher than regional mortality rates. Analyses conducted to estimate malignant cancer mortality showed the highest risk of lung cancer in the outskirts around the industrial area, in particular within the urban districts of "Tamburi" and "Borgo" (Martinelli et al. 2009—source C.1.j) (Figs. 1, 2).

While the first environmental and health issues were highlighted starting from the 1990 s, the most relevant sustainability threats became increasingly apparent starting from the mid-end of the 2000 s. In 2008 high levels of dioxin and dioxin-like polychlorinated biphenyls were found in food samples of animal origin that were collected from farms located in the immediate surroundings of the industrial area (Diletti et al. 2009—source C.1.c), causing instant alarm among citizens and the authorities. As an immediate response to the events, as early as December 2008, a Regional Regulation enforced more stringent limits on dioxin stack emissions for steel plants (Apulia Region, 2008—source A.6.a) and the Local Health Authority enforced a ban on grazing over wasteland within 20 km from the industrial area and 14 farms were forced to put their flocks (over 1000 sheep and goats) down (Regional Environmental Protection Agency (ARPA), 2009—source B.1.a). The first European Commission intervention on the ILVA plant occurred as a dispute with the Italian government related to the lack of implementation of the Environmental Integrated Authorization: the so-called A.I.A. (Autorizzazione Integrata Ambientale). According to this authorization, in order to be allowed to work, the steel plant needed different interventions to guarantee respect of the environment. The A.I.A. was granted to ILVA on the 20th July 2011 by the Ministry for the Environment, thereby authorizing its activities and prescribing that the functioning of the plant had to occur

Fig. 1 The ILVA steel plant in Taranto and the urban and rural areas contaminated by ILVA dioxin emissions. Planted fields and pastures refer to areas contaminated by high dioxin levels, which in turn required thousands of cows and sheep to be slaughtered. Tamburi and Borgo are the districts of Taranto nearest to the steel plant in which PM_{10} pollution level was 34.9 μg/m^3 (average value 2004–2010) out of a limit of 20 μg/m^3. In these districts 91 human deaths were estimated as attributable to the exceeding pollution limits, while other 83 human deaths were estimated on the other districts of Taranto (Epidemiological appraisal, 2012—source A.5.b)

Fig. 2 The ILVA steel plant of Taranto and the nearest urban district of Taranto ("Tamburi")

respecting the interventions and emissions limit values indicated or requested in the measure itself (Institute for the environmental protection and research, 2011, p. 14—source A.2.a).

The ILVA sustainability challenges became even more apparent in 2012. A protocol agreement for urgent environmental recovery and requalification measures for the Taranto area was signed on the 26th July 2012 by Environment, Infrastructure, Economic development and Local cohesion ministries, the Apulia Region, the Taranto province, the Taranto district and the commissioner for Taranto's harbour. However, on the same day, the Judiciary forced ILVA production to halt due to the proven accusation of environmental disaster. The magistrate based her decision on a report made by Nucleo Operativo Ecologico (NOE) (i.e. the Italian Police Ecological Operative Unit) and on two different evaluation reports (a chemical and an epidemiological one). These reports attested to dangerous, out of control emissions, dumping powders and toxic waste in contact with the aquifer. The magistrate did not hesitate to halt the steel factory, stating that the company has been polluting for years and has put the citizens' health at risk "pursuing a logic of profit" (Preliminary inquiry judge, 26th July 2012 p. 279—source A.5.c). This measure created tensions between the Judiciary and the Italian Government. There were numerous successive depositions of experts, the company's top management, ministers before Parliament and Government commissions. They debated the measure and the resulting sustainability challenges involving contrasting economic, unemployment, health, and environmental risks. As a result of the depositions and in contrast with the Magistrate's decision, in October 2012 the Environment Ministry promulgated a decree containing prescriptions with the aim of guaranteeing business continuity. With the proviso that there would be prior execution of significant interventions to hot area machinery, management of the company was permitted to restart work (Environmental minister decree, 27th October 2012—source A.3.b). The Judiciary, in contrast with the government's position, decided to intervene again in November emanating requisition of the production (Preliminary inquiry judge, 26th November 2012—source A.5.e). Despite that, on the 3rd of December 2012, the Government intervened once more emanating a decree under which ILVA S.p.A. was declared a Strategic National Interest Site (S.I.N.), establishing business continuity for a period of no longer than 36 months and subject to the condition that A.I.A. prescriptions were applied. On the 5th of December 2012 the public prosecutor's office took a measure according to which the sequestered plants could return to ILVA ownership and, finally, on Christmas Eve 2012, the decree establishing ILVA business continuity became law (Law no. 231/2012—source A.2.b) prevailing over the Judiciary's previous decisions.[1]

[1] The ILVA steel plant sustainability issues have continued after 2012 and are still on-going at the time of writing this article. The subsequent events reiterated the contrast between the different sustainability dimensions involved and the contrast between the Italian Judiciary and the Italian Government. However, these events are out of the present research scope, which is specified in the methodological section (Sect. 4).

In brief, the ILVA steel plant in Taranto was initially supposed to enhance the depressed economy of Southern Italy and even today this effect is unquestioned. However, decade after decade ILVA polluted the environment, leading to many casualties. ILVA is a story of "jobs and death", "steel or life", "ill wind", and "shepherds without a flock" (DW 2018). After all, the sustainability challenges faced by ILVA are not new in the steel industry, which is considered to be a "dirty" one (European Parliament 2015, p. 8—source A.1.b). Many research results show that steel production has a number of impacts on the environment, including air emissions, wastewater contaminants, hazardous wastes, and solid wastes (Greenspec 2019). It has also been also demonstrated that steel production also impacts on human health due to long-term effects of exposure to hazards (Olmez et al. 2016). Steel workers are exposed to risk factors leading to cancers, musculoskeletal diseases, respiratory diseases, hearing loss, circulatory diseases, stress related disorders and others (Worldsteel Association 2019). The relevance of these sustainability challenges makes them a political issue. In turn, the present research tries to reveal that the related risks may be governed beyond corporate boundaries, focusing on the role of states in this process.

3 Theoretical framework

According to Foucault (1991, p. 102), governmentality is an *"ensemble formed by the institutions, procedures, analyses and reflections, the calculations and tactics that allow the exercise of this very specific albeit complex form of power, which has as its target population, as its principal form of knowledge political economy, and as its essential technical means apparatuses of security"*. In turn, governmentality deals with how governance problems are thought about, calculated and responded to, and presupposes the use of specific bodies of knowledge or expertise. In governing people and things, different types of agency and authority, as well as various types of thought are considered to be simultaneously at play.

In line with the Foucault's definition of governmentality, Dean (2009, p. 18) interprets government as "*any more or less calculated and rational activity, undertaken by a multiplicity of authorities and agencies, employing a variety of techniques and forms of knowledge, that seeks to shape conduct by working through the desires, aspirations, interests and beliefs of various actors, for definite but shifting ends and with a diverse set of relatively unpredictable consequences, effects and outcomes"*. To facilitate understanding of how rationalities and technologies of government come into being, are maintained and are transformed, Dean outlined a model for the analysis of governance systems, the so-called "analytics of government" (Dean 2009, p. 30). Three aspects should be identified: "problematisation", "regimes of practices" and "utopian ideal". Problematisation refers to the "specific situations in which the activity of governing comes to be called into question, the moments and the situations in which government becomes a problem" (Dean 2009, p. 38). A problematisation of government is about calling into question how "conduct of conduct" (Foucault 2007, p. 17) should be shaped. Once a problem has been defined as being the proper subject of governing, questions of *how* governance might be achieved

emerge. This entails the exploration of the detailed "regimes of governance" by which the actual governing activity is achieved. The regimes of governance rely on four "axes", namely:

1. "Visibility", i.e. the characteristic ways of seeing that are necessary to the operation of particular regimes. Exploring visibility means understanding ways of seeing and perceiving subjects within the regime. In the process of shedding lights on some subjects, visibility may obscure other subjects (Dean 2009, p. 41);
2. "Knowledge", i.e. the distinctive ways of thinking and questioning, resting on definite vocabularies and procedures for the production of truth, including knowledge-production processes generated by and used within governance processes. Knowledge refers to the expertise, language and forms of thought employed in the practices of governing (Dean 2009, p. 42);
3. "Techniques", i.e. the specific ways of acting, intervening, and directing, relying upon definite mechanisms, techniques, technologies and practices used to achieve the governance aims (and which may create visibilities, knowledge, and identities). Techniques outline the technical aspects of governing activities, while this does not imply government is purely technical (Dean 2009, p. 42);
4. "Identities", i.e. the ways of constituting subjects, selves, persons, actors, or agents which emerge from and support governance processes. It implies a performance of government as a means of acting on conduct (Dean 2009, p. 44). Indeed, the regimes of government "elicit, promote, facilitate, foster and attribute various capacities, qualities and statuses to particular agents" (Dean 2009, pp. 43–44).

Finally, the "utopian ideal" reflects the idea that "government can be effective, that it can achieve its desired ends" (Dean 2009, p. 44). It represents the aim towards which governance is directed, as well as the belief that governance is made possible by the regime of governance. It presupposes that government aims are not only necessary but also reachable (Dean 2009, p. 44).

Despite the wide recognition that the Foucauldian ideas have received within accounting research (McKinlay and Pezet 2010; Stacchezzini 2012; Funnell et al. 2018), Dean's analytics of government represents a framework that sustainability-oriented accounting studies have rarely adopted, with very few exceptions. With their focus on the sustainable development strategy of the Scottish Executive, Russell and Thomson (2008) underline that sustainable development indicators may have the power to arbitrarily divide "sustainable" from "unsustainable" practices and legitimate the use of state intervention. Spence and Rinaldi (2014) show that sustainability accounting may undermine social and environmental goals when these goals are reformulated according to an economic regime of practice. As such, Dean's framework demonstrates its ability to critically analyse how accounting practices influence the sustainability issues that are enacted, maintained and transformed within specific systems of governance. In another sustainability-oriented research, Gouldson and Bebbington (2007) highlight Dean's framework potentials for understanding how environmental risks are problematised and governed by corporations.

The present research tries to expand the application of Dean's framework to a context in which the state is required to "govern" the sustainability trajectories and decisions of companies and local communities, and simultaneously contrasting risks (i.e. social vs. societal risks) are at play. This is intended to be in line with concept of governmentality, which presupposes a multiplicity of authorities and agencies, and the use of a variety of techniques and forms of knowledge (Dean 2009, p. 18) to "conduct the conduct" of various actors (Foucault 2007, p. 17).

4 Methodology

This case study is primarily interpretative in nature. It is based on Mitchell Dean's (2009) "analytics of government" as theoretical framework, and provides theoretically informed empirical insights on how the Italian state "governed" the sustainability-related risks of the ILVA steel plant of Taranto.

To identify patterns ascribable to these analytics, we developed an iterative process of manual elaborative coding (Auerbach and Silverstein 2003, p. 104). This coding aimed at identifying patterns related to "problematisation", "regimes of governance" (as formed by "visibility", "knowledge", "techniques", and "identity"), and "utopian ideal" within official documents of the actors involved in governing sustainability-related risks within ILVA. This method of analysis, already adopted by prior accounting research guided by Dean's framework (i.e. Spence and Rinaldi 2014), required selecting relevant texts, identifying repeated ideas and then grouping these ideas into themes related to the framework (Auerbach and Silverstein 2003, p. 105). Table 1 details the themes explored for each analytics. Based on this analysis,

Table 1 Themes explored to discern Dean's (2009) "analytics of government"

Analytics of government	Themes
Problematisation	How social risks (unemployment, economic losses, loss of competitiveness) and societal risks (illness, mortality, environmental pollution) are problematised
Regimes of governance	
Visibility	How social and societal risks are made visible (e.g. description of events, signals about risk-related issues)
Knowledge	Forms of knowledge/expertise used to govern social and societal risks (e.g. law, experts' appraisals)
Techniques	Calculative techniques and related measures (e.g. rates, averages, trends, target values, limits, benchmarks) adopted to assess social and societal risks[a]
Identity	How the ILVA steel plant is portrayed
Utopian ideal	Aims at the basis of the decisions taken to address the problematised risks

[a]While Dean's conceptualization of techniques spans across various mechanisms, techniques, technologies and practices used to achieve the governance, the present analysis deliberately focuses on the role of the *calculative techniques* and related *measures*, in line with Miller's (2001) definition of *calculative practices* that consist of both techniques and measures

a theoretically-informed narrative has been developed (Auerbach and Silverstein 2003, p. 121).

Relevant texts were collected from the official documents ascribable to the actors involved in governing the sustainability related risks within ILVA, spanning from the Judiciary's decision to halt the steel plant (26th July 2012) up to the Italian Government decision to allow business continuity (24th December 2012). The analysis also took into consideration the expert appraisals used in supporting the Judiciary's enquiries and measures as well as the governmental decisions. All the documents were analysed in parallel by two authors, and then discussed together with the third author. No substantial differences arose in this process. A summary of the documents on which this in-depth analysis was carried out is here provided in Table 2, while the "Appendix" provides details for these documents and lists also the documents used for a more comprehensive understanding of the case study context (e.g. EU directives and reports, newspapers, environmental blogs). The findings section reports extracts from pertinent documents used in the analysis to help develop and give credibility to our theoretically-informed narrative (Auerbach and Silverstein 2003, p. 121).

5 Findings

5.1 "Problematisation"

The analysis reveals a critical situation in which opposite risks were simultaneously taking place. On the one hand, societal risk, in the form of a high environmental risk in the area surrounding the plant in comparison to other regions and districts. This risk is also associated with the identification of a causality between the plant emissions and animal health (source B.1.a) which increases concerns also regarding risks to human health. On the other, the social risks (i.e. unemployment, national economic impact, international competitiveness) reflect the geo-economical context in which the plant is located and that could arise in case of business closure (sources C and D).

Such a "problematisation" became particularly apparent on 26th July 2012, when the Judicial inquiries were concluded with the measure forcing the halting of ILVA steel production, due to the proven accusation of environmental disaster. The measure was declared "*functional to the protection of preventive-protective needs indicated in the law […] and in particular about the serious and current situation of environmental and health emergency suffered by the Taranto territory, attributed to the pollutant emissions by ILVA factory"* (source A.5.c).

This measure made the contrast between social risks and societal ones evident, generating a paradoxical un-governability. On one hand, the business closure forced by the Judiciary was immediately translated into a social issue due to the high level of unemployment rate it generated and to the loss in international competitiveness in the steel sector for which the Taranto plant has been a driving force in Italy and in Europe. Conversely, an opposite decision by the Judiciary would have meant compromising people's health and the environment even more.

Table 2 Documents used to identify themes ascribable to Dean's (2009) "analytics of government"

Documents	Documents' author(s)	References (see the "Appendix")
Law-decrees and Decree modified into the 231/2012 law	Italian Government	A.2.a–A.2.h
Protocol agreement for urgent intervention of reclamation, environmentalisation and retraining	Environment, Infrastructure, Economic development and Local cohesion ministries; Puglia Region; Taranto province; Taranto district; Commissioner for Taranto harbour	A.3.a
Re-examination of the Environmental Integrated Authorization to ILVA	Environment Ministry	A.3.b
Depositions before Parliament	Environment Minister; Economy and Environment Ministers	A.4.a–A.4.c
Parliamentary commission inquiry regional reports	Parliamentary commission of Inquiry on illegal activities on waste cycle	A.4.e–A.4.g
Chemical and Epidemiological appraisals and Conclusions; ILVA halt production measure; Production requisition measure	Preliminary inquiry judge	A.5.a–A.5.d
Environmental reports, pollutants' emissions reports, health damage assessment study	Regional Environmental Protection Agency (ARPA)	B.1.a–B.1.h
Environmental Integrated Authorizations	Institute for the environmental protection and research (ISPRA)	B.2.a–B.2.b
Apulia cancer book	Local Health entity	B.3.a
Scientific papers	Independent environmental scientific experts	C.1.a–C.1.k
Steel industry reports	Independent steel industry confederations	C.2a.–C.3b
Financial statements and reports	ILVA company	D.a–D.c

In such an entangled situation, other state authorities and entities were also involved in the governance process. Many local authorities participated in the environmental and health appraisal (sources B.1 and B.3). Furthermore, a protocol agreement for urgent environmental recovery and requalification measures for the Taranto area was also signed by the Environment, Infrastructure, Economic development and Local cohesion ministries; Apulia Region; Taranto province; Taranto district; and the commissioner for Taranto harbour. Such a protocol (source A.3.a), signed precisely on the same day as the Judiciary halt measure, was not specifically related to ILVA activities but to those of the whole Taranto industrial area. However, together with the Judiciary's measure, it is crucial to the identification of the precise moment in which the "problematisation" arose. Such a protocol indeed provided for funds allocated for environmental adjustments and industrial upgrading, implicitly assuming ILVA business continuity. All of these premises demonstrate the urge for national government intervention on the simultaneous contrast between social versus societal risks that represents the issue to be governed.

5.2 "Regimes of governance"

5.2.1 "Visibility"

The first axis of the regimes of governance is "visibility". It represents the ways of seeing and perceiving the "problematisation". Visibilities relate both to what is made visible by governing activities as well as to the *ways* in which things are made "visible". Given that the "problematisation" of the case is the contrast between opposite risks (social vs. societal risks), within the first axis of the regime of governance we can identify the signals causing alarm among citizens and authorities that make the need for intervention emerge. The environmental issue concerning the ILVA case became "visible" in early 2008 when high levels of dioxin were found in animals located in the immediate surroundings of the industrial area (source C.1.c). As a result, the administrative authorities (i.e. the Regional Environmental Protection Agency and the Taranto Local Health Authority) ordered that over 2000 sheep and goats belonging to 14 farms be put down, which represents the first form of "visibility". The decision to put the flocks down was taken after the animals were found to have three times the dioxin legal limit in their blood. All the flocks belonged to farms operating in the Taranto industrial area and, for that reason, a ban on grazing within a twenty kilometres range was issued and it is still in place.

Another form of "visibility", affecting public opinion about the case, related to mortality and cancer rates in the area surrounding the plant released in 2012 (e.g. epidemiological appraisal, Sentieri study, etc.). They have shown the elevated number of people who have become ill or died due to types of cancer potentially deriving from the steel production (sources A.4.e and A.5.b). The geographical comparisons between the Taranto city area and the districts around the plant always indicate higher levels of health risks in the latter. Specifically, the districts of Borgo and Tamburi (the nearest to the ILVA plant) have higher levels of cancer rates, mortality from all causes, estimated deaths due to excess of pollutants concentration and risk

of hospitalization (source A.5.b). However, those results indicate it is not possible to identify a direct causality relation between the illness/death rate with ILVA pollution. Nevertheless, the "visibility" of a great number of ill patients or deceased people represent an element of risk perception for those living in the area. Thus, authorities involved in the governance process could not exclude such "visibility" from their considerations.

Another key and tangible form of "visibility" relates to the level of pollution measured and perceived in the area surrounding the plant. Many authorities were involved in the measurement of pollution around and within the plant (e.g. ARPA, NOE). In particular, dust pollution is the most striking form of "visibility" generating an untenable situation for people living near the plant which is well documented through pictures and videos taken by local and national newspapers. On windy days (source C.1.i), red dust from the plant covers the house roofs and terraces, the tombs in the cemetery, and the public gardens where children play to a depth of some millimetres. This generates a "tangible" perception of the impact of the ILVA production on the surrounding environment.

Finally, with the Judiciary measure to halt ILVA, another form of "visibility" also arises. It refers to the unemployment risk deriving from a stoppage of business in the poorest Italian region. The national newspapers report that, on the same day as the stoppage, thousands of employees (about 8000) went on strike to safeguard their jobs. As underlined in an article by La Repubblica newspaper: "An environmentally friendly company is fine—a worker says—but we must give the company time, we must continue to work, otherwise where do we go? […] In this city—a colleague echoes—the prospects are almost zero. The closure of ILVA would force our families into a crisis, it would be a traumatic decision" (source E.6.b). The Tamburi district is very familiar with the many forms of "visibility": Taranto citizens indeed called it the "living dead" district. As a citizen declared to a journalist of La Stampa newspaper: "Eighteen thousand living dead: both for our health and our jobs" (source E.7.a).

All of these forms of "visibility" about the contrasting issues involving ILVA steel plant feed the risks perception of the lay public and the urgent need for risk governance.

5.2.2 "Knowledge"

The second axis of the regimes of governance consists of the distinctive ways of thinking and questioning. The case analysis demonstrates that the governance process draws on different forms of "knowledge". On one side the governance process is based on the "knowledge" concerning the compliance with the law and the causality identification which in turn relies on the experts' assessment. On the other, the governance process is based on the "knowledge" of social conditions to balance in a context—the *Mezzogiorno* area—in which the local society is struggling for survival.

Analogous to the Judiciary actions, the Italian Government verified compliance with the law. However, while the Judiciary's intervention consisted of verifying mere compliance with pollution values according to the legal benchmarks and the

need to intervene in case of non-compliance (as in fact occurred), the Government relied only partially on this form of "knowledge". Although drawing on the same chemical and epidemiological appraisals, the Italian government's evaluation not only verified the existence of compliance with legal limits related to environmental and health impacts but also investigated the trends of the environmental risk in terms of company pollution levels. Secondly, the government aimed at identifying the source of the illness and deaths. In other words, a second government "knowledge" consists in questioning a certain causality between ILVA pollution and the form of "visibility" concerning the higher number of ill/deceased people in the area surrounding the plant.

To develop its "knowledge", the Government has taken into consideration additional technical texts provided by the experts compared to those used by the Judiciary. As emerges from the decrees and Ministers' speeches (sources A.4.a–A.4.c), the Government considered the many reports produced by the Environmental Protection Regional Agency, which was in charge of periodic data collection. As the technical-scientific body for Apulia Region it is tasked with prevention, control, and monitoring. It was also in charge of data collection specifically related to ILVA to investigate the concentration levels, benchmark, range, average and pollutant quantities whose results were published in many reports (such as "Dioxin emissions from the ILVA E312 stack", "ILVA agglomeration plants emissions chronology", and "Technical results following the NOE note" (corresponding to the texts: B.1.d, B.1.f, and B.1.g respectively).The Government could also take into consideration the "SENTIERI study" (source A.4.d), whose results were released in 2012 but referred to older data. It consists of an evaluation about beryllium and benzo(a)pyrene pollution levels in the Tamburi area as requested by the Parliamentary Inquiry Commission on illegal waste cycle activities from the National Health Institute. Thus, the Italian Government relied on many forms of "knowledge" to evaluate the current environmental and health risks: the existence of compliance to legal limits; the environmental risk evolution in terms of pollution trends; and the investigation of a direct causality between ILVA's activity and diseases/deaths in the local community.

Further, diversely from the Judiciary, the Government could also consider social aspects affecting people living in the area surrounding the plant, introducing another form of "knowledge" aimed at identifying social consequences deriving from the ILVA closure. This was carried out through the collection of different kinds of information on the social impact of ILVA which the "visibilities" related to the unemployment risk contributed to. We need only think of the strike involving 8000 workers after the Judiciary's intervention. Texts on which the Government could rely in questioning the social dependence on ILVA of the people living in the area and beyond were, for instance, the national, and international reports released by industrial associations and economic institutions (e.g., Eurofer, FederAcciai) or the company's financial statements (sources C.2.a, C.3.a–C.3.b, D.a–D.c).

In brief, the Government appears to rely on forms of "knowledge" regarding the whole range of balance conditions between the local territory and the survival of its society, as a guarantee for people working in the company and/or living nearby. The government's forms of "knowledge" did not merely question the environmental and health situation in case of business continuity. It went beyond the mere verification

of compliance with legal limits and questioned the environmental pollutants trends and the health issues' source identification. It also questioned the local and national social consequences deriving from the Judiciary's decision to halt production thus widening the basis of "knowledge" on which the Government relied to discuss the "problematisation".

5.2.3 "Techniques"

Acquisition of "knowledge" draws on techniques able to feed each form of knowledge. Thus, the study of these "techniques" is useful in the identification of the patterns of "visibility" they create to achieve governance goals. In the ILVA case, the identification of the calculative practices—here intended as techniques of quantification as the basis of the different forms of "knowledge"—permits investigating the activities through which the government conveyed patterns of specific "visibility" to steer the simultaneous contrast between societal and social risks. The Government relied on technical expertise and assessment to collect information on environmental and health risks. Thus, the technique identifiable as the basis of the forms of "knowledge" attributable to environmental and health risks is that of the experts' quantification and assessment. It allowed collecting risk measurements such as: the daily or annual average concentration; their comparison with legal limits and among geographical areas; the calculation of mortality; diseases and hospitalization rates; the estimation of death attributable to increasing levels of specific pollutants, referring to specific geographical areas.

The results of such "techniques" describe the environmental risk as attributable to ILVA. The chemical appraisal, for instance, describes the congeners profile in animal tissue. In particular, the appraisal shows the amount of different dioxin congeners identified in the liver fat of those animals grazing around the plant. According to the results of the analysis, which are also illustrated in a specific figure, the chemical appraisal explained that:

> Even with the caution that the limits of scientific and experimental knowledge this case pose, it is reasonable to affirm a preferential correlation of the contaminants found in tissues and animal organs examined with the profiles of PCDD/PCDF congeners found in ILVA diffused emissions (source A.5.a, p. 525).

However, experts also show that the same kind of pollutants register a concentration level in compliance with the current limits. In particular, the analysis of pollutants according to temporal comparisons mainly reveal a decreasing trend of the risk showing current emissions level is compliant to the law:

> The analysis and the monitoring conducted in the course of this investigation to the Area Emissions agglomeration and in particular the area called E312, highlighted pollutant values of PCDD/PCDF below the limit values expected according the Regional Decree n.44 of 19/12/2008. The average value of the samples taken in the four monitoring campaigns has a p state of 0.27 ng I-TEQ/Nm^3 for PCDD/PCDF respecting the maximum limit of the

> regional norm of 0.40. The emissivity values although superior to minimum standard of BRef basis, however, are lower than the ones set by the Environmental Integrated Authorization (source A.5.a, p. 535).

The epidemiological analysis offering a geographical comparison between the Taranto city area and the districts around the plant always indicate higher levels of health risks in the latter. Specifically, the Borgo and Tamburi districts have higher levels of cancer rates, mortality from all causes, estimated deaths due to excess of pollutants concentration and risk of hospitalization:

> In the considered seven years of analysis [2004–2010], for Taranto as a whole, it is estimated that 83 deaths are attributable to exceedance of the limit of 20 micrograms per m^3 for the annual average concentration of PM_{10}. For Borgo and Tamburi districts 91 deaths are estimated attributable to the exceeding legal limit (source A.5.b, p. 8).

The Environmental Minister relied on the results of experts' "techniques" to underline in Parliament that:

(a) Compliance with legal limits has been demonstrated to be a matter of historical context:
> Therefore, part of the problems detected, for example, by epidemiological surveys that have been carried out on behalf of the Judiciary, but also from those which were made by the National Health Institute, gives an account of the population health status, with evident excess mortality, which presumably refers to environmental contamination derived from plants that were operating in accordance with laws of that time. Evident environmental impacts and likely health impacts, which, however, need to be correlated with the standards of that time and with the authorizations that over time these plants have received, as for all the technologies and plants operating in Europe over the last fifty years (source A.4.a, p. 2);

(b) There was a decreasing trend of pollutants:
> There was, that is, an upgrade in technology; from the point of view of the technological performance, there have been significant results in terms of reducing emissions. In particular, dioxin emissions have been cut down drastically, but there was also a significant reduction of dust emissions, of the hot cycle emissions, also with regard to polycyclic aromatic hydrocarbon compounds (source A.4.a, p. 6);

(c) A direct cause-effect relation between ILVA's activity, environmental impact and diseases could not be confirmed by experts:
> The analysis has shown that there is a broader spectrum, both in women and the child population, which does not exclude that there is a relationship between environmental risks and damage to health; but this requires a more complex investigation. (source A.4.a, p. 6).

While relying on the same appraisal conclusions adopted by the Judiciary, the Italian Government also dealt with the "knowledge" concerning the social consequences of the company's closure. This was carried out through the collection of different kinds of information based on "techniques" measuring the social impact of ILVA. Texts on which Government could rely to investigate such an opposite risk were the national and international reports released by industrial associations and economic institutions or the company's financial statements (sources C.2.a, C.3.a–C.3.b, D.a–D.c).

These texts still rely on calculative practices but in this case such a "technique" is that of an economic evaluation rather than that of environmental impact. For instance, the most recent ILVA financial statement available provided information about the high level of employment costs and about the company's financial situation, also in relation to the international context:

> The year ending on the 31st December 2011 was characterized by an increase in production compared to the previous one, but did not reach the pre-financial crisis production levels, in particular the European and Italian ones. In 2011 the steel user sectors increased demand for steel products, and therefore the Company has also recorded a significant increase in shipments of finished products. The final balance shows a net loss of 35,549,000 € compared to the positive result of 43,697,000 € achieved in 2010 (source D.b, p. 1).
>
> The decrease in EBITDA is also particularly significant, worsened by 124,283,000 €. These results must be considered in the general economic context which has seen: - the particular and disadvantageous Italian situation of the costs of some services that continue to register higher tariffs than those of the main "European competitors", - the continuing economic effects arising from the financial crisis that began in 2008 in the USA and extended to the entire world, with repercussions on the entire production system, - a significant economic recovery only in the BRIC countries (Brazil, Russia, India and China). Under the weight of the aforementioned "general framework", the year 2011 ended:
>
> - with revenues of 6,026,236,000 € (4,619,903,000 € in 2010);
> - with a negative EBITDA of 47,112,000 € (positive for 77,171,000 € in 2010);
> - with a net loss of 35,549,000 € (net profit of 43,697,000 € in 2010) (source D.b, p. 2).

An economic evaluation of ILVA company was also provided by FederAcciai, the national federation of Italian steel manufacturers. Its president, in an interview, for instance, stated as follows:

> ILVA weighs on the steel sector not only in terms of millions of tons produced, but has a decisive impact on the so-called user industry. This mastodon which includes two steel plants has a production capacity of about 10 million tons a

year. In the last 12 months, it has released 8 million tons of finished products. It is a network of about 1500 traders, half of which deals with flat products. ILVA has 80% of the Italian market in the flat products segment (40% overall on the 28.5 million tons of Italian steel production). The national industrial structure eats 5 million of the 8 million tons produced by ILVA, that corresponds to the 40/45% needs of the industrial chain transformer, if these 5 million were missing the downstream factories along the supply chain should have to import from abroad, with extra costs of logistics, financial and of a longer supply chain. A combination that would result in a competitive displacement for these industries ranging between 2 and 5 billion euro (source E.6.d).
ILVA has exported 3 million tons in the last year (2.5 in the EU and half a million extra-EU). The impact on the Italian trade balance will therefore be double: a higher cost to import the millions of tons of missing steel, and a further system cost for the reduction of exports. The overall effect of substitution on the trade balance is between 3.7 and 5.5 billion a year. To these values must be added other import-related charges, which move in the range between € 750 million and € 1.5 billion. The overall burden for the layoffs could be estimated at around 330 million a year. In addition, the costs associated with lower income in terms of taxes and other social charges, the social impact on the Apulia territory should be considered, due to the fact that thousands of people would be without wages. All in all, the feared amount is about 8 billion euro a year (source E.6.d).

Both Ministers relied on these additional results of experts' "techniques" to support the ILVA "identity" creation process in their discourses.

5.2.4 "Identity"

"Identity" constitutes the fourth axis of the regimes of governance. It relates to the "forms of identity through which governing operates and which specific practices and programs of government try to form" (Dean 2009, p. 32). In the case of ILVA, this "identity" is moulded by the Italian Government by defining the area in which the company operates as a "Strategic National Interest site". This identity clearly emerges in the decree dated 3rd December 2012, which then became law on the 24th December of the same year. Such an "identity" creation reflects what emerges also from Ministers' discourse and the way in which "techniques" are used to create patterns of the different forms of "visibility". Italian Ministers made an explicit use of the calculative practices only when they refer to social risks. That is, governors explicitly mention the economic evaluations related to the "knowledge" about the social consequences in case of business closure. In particular, The Environment Minister highlighted the role played by ILVA at international and local level in terms of competitiveness:

ILVA is currently the largest European steelwork, in the world, and the hot area of the ILVA Taranto plant is the first step in the whole domestic steel industry production cycle. That is, it is from Taranto that semi-products depart for the various sites and steel industry plants of our country. It must be said

> that ILVA in Taranto represents 75 percent of the gross domestic product of the Taranto province and 76 per cent of the harbour activities (source A.4.a, p. 2).

Further, the Economic and Development Minister pointed out the role played by ILVA in terms of employment rate in the *Mezzogiorno* context as well as to the huge economic costs that would derive from its closure:

> In terms of occupation, ILVA employs more than 11,600 workers directly employed, to which must be added a closely related number of employees of satellite industries, which brings direct employment to nearly 15,400 units. To this figure must be added another 9200 units linked to indirect industries (source A.4.c, p. 4).
> Overall, it [business closure] would result in a negative impact, which has been estimated in over 8 billion euro per year, attributable to approximately 6 billion euro regarding the imports' growth and 1.2 billion euro to income support and lower revenue for the public administration, and for about 50 million euro in terms of reduced spending power for the directly affected area (source A.4.c, p. 5).

In brief, the Ministers gave the evidence for the "technique" of calculative practices only when they described social risks generated by ILVA closure. This approach gives "visibility" solely to social risks while marginalizing experts' assessments on societal risks provoked by the company. Such activity feeds the "identity" which recognizes ILVA as a key strategic site not only at local but also at national level. This in turn has the simultaneous effect of feeding the collective identity of the local territory making the balance of the system be perceived as dependent (for better and for worse) on the company that creates the "problematisation". In such a way, the Government, through risk discourse, justified and strengthened its position which was then conveyed into the law. Defining ILVA as a "Strategic National Interest site" the government strengthens the perception of ILVA social identity as a key element of a wider national asset even more. Thus, officially ensuring ILVA business continuity while not compromising the achievement of environmental and health protection. The next section depicts this "utopian ideal".

5.3 "Utopian ideal"

The utopian ideal represents the goals toward which governance is directed (Dean 2009). In the ILVA case, it consisted in the fact of making the containment of opposite risks (social vs. societal) possible and avoiding the paradoxical situation that dealing with either risk would leave the opposite one unsolved, with serious damage in any case. On one hand, the company's closure (or the halting of production for a while, conditional on having the necessary capital to invest in the short term) would have led to the loss of orders, of clients and of thousands of jobs. Thus signifying the economic destruction of the local territory in the time needed to transform the plant; a period of time that would be quite lengthy given the size and the complexity of the transformation. On the other hand, business continuity without intervention

would have protracted unacceptable environmental and health conditions which society's sensibility—together with the law—does not permit anyone to ignore anymore. The Government therefore pursued the "utopian ideal" of temporarily ranking the risks. The decree of 3rd December 2012—which then become law 231/2012—indeed stated the solution established:

> In the case of a National Strategic Interest Site, identified with a Premier's decree, when it employs a number of subordinated employees, not fewer than 200 for at least one year, if there is the absolute need to safeguard employment and production, the Environment Ministry can authorize continuity (source A.2.b).
>
> The decree also established:
>
> (a) Business continuity for a limited period of time and its monitoring:
> at the moment of the review of the integrated environmental authorization, business continuity for a determined period not superior to 36 months (source A.2.b).
> (b) The mandatory investments in the plant's requalification, as a means to decrease the societal (i.e. environmental and health) risk:
> […] and conditional to the prescriptions contained in the measure of such an authorization, according to the procedures and the indicated timing, with the aim of guaranteeing the most adequate environmental and health protection according to the best available techniques. (source A.2.b).

The "utopian ideal" can be also identified in the Ministers' speeches in Parliament, when, for instance, the Economic and Development Minister underlined the many investments made by the company in environmental protection while still recognizing they were not sufficient to completely protect people's health. State intervention has been considered more than appropriate:

> The company's commitment concerning the investments during these years was important, as evidence of a shareholder genuine interest in remaining in the industry and in the area. Altogether, since it was acquired in 1995 up to 2011, the Riva Group has invested more than 4.5 billion euro in the Taranto factory, concentrating in it almost 72 percent of the investments made in the whole ILVA Group, in Italy and abroad. In the same period, the share of investment devoted to environmental protection accounted for 24 percent (approximately 1.1 billion euro) of the total invested in the Taranto plant. However, those findings cannot justify the serious situations of environmental damage and risk to health which remain despite the investments supported by the Riva Group: for this reason, a Protocol agreement was signed and euro 396 million have been allocated for environmental adjustments, adaptation of the harbour area (which recently entered a strategic network of European harbours and it is affected by material infrastructure projects) and industrial upgrading (source A.4.c, p. 4).

The Environmental Minister, even more explicitly, declared:

> This is not a conflictual approach with business continuity, but is intended to make sure that industrial activities – through technological innovations aiming at protecting the environment – acquire better productive capacity and thus enhance its competitiveness. Because the European target is to make sure that the European economy's competitiveness is driven by interventions that improve environmental quality. This is the aim that we have too (source A.4.c, p. 9).

Overall, the governmental discourse permitted highlighting the "utopian ideal" of containment of the opposite risks and how this has been pursued, strengthening the social "identity" of the company as an answer to the "problematisation" faced and the "visibilities" perceived (see §5.2.4). In brief, to govern such a "problematisation", different forms of "knowledge" were taken into account by the government extending those considered by the Judiciary for intervention. However, the Ministers—in their discourses—gave evidence of the "techniques"—on which "knowledge" relies—to enhance the "visibility" associated with social risks. Such a "practice" appears to be aligned to the "identity" the government aims at conveying for its own achievements. Specifically, through this discursive "practice", the Ministers fed the social risk "truth". The adoption, in particular, of textual reference about the calculative practices giving economic evaluation of the social consequences conferred great relevance to social risks. This "practice" facilitated the construction of a discourse oriented towards silencing societal risks in order to encourage business continuity. Simultaneously, relying on "knowledge" about societal risks assessment while not quantitatively mentioning the results of such a "technique" allowed the marginalization of those environmental and health risks, without excluding their "knowledge" and assessment.

6 Discussion

Dean's (2009) analytics of government provided a theoretical lens to interpret how the Italian state, with its rationalities and technologies of government, tried to govern the sustainability-related risks associated to the activities of the ILVA steel plant in Taranto (Italy). As argued by Russell and Frame (2013), governmentality helps unveil the complexities behind sustainability issues. In analysing how the Italian state "problematised" the ILVA matter, we discovered a double level of complexity in the government decision on the ILVA business (dis)continuity.

The first, more expected, level of complexity is linked to the comprehension of each of the risks involved, as commonly happens (Gouldson and Bebbington 2007; Power 2007; Tait and Chataway 2007). Each of these risks had to be distinctively understood, with their effects, which extend from internal stakeholders to external ones, beyond the boundaries of the company. The societal risk causes issues for workers inside the plant, for people living on the territories and for animals, while the social risk has effects on a group which is only partially the same (while remaining completely within the set), that is the company's workers, their families

and relatives. This risk extends to the people belonging to the whole supply chain, more widely spread than people suffering just the heavy societal risk of the territories. The decision maker had to mark the limit of each of these risks, in term of consequences and people involved. It is well known that sustainability is a concept that cannot be limited to an organizational level, as it is a global concept (Gray and Milne 2004, p. 7) which needs global solutions. In the case of environmental governance, the boundaries of the issues "are usually taken for granted" (Bulkeley 2005, p. 876) and the framing of environmental sustainability is considered to be a political matter (Bulkeley 2005; Lawhon and Patel 2013). In the case under analysis, the problematics required specific intervention by the state, as "regulator of last resort" (Gouldson and Bebbington 2007). The state had to develop a profound knowledge of all the concerns involving each of the two kinds of risk, and not provide just general rules. The behaviour of the organisation was a matter of public interest in addition in terms of sustainability governance in the poorest Italian territory. As the case demonstrates, sustainability does not only relate to environmental matters, but enlarges to encompass social and economic needs considering that companies have a social responsibility towards their territories (Hart 1997, p. 75).

The second level of complexity is related to the fact that it is not enough to face the issues related to each of the two kinds of risks. Each of them is a concern per se and certainly it would have been difficult to solve either of them separately. But here, the government concerns were related also to the need of combining a solution to both, by identifying a governance way-out able to satisfy the opposite aims of the people linked to the company (workers, inhabitants of the territories, suppliers, other stakeholders) and not contrasting with the public interest. This appears to be in tune with broader evidence, suggesting the idea that the developments of social, environmental, economic and ethical governance require "on one hand forms of knowledge of social and environmental sustainability, on the other hand an increasing set of rules, or norms, to take account of the impact of corporate actions upon the profoundly intertwined social, environmental and economic dimensions of operations" (Spence and Rinaldi 2014, p. 436).

Dean's (2009) framework also offered the opportunity to detect the "regimes of government" of a subject (the state) that had to solve sustainability problems in the place of the owner or the managers of the company, as if the Government had replaced the former. Following Dean, the analysis reveals that the "visibility" of the issues involved were wider than local; if we consider that the environmental/health situation had a real impact on the population surrounding the plant as well as on the living animals in a region largely based on breeding. In a territory however strongly dependent on that company, this was exceptionally relevant. ILVA was certainly a pivotal case for many other situations, scattered over the country, at times not as fully well known as this company, where the societal effects of industrial production had an impact not as yet tolerated by the population, given that environmental claims are increasing everywhere. On the other hand, the possible interruption of the going concern would have been perceived both negatively by people belonging to the ILVA supply chain (many of them living near the same territories where the plant stands) and positively by competitors (and their supply chain) as any production interruption would have benefitted them. Considering that the remainder

of the steel industry belongs to foreign countries, the problem had worldwide relevance, and could have caused domestic trouble as its negative solutions might have deprived the whole country of such an important organization.

The analysis also shows that the Italian government benefitted from various kind of "knowledge" as well as of different "techniques". It is usually widely accepted that in governance for sustainability there is a need for interaction among experts of many integrated fields and stakeholders who have different knowledge about various and differentiated risks (Scholz 2011). This is the reason why this kind of governance requires a multi-actor dimension approach (Shiroyama et al. 2012) and a deep level of knowledge integration, "as a means to deal with multiple dimensions of sustainability and uncertainty" (Shiroyama et al. 2012, p. 46). However, a multi-actor approach increases the complexity of sustainability governance (Phillimore et al. 2007; Shiroyama et al. 2012), in particular when "confronting risk tradeoffs" (Graham and Wiener 1995, p. 1). In the ILVA case, many experts were involved in a multi-actor dimension approach; the novelty is that the Italian Government played the role of integrating two streams of knowledge. The first is represented by environmental knowledge and the effects of the chemical pollutants on the air, on the earth, on humans and on other living beings. This kind of knowledge has been strictly connected with a double level of techniques: (1) that aiming at detecting both compliance with current rules or the overrunning of the allowed limits proposed by regulation and (2) that aiming at looking for a causal link (if one is thought to possibly exist) between the visible effects of the pollutants (diseases, death, etc.) and the overrunning of the limits admitted by law. The accounting practices guiding the research into qualified data about pollution are just the first step, as the more difficult demonstration relies on the causal connections between the certified level of pollution and its probable or possible effects. These governance techniques were relevant simply in the exercise of disciplinary power (Russell and Frame 2013, p. 96) by the Judiciary, which was certainly important in trying to face the societal risk but not in giving an answer to the social risk: the aim of the courts of justice was limited to respect of the law.

A move towards new corporate sustainability perspectives has been claimed in literature (Adams 2008, p. 121). A change has been happening worldwide: swapping to a more sustainable production is inevitable, and to make that move at a convenient time is in the interest of individual corporations (Adams 2008, p. 122). However, literature has not yet shown that such an interest, that of an individual corporation is also pursued by the state thanks to its role of "substantial contributor to sustainability governance" residing in the ability to make environmental protection a basic goal (Frickel and Davidson 2004, p. 89). Specifically, the current study fills this gap and shows a shift to a different power (that of the government) to overcome the limitation of governing solely societal risks. This shift has been possible owing to the involvement of the Italian Government. This latter called for a different stream of knowledge and the use of related techniques, those investigating the social and economic relevance of the company, the welfare spread out to the surrounding territories as well as the opportunities for people to have work opportunities and address their life needs. In this inspection, the Italian Government drew on ILVA financial statements, regional commentaries developed by the local chambers of commerce,

financial and social surveys, insights about the steel industry around the world and commentaries about the ILVA competitors. The Italian Government benefitted from the investigating technologies provided by financial and production experts able to address its questions. This new acquisition of knowledge allowed understanding and visualizing the genesis and levels of the risks opposed to the societal ones as well as to defining the resilience dimension of the governance for sustainability (Shiroyama et al. 2012, p. 48).

Accounting technologies can act as the driver of social and societal risk transfer to communities, and governments have frequently been complicit in this process (Benn and Dunphy 2007; Asenova et al. 2015; Wilshusen and MacDonald 2017). In particular, prior sustainability-oriented accounting research has identified the threats that calculative practices bring about when used to support sustainability-related governance decisions (Russell and Thomson 2008; Spence and Rinaldi 2014). The present research confirms this argument, as we have showed that accounting technologies and measures were used to silence the environmental and health risks that, otherwise, should have emphasised the unsustainability of the ILVA business activities. In particular, the present study extends this body of research by showing that calculative practices may act at a higher level in respect to the "subjects" to be governed. In this case, a national government used these practices to intervene on the sustainability action of a company, which in turn was allowed to continue its activities but at the same time forced to adopt actions to reduce its environmental impact. In other words, the present research confirms the role of calculative practices in the "conduct of conduct" (Foucault 2007, p. 17).

Further, the results also confirm that government is not purely technical (Dean 2009, p. 42). The great quantity of information collected by the Italian Government and related both to the societal matters and to the social ones would not have been relevant to finding the final way out, if a criterion of judgment had not been considered: paradoxically, every decision considering just one of the two risks involved (i.e. social and societal risks) would not have created a real solution to the problem. To reach a governmental answer that could be considered acceptable, in a sustainability perspective, the "utopian ideal" played a significant role in preserving the former "identity" or in forming a new one. This new form assumed a former knowledge analytic and deployed the identity as a perspective implying a performance of governance as a means of acting on conduct. The "utopian ideal" permitted overcoming the opposition of the two risks by ordering a sequence of suggested behaviours able to avoid huge consequences: single attention to the societal risks could have destroyed the ILVA going concern and caused the loss of orders as well as customers, the loss of work for a wide territorial area as well as its welfare conditions. On the contrary, sole attention to the social risks would have increased the level of pollution, ignoring the claims coming from the population, extending unacceptable worsening conditions for everybody living there. Conditions, which are still not yet acceptable according to an increased sustainability sensibility, particularly perceived by younger generations. The Government pursued its utopian ideal by imagining a temporary order in facing the two different risks and programming: *(a)* business continuity for a definite period, subject to planned controls; *(b)* the mandatory execution of investments, in a time defined by law, suitable to reconvert the plant and

recover acceptable conditions of pollution, so reducing the societal risks. By showing that the Italian state defined a priority list of interventions, Dean's framework highlights the political nature of political governance decisions and the need to critically consider the actual role of calculative practices in supporting and legitimising political decisions. The framework also allows depicting how sustainability governance might solidify business logics (Wilshusen and MacDonald 2017, p. 1824) by framing sustainability risks in economic terms.

7 Conclusion

The governance of the sustainability issues determines both difficult choices and significant struggles inside and among societies in order to define the appropriate role for the state and take public interest decisions (Meadowcroft et al. 2005, p. 7). This represents the situation dealt within this research: the emergence of two risks, both affecting sustainability matters and paradoxically contrasting one another, causing a huge shock to a wide territory in Southern Italy and determining opposite views among both populations and public institutions. The struggle between different sustainability issues was able to cause a closure of the company that might have been unsustainable for the greater part of the territories and their stakeholders. In this *"impasse"*, the Italian state took on a new role as a "regulator of last resort" (Gouldson and Bebbington 2007, p. 7), asked to govern business trajectories and disentangle the complex node concerning the social and the societal risks.

Unveiling the "problematics of government", the "regimes of practice" and the "utopian ideal" (Dean 2009) according to which ILVA's sustainability-risks have been governed by the Italian state is the key contribution of the present research. Dean's analytics of government particularly helped in interpreting the complexities related to the problematics of sustainability-related risk governance, as well as the practices that make risk governance "not only necessary by also possible" (Dean 2009, p. 44), according to an "utopian ideal" that the Italian government came to constitute to find a compromise between different, contrasting risks. In this respect, the research also offers a methodological contribution by showing the potential of the Dean's framework in interpreting the possibilities for governing corporations in a context in which a state is requested to act as a "regulator of last resort" (Gouldson and Bebbington 2007, p. 7). The analysis reveals that the Italian state, while acting in place of the company, drew on a sustainability path that was really not so far different from what could have been figured out if the same decisions had been taken by the company itself. Thus, our analysis contributes to sustainability-oriented research by elucidating aspects that make sustainability risk governance complex or even paradoxical. Further, the findings call for additional research on the compromises that sustainability-related governance dictate (Adams 2008) and question the role of states when contrasting risks are simultaneously at play and the managing of one risk may paradoxically enhance other risks.

The present research also urges considering the role of calculative practices in the very process of sustainability risk governance (Russell and Thomson 2009; Spence and Rinaldi 2014). The utopian ideal on which the Italian Government based and

justified its decisions would be impossible on the basis of technical appraisals only. The knowledge and the technical analyses implied in detecting the sustainability risks were very different and they led to results which were not directly comparable, as quantitative measurements confronted qualitative ones regarding different aspects. While taking into consideration the results of the technical inquires carried out, the solution proposed by the Italian Government, avoided making an impossible comparison among them and drew up the final solution by leverage on the utopian ideal it wanted to pursue, in the name of a higher public interest. These findings suggest further research on the role of calculative practices in contexts of incommensurability between different sustainability-related risks.

This work is based on a significant amount of documents that we analysed carefully, but suffers a limitation related to the fact the we did not interview the main actors involved in the decisions: the magistrates, the member of the Italian Government (and their staff) who took the final decisions and the different stakeholders (both those on the territories and those belonging to the supply chain, as well as the workers of the plant). Further research may investigate how the stakeholders' claims influenced the Government decision about the sustainability risks. The research may also be expanded in terms of time frame. While our analysis has focused on the mentalities and practices of government related to the Italian Government's 2012 decision to allow ILVA to continue its activity, further research may develop a genealogical enquiry (Foucault 1981) to unveil the historical conditions that allowed the ILVA steel plant to work for decades even when compliance with environmental rules was disputed. Future research may also explore possible changes in the mentalities and practices of government according to the change in the political party in charge of governing Italy. Obviously, comparisons between the state intervention on the ILVA case and similar situations within this or other "dirty" industries (European Parliament 2015, p. 8) may facilitate a wider appeal on the political governance of sustainability-related corporate risks.

Acknowledgements The authors are grateful to the editor in chief, the guest editors and the reviewers for their insightful comments and the support provided during the review process. In its earlier version, the article benefitted from the feedback provided by the attendees at European Accounting Association (EAA) Conference in Valencia, Spain (10–12 May 2017), European Network for Research in Organisational & Accounting Change (ENROAC) Conference in Naples, Italy (29–30 June 2017), Critical Perspectives on Accounting (CPA) Conference in Québec City, Canada (2–5 July 2017), and Accademia Italiana di Economia Aziendale (AIDEA) Conference in Rome, Italy (14–15 September 2017, Rome). While the paper is the result of a joint effort of the authors, *Alessandro Lai* wrote Sections 6 and 7, *Silvia Panfilo* wrote Sections 5.1, 5.2 and 5.3 and the Appendix, and *Riccardo Stacchezzini* wrote Sections 1, 2, 3 and 4.

Appendix

The appendix reports the list of all the sources used to investigate the case study. Where not differently stated, the sources are sorted according to their nature, and then listed chronologically.

A. Documents by European Union and Italian Government, Parliament, Ministers, Apulia Region, and Judiciary

1. European Union

   a. EU Dir. 2010/75 (24th November 2010) "relativa alle emissioni industriali (prevenzione e riduzione integrale dell'inquinamento)" [EU Directive on "Industrial emissions (prevention and integrated reduction of pollution)—our translation]
   b. European Parliament (13th October 2015). The ILVA Industrial Site in Taranto, report produced by the Directorate-General for Internal Policies – Policy Department Economic and Scientific Policy".
   c. Commissione Europea – Comunicato stampa (20th January 2016). "Aiuti di Stato: al via un'indagine approfondita della Commissione sul sostegno italiano alle acciaierie ILVA di Taranto." [European Commission – Press release. "State aid: An in-depth Commission investigation begins about the Italian support for the ILVA steel plant in Taranto"—our translation]
   d. European Commission (21st December 2017) – Press release. "State aid: Commission concludes in-depth investigation on support to Italy's largest steelmaker ILVA S.p.A. in A.S. and orders recovery on two measures that involved illegal State aid".

2. Italian Government

   a. Decreto-legge (26th October 2012). "Riesame dell'autorizzazione integrata ambientale n. DVA/DEC/2011/450 del 4/8/2011 rilasciata per l'esercizio dello stabilimento siderurgico della società ILVA S.p.A. ubicato nel comune di Taranto." [Decree-Law. "Review of the integrated Environmental Authorization n. DVA/DEC/2011/450 of 4/8/2011 issued for the activity of the iron and steel plant of the company ILVA S.p.A. located in Taranto."—our translation]
   b. Decreto-legge (3rd December 2012, n. 207, converted by Law on the 24th December 2012, n. 231) – "Disposizioni urgenti a tutela della salute, dell'ambiente e dei livelli di occupazione, in caso di crisi di stabilimenti industriali di Interesse Strategico Nazionale." [Decree-law. "Urgent provisions to protect health, the environment and employment levels, in the event of crisis of industrial National Strategic Interest sites."—our translation]
   c. Decreto-legge (4th June 2013, n. 61). "Nuove disposizioni urgenti a tutela dell'ambiente, della salute e del lavoro nell'esercizio di imprese di interesse strategico nazionale." [Decree-Law. "New urgent provisions to protect the environment, health and work in the activity of companies of National Strategic Interest."—our translation]
   d. Decreto-legge (10th December 2013, n. 136). "Disposizioni urgenti dirette a fronteggiare emergenze ambientali e industriali ed a favorire lo sviluppo delle aree interessate." [Decree-Law. "Urgent provisions aimed at coping with environmental and industrial emergencies and favouring the development of the concerned areas."—our translation]

e. Decreto del Presidente del Consiglio dei Ministri (14th March 2014). "Approvazione del piano delle misure e delle attività di tutela ambientale e sanitaria, a norma dell'articolo 1, commi 5 e 7, del decreto-legge 4 giugno 2013, n. 61, convertito, con modificazioni, dalla legge 3 agosto 2013, n. 89. (14A03637)." [Premier decree. Approval of the measures and activities plan for environmental protection and health, in accordance with Article 1, paragraphs 5 and 7, of the Decree-law of 4 June 2013, n. 61, converted, with amendments, by law 3 August 2013, n. 89. (14A03637)."—our translation]
f. Decreto-legge (5th January 2015, n. 1). "Disposizioni urgenti per l'esercizio di imprese di interesse strategico nazionale in crisi e per lo sviluppo della città e dell'area di Taranto." [Decree-law. "Urgent provisions for the activity of National Strategic Interest companies in crisis and for the development of the city and the area of Taranto."—our translation]
g. Decreto-legge (4th July 2015, n. 92). "Misure urgenti in materia di rifiuti e di autorizzazione integrata ambientale, nonché per l'esercizio dell'attività d'impresa di stabilimenti industriali di interesse strategico nazionale." [Decree-Law. "Urgent measures regarding waste and integrated environmental authorization, as well as for the activities of industrial plants of National Strategic Interest."—our translation]
h. Decreto-legge (4th December 2015, n. 191). "Disposizioni urgenti per la cessione a terzi dei complessi aziendali del Gruppo ILVA." [Decree-law. "Urgent provisions for the sale of the ILVA Group's business complex to third parties."—our translation]

3. Environmental Minister of the Italian Government

a. Ministero dell'Ambiente e della Tutela del Territorio e del Mare, Ministero delle Infrastrutture e dei Trasporti, Ministero dello Sviluppo Economico, Ministero per la Coesione Territoriale, Regione Puglia, Provincia di Taranto, Comune di Taranto, Commissario straordinario del Porto di Taranto (26th July 2012). "Protocollo di intesa per interventi urgenti di bonifica, ambientalizzazione e riqualificazione di Taranto." [Environment Minister, Infrastructure and Transportation Minister, Economic development Minister, Territory Cohesion Minister, Apulia Region, Taranto's province, Taranto municipality, Extraordinary commissioner for Taranto's harbor. "Protocol agreement for urgent intervention of reclamation, environmentalization and retraining"—our translation]
b. Ministero Dell'ambiente e Della Tutela Del Territorio e Del Mare (27th October 2012). Riesame dell'autorizzazione integrata ambientale n. DVA/DEC/2011/450 del 4 agosto 2011 rilasciata per l'esercizio dello stabilimento siderurgico ILVA S.p.A. ubicato nei comuni di Taranto e di Statte. [Environmental Minister. "Review of the Integrated Environmental Authorization released for the continuity of the ILVA S.p.A. steel plant established in Taranto and Statte municipalities."—our translation]

4. Italian Parliament and Parliament commissions

a. Camera dei Deputati (1st August 2012). "Resoconto stenografico dell'Assemblea Seduta n. 675 di mercoledì 1 agosto 2012" [House of Representatives. "Stenographic report of the Assembly n. 675 of Wednesday 1 August 2012."—our translation].
b. Senato della Repubblica (1st August 2012). "Resoconto stenografico dell'Assemblea Seduta n. 782 (antimeridiana) di mercoledì 1 agosto 2012" [Senate. "Stenographic report of the Assembly n. 782 (pre-noon) of Wednesday, August 1, 2012"—our translation].
c. Senato della Repubblica (5th September 2012). 788a seduta pubblica. "Resoconto stenografico dell'Assemblea Seduta n. 788 di mercoledì 5 settembre 2012". [Senate. "Shorthand report of the Assembly n. 788a of Wednesday, September 5, 2012"—our translation]
d. Commissione bicamerale ciclo rifiuti (6th August 2012). "Audizione Presidente dell'ILVA S.p.A., Bruno Ferrante." [Bicameral commission on waste cycle activities. "ILVA's president audition, Bruno Ferrante"—our translation]
e. Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo rifiuti: Comba et al. (12th October 2012). Ambiente e salute a Taranto: evidenze disponibili e indicazioni di sanità pubblica (Studio SENTIERI). [Parliamentary Commission of Inquiry into illegal activities related to the waste cycle: Comba et al. Environment and health in Taranto: available evidence and indications of public health (Studio SENTIERI)."—our translation]
f. Commissione bicamerale ciclo rifiuti (18th September 2012). "Audizione del procuratore della Repubblica presso il Tribunale di Taranto, Franco Sebastio." [Bicameral commission on waste cycle activities. "Public prosecutor's audition, Franco Sebastio"—our translation]
g. Commissione Parlamentare di inchiesta sulle attività illecite connesse al ciclo rifiuti (17th October 2012). "Relazione territoriale sulle attività illecite connesse al ciclo dei rifiuti nella Regione Puglia." [Parliamentary Commission of Inquiry into illegal activities related to the waste cycle. "Territorial relation on the illegal activities related to the waste cycle in the Apulia Region"—our translation]
h. Commissione Parlamentare di inchiesta sulle attività illecite connesse al ciclo rifiuti (2012). "Relazione territoriale sulle attività illecite connesso al ciclo rifiuti della Regione Puglia. Doc. XXIII 10." [Parliamentary Commission of Inquiry into illegal activities related to the waste cycle. "Territorial relation on the illegal activities related to the waste cycle in the Apulia Region. Doc. XXIII 10"—our translation]
i. Commissione Parlamentare di inchiesta sulle attività illecite connesse al ciclo rifiuti (2012). "Relazione territoriale sulle attività illecite connesso al ciclo rifiuti della Regione Puglia. Doc. XXIII n.12." [Parliamentary Commission of Inquiry into illegal activities related to the waste cycle. "Territorial relation on the illegal activities related to the waste cycle in the Apulia Region. Doc. XXIII n.12"—our translation]

j. Commissione lavoro, previdenza sociale Senato della Repubblica (13th November 2012). "Audizione del Presidente dell'ILVA S.p.A. Dr. Bruno Ferrante." [Commission on jobs, welfare of the Senate. "ILVA's president audition, Bruno Ferrante"—our translation]
k. Senato della Repubblica (2012). "Intervento Vendola al Senato: cronologia attività stabilimento ILVA." [Republic Senate. "Vendola's intervention: ILVA plant activities' chronology"—our translation]

5. Italian Judiciary

a. Giudice indagini preliminari (2012). "Conclusioni perizia chimica." [Preliminary inquiry judge. "Chemical appraisal results"—our translation]
b. Giudice indagini preliminari (2012). "Conclusioni perizia epidemiologica." [Preliminary inquiry Judge. "Epidemiological appraisal results"—our translation]
c. Giudice indagini preliminari (26th July 2012). "Ordinanza di fermo della società ILVA S.p.A." [Preliminary inquiry judge. "Closing measure of ILVA S.p.A."—our translation]
d. Giudice indagine preliminari (11th August 2012). "Ordinanza di fermo di ILVA S.p.A e sequestro produzione." [Preliminary inquiry judge." Closing and production seizure measure of ILVA S.p.A."—our translation]
e. Giudice indagine preliminari (26th November 2012). "Ordinanza sequestro produzione di ILVA S.p.A." [Preliminary inquiry judge." Production seizure measure of ILVA S.p.A."—our translation]

6. Apulia Region

a. Apulia Region (2008). Legge regionale n. 44/2008: Norme a tutela della salute, dell'ambiente e del territorio: limiti alle emissioni in atmosfera di policlorodibenzodiossina e policlorodibenzofurani. [Apulia Region. Regional law n.44/2008: Rules for the protection of health, the environment and the territory: limits to atmospheric emissions of polychlorinated dibenzodioxin and polychlorinated dibenzofurans – our translation]

B. Documents by national and local institutional experts

1. Regional Environmental Protection Agency (ARPA)

a. ARPA (2009). "Relazione sui dati ambientali dell'area di Taranto." [ARPA. "Report on environmental data in the Taranto area."—our translation]
b. ARPA (2010). "Benzo(a)pirene aerodisperso presso la stazione di monitoraggio della qualità dell'aria di Via Macchiavelli a Taranto – attribuzione alle sorgenti emissive – relazione tecnica preliminare." [ARPA. "Benzo(a)pyrene airborne at the Via Macchiavelli air quality monitoring station in Taranto

– attribution to the emission sources – preliminary technical report."—our translation]
c. ARPA (2011). "Rapporto Ambiente e Sicurezza 2011 – ILVA Taranto." [ARPA. "Environment and Safety report 2011 – ILVA Taranto"—our translation]
d. ARPA (2012). "Emissioni di diossine dal camino E 312: Il risultato della campagna di monitoraggio 2011." [ARPA. "Dioxins emission from the E 312 chimney: The result of the 2011 monitoring campaign"—our translation]
e. ARPA (2012). "Relazione tecnica: Analisi delle tendenze di inquinanti nel quartiere Tamburi di Taranto per il 2012." [ARPA. "Technical report: Analysis of pollutant trends in Taranto's Tamburi district in 2012."—our translation]
f. ARPA (2012). "Cronologia emissioni da impianti agglomerazione ILVA 1994–2011." [ARPA. "Emissions' history from ILVA agglomeration plants 1994–2011"—our translation]
g. ARPA (2012). "Relazione tecnica a seguito di sopralluogo del 2/08/2011 nello stabilimento siderurgico ILVA di Taranto effettuato a seguito di nota del NOE di Lecce prot. N.41/2010 del 2/07/2011 trasmesso da Regione Puglia con nota prot. N. AOO_169_0000412." [ARPA. "Technical report following inspection of 2/08/2011 in the ILVA iron and steel plant carried out following a note by the NOE of Lecce prot. N.41/2010 of 02/07/2011 transmitted by Apulia Region with note prot. N. AOO_169_0000412."—our translation]
h. ARPA et al. (2012). "Valutazione del Danno Sanitario Stabilimento ILVA di Taranto ai sensi della LR 21/2012 - Scenari emissivi pre-AIA (anno 2010) e post-AIA (anno 2016)." [ARPA et al. "Health Damage Assessment by ILVA steel plant of Taranto pursuant to Regional Law 21/2012 - Pre-AIA (2010) and post-AIA (2016) emission scenarios."—our translation]

2. Institute for the environmental protection and research (ISPRA)

a. ISPRA-IPPC commissione investigativa (2011). "Autorizzazione Integrata Ambientale per l'esercizio dello stabilimento siderurgico ILVA S.p.A: ubicato nel comune di Taranto." [ISPRA-IPPC Inquiry commission. "Integrated Environmental Authorization for the activities of the ILVA steel plant: established in the Taranto municipality"—our translation]
b. ISPRA. "AUTORIZZAZIONE INTEGRATA AMBIENTALE DECRETO DVA-DEC-2011-0000450 del 04/08/2011 (G.U. n. 195 del 23/08/2011) integrato dal DECRETO DVA-DEC-2012-0000547 del 26/10/2012 (G.U. n. 252 del 27/10/2012) STABILIMENTO SIDERURGICO ILVA S.p.A. sito nel Comune di TARANTO e STATTE (TA). Tabella Riassuntiva Trimestrale Stato Di Attuazione Prescrizioni Ad Esito Verifica Ispra." ["Integrated Environmental Authorization supplemented by the decree DVA-DEC-2012-0000547 of the 26th October 2012. Quarterly summary table about the prescriptions fulfillment after ISPRA check results"—our translation]

3. Local Health Entity (ASL)

   a. ASL Taranto (edizione 2012). Registro tumori. [ASL Taranto. "2012 Apulia cancer book"—our translation]
   b. ASL Taranto (edizione 2013). Registro tumori. [ASL Taranto. "2013 Apulia cancer book"—our translation]
   c. ASL Taranto (edizione 2014). Registro tumori. [ASL Taranto. "2014 Apulia cancer book"—our translation]
   d. ASL Taranto (edizione 2015). Registro tumori. [ASL Taranto. "2015 Apulia cancer book"—our translation]
   e. ASL Taranto (edizione 2016). Registro tumori. [ASL Taranto. "2016 Apulia cancer book"—our translation]

C. Documents by independent environmental scientific experts and steel industry confederations (alphabetical order)

1. Scientific experts

   a. Amodio, M., Andriani, E., Dambruoso, P. R., de Gennaro, G., Di Gilio, A., Intini, M., et al. (2013). A monitoring strategy to assess the fugitive emission from a steel plant. *Atmospheric environment*, 79, 455–461.
   b. Chiari, M., Del Carmine, P., Orellana, I. G., Lucarelli, F., Nava, S., & Paperetti, L. (2006). Hourly elemental composition and source identification of fine and coarse PM10 in an Italian urban area stressed by many industrial activities. *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms*, 249(1–2), 584–587.
   c. Diletti, G., Ceci, R., Scortichini, G. & Migliorati, G. (2009). Dioxin levels in livestock and grassland near a large industrial area in Taranto (Italy). *Organohalogen Compd*, 38, 2359–2363.
   d. Esposito, V., Maffei, A., Castellano, G., Martinelli, W., Conversano, M. & Assennato G (2010). Dioxin levels in soil and groundwater samples in the surroundings of a large industrial area in Taranto (Italy). *Organohalogen Compd*, 72, 736–739.
   e. Esposito, V., Maffei, A., Ficocelli, S., Spartera, M., Giua, R. & Assennato, G. (2012). Dioxins from industrial emission to the environment. The Taranto case study. *Ital J Occup Environ Hyg*, 3(1), 42–48.
   f. Esposito, V., Maffei, A., Bruno, D., Varvaglione, B., Ficocelli, S., Capoccia, C., et al. (2014). POP emissions from a large sinter plant in Taranto (Italy) over a five-year period following enforcement of new legislation. *Science of the Total Environment*, 491, 118–122.
   g. Francois F., Bernaert P. & Baert R. (2000). Reduction of PCDD/PCDF emission in the Flemish Region (Belgium). *Organohalogen Compd*, 45, 352–355.
   h. Francois F., Bernaert, P. & Baert, R. (2001). Reduction of the dioxin emissions from iron sintering plants in the Flemish region (Belgium)—enforcement approach of the Environment Inspection Section. *Organohalogen Compd*, 54, 115–118.

i. Mangia, C., Gianicolo, E. A., Bruni, A., Vigotti, M. A., & Cervino, M. (2013). Spatial variability of air pollutants in the city of Taranto, Italy and its potential impact on exposure assessment. *Environmental monitoring and assessment*, 185(2), 1719–1735.
j. Martinelli, D., Mincuzzi, A., Minerba, S., Tafuri, S., Conversano, M., Caputi, G., Lopalco, G. L., Quarto, M., Germinario, C., & Prato, R. (2009). Malignant cancer mortality in Province of Taranto (Italy). Geographic analysis in an area of high environmental risk. *Journal of Preventive Medicine and Hygiene*, 50, 181–190.
k. Mitis, F., Martuzzi, M., Biggeri, A., Bertollini, R., & Terracini, B. (2005). Industrial activities in sites at high environmental risk and their impact on the health of the population. *International Journal of Occupational and Environmental Health*, 11, 88–95.

2. FederAcciai confederation

a. FederAcciai (2012). La siderurgia italiana in cifre. [FedearAcciai. "The Italian steel industry in figures" – our translation]

3. Eurofer

a. Eurofer (2012). European steel in figures 2008–2012.
b. Eurofer (2012). Annual report and European steel in figures.

D. ILVA SpA reports and press releases

a. ILVA (2010). "Bilancio separato e consolidato annuale". [ILVA separated and consolidated annual—our translation]
b. ILVA (2011). "Bilancio separato e consolidato annuale" [ILVA separated and consolidated annual statement—our translation]
c. ILVA (2011). "Trend finanziari: 2007–2011. [ILVA. Financial trends: 2007–2011—our translation].
d. Relazioni commissari straordinari: giugno-settembre 2013, ottobre-dicembre 2013, gennaio- marzo 2014, giugno-agosto 2014; post insolvenza: aprile 2015, luglio 2015, novembre 2015. [Extraordinary commissioners' reports: June–September 2013, October-December 2013, January-March 2014, June–August 2014; post insolvency: April 2015, July 2015, November 2015."—our translation]
e. Relazioni dello stato di aggiornamento dello stato di attuazione degli interventi strutturali e gestionali (prescrizioni AIA): gennaio 2013, aprile 2013, ottobre 2013, gennaio 2014, aprile 2014. ["Reports on the implementation state of structural and management measures (AIA prescriptions): January 2013, April 2013, October 2013, January 2014, April 2014."—our translation]
f. Nota ILVA 2013 - critica al documento "Valutazione danno sanitario Arpa". [ILVA press note 2013 - criticism of the document Health Damage Assessment by ARPA."—our translation]

g. Programma dei commissari (dicembre 2015). [Extraordinary commissioners plan (December 2015)—our translation]
h. Comunicati stampa: 13 agosto 2015, 15 settembre 2015. ["Press releases: 13th August 2015, 15th September 2015"—our translation].
i. Nota stampa ILVA: l'autorizzazione integrata (Aia) e i nuovi limiti per l'impianto di agglomerazione e sinterizzazione (camino E312) entreranno in vigore dal 30 giugno 2017. [ILVA press note: the Integrated Environmental Authorization (AIA) and the new limits for the agglomeration and sintering plant (chimney E312) will come into force on 30 June 2017."—our translation]

E. Newspapers, magazines, TV shows and blogs (the newspapers are reported in alphabetical order, then in chronological order)

1. "Corriere del Mezzogiorno" newspaper

   a. Unknown author (3rd September 2015). "I pm: rifiuti smaltiti illecitamente. Ilva nella bufera." [Unknown author. "The prosecutors: illicit waste. Ilva in the storm"—our translation]
   b. Consigliere, I. (14th July 2015). "Ilva di Taranto, per il 53% bisogna tutelare i lavoratori." [Consigliere, I. "Ilva in Taranto, for the 53% must protect workers"—our translation]

2. "Il Fatto Quotidiano" newspaper

   a. Casula, F. (2nd March 2012). "Ilva di Taranto, perizia choc: "90 morti all'anno per emissioni nocive della fabbrica"." [Casula, F. "Ilva in Taranto, choc report: 90 deaths per year due to harmful emissions from the factory."—our translation]
   b. Unknown author (26th July 2012). "Ilva sequestrata: "Disastro ambientale"." [Unknown author. "Ilva have been seized: "Environmental disaster""—our translation]
   c. Casula, F. (9th April 2013). "Salva Ilva, Consulta respinge ricorso Tribunale e gip: "Costituzionale"." [Casula, F. "Save Ilva, Council rejects Tribunal's appeal and the Preliminary inquiry judge: "Constitutional"."—our translation]
   d. Marescotti, A. (27th May 2013). "Ilva, la bufala dei 40 mila posti a rischio." [Marescotti, A. "Ilva, the hoax of 40 thousand jobs at risk"—our translation]

3. "Il Giornale" newspaper

   a. Carucci, E. (9th December 2015). "Ilva, il processo riparte dal gup e l'Asl vieta di aprire le finestre." [Carucci, E. "Ilva, the process starts again from the Preliminary hearing judge and the Local Health Agency forbids opening the windows"—our translation]

b. Carucci, E. (16th February 2016). "Emiliano chiama. Renzi non risponde. "Serve la decarbonizzazione dell'Ilva"." [Carucci, E. "Emiliano calls. Renzi does not answer. We need the decarbonisation of Ilva."—our translation]
c. Carucci, E. (27th February 2016). "L'Ilva autodenuncia i suoi livelli di diossina. Sono allarmanti." [Carucci, E. "Ilva self-denies its dioxin levels. They are alarming"—our translation]
d. Carucci, E. (23th March 2016). "Quella diossina è dell'Ilva, anzi no." [Carucci, E. "That dioxin belongs to ILVA, not indeed"—our translation]

4. "Il Sole 24 Ore" newspaper

a. Giliberto, J. (26th June 2011). "Ilva Taranto, chiesto lo stop." [Gilberto, J. "Ilva in Taranto, asked the stop"—our translation]
b. Palmiotti, D. (18th July 2012). "L'Ilva di Taranto a rischio chiusura." [Palmiotti, D. "ILVA in Taranto risks to close down"—our translation]
c. Pa., D. (18th July 2012). "L'acciaieria più grande d'Europa". [Pa., D. "The biggest European steel plant" – our translation].
d. Palmiotti, D. (25th July 2012). "Spiragli per l'Ilva di Taranto." [Palmiotti, D. "Glimmers for the Taranto's ILVA"—our translation]
e. Unknown author (6th August 2012). "Ilva di Taranto. Ferrante: se lo stabilimento chiude stop anche Genova e Novi Ligure." [Unknown author. "Ilva in Taranto. Ferrante: if the plant closes, stops also to Genoa and Novi Ligure."—our translation]
f. Unknown author (18th September 2012). "Ilva Taranto, Ferrante deposita in procura il piano di risanamento." [Unknown author. "Ilva Taranto, Ferrante filed the recovery plan to public prosecutor's office"—our translation]
g. Cottone, N. (3rd October 2012). "L'abc del decreto Ilva: riconosciuta la zona industriale di Taranto come area in situazione di crisi." [Cottone, N. "The abc of the Ilva decree: recognized the Taranto industrial site as an area in crisis"—our translation]
h. Palmiotti, D. (22th October 2012). "Taranto, tumori in aumento esponenziale. Ilva sotto accusa. Clini: si impone un programma straordinario di prevenzione." [Palmiotti, D. "Taranto, cancers exponential increase. Ilva under accusation. Clini: an extraordinary prevention program is required"—our translation]
i. Unknown author (26th October 2012). "Ilva di Taranto, il ministero dell'Ambiente ha rilasciato l'autorizzazione integrata ambientale." [Unknown author. "Taranto's ILVA: the Environmental Minister granted the Integrated Environmental Authorization"—our translation]
j. Unknown author (26th November 2012). "Chiude l'Ilva di Taranto, 5mila a casa, in corso sciopero di 24 ore. Confindustria calcola oneri per un miliardo. Il Governo convoca le parti." [Unknown author. "The Ilva of Taranto closes, 5 thousand at home, 24-h strike going on. Confindustria calculates charges for a billion. The Government convenes the parties"—our translation]

k. Unknown author (11th February 2016). "Ma i big mondiali avviano le ristrutturazioni." [Unknown author. "However, the bigs at the global level start the renovations"—our translation]
l. Meneghello, M. (1st March 2016). "Distributori «orfani» di Ilva e Cina." [Meneghello, M. "«Orphan» distributors of Ilva and China"—our translation]
m. Meneghello, M. (11th March 2016). "Ilva, Riva contesta i commissari." [Meneghello, M. "Ilva, Riva disputes the commissioners"—our translation]
n. Palmiotti, D. (23rd March2016). "Ilva, Galletti chiama Ispra per l'analisi della diossina. Sì a riduzione d'uso del carbone." [Palmiotti, D. "Ilva, Galletti calls Ispra for the dioxin's analysis. Yes to coal reduction use"—our translation]
o. Cassese, S. (15th May 2016). "Il Paese dalle mani legate. [Cassese, S. "The Country with tied hands"—our translation]
p. Meneghello, M. (18th May 2016). "Ilva, Italia sotto accusa a Strasburgo." [Meneghello, M. "Ilva, Italy accused in Strasbourg"—our translation]
q. Meneghello, M. (3rd June 2016). "«L'Ilva è strategica ma va risanata»." [Meneghello, M. "Ilva is strategic but it needs to be restored"—our translation]
r. Meneghello, M. (7th March 2017). "In porto le due offerte per rilevare Ilva." [Meneghello, M. "Successfully completed the two offers to take over ILVA"—our translation]
s. Meneghello, M. (26th July 2018). "Ilva, dal «giallo» sulla gara ai rischi sul futuro. Tutti gli interrogativi a un anno dall'aggiudicazione." [Meneghello, M. "Ilva, from the "mystery" on the race to the one of the risks about the future. All questions within a year of the adjudication"—our translation]

5. "La Gazzetta del Mezzogiorno" newspaper

a. Unknown author (27th September 2012). "Ilva, gli operai in sciopero presidi e blocchi a Taranto. Procura: «Si va avanti». Sciopero spacca sindacati e lavoratori. Vendola: I profitti ciclopici per risanare. Cosa prevede il piano dell'azienda respinto." [Unknown author. "Ilva, the workers on strike and blocks in Taranto. Prosecutor's office: «We go on». Strike splits unions and workers. Vendola: Cyclopean profits to restore. What included the rejected company plan"—our translation]
b. Unknown author (29th September 2012). "Ilva, operai tornano in fabbrica ma in dieci restano sui camini. AIA pronta per il parere tecnico. Clini: «Nell'Aia c'è tutto per la salute»." [Unknown author. "Ilva, workers return to the plant but ten remain on the chimneys. AIA ready for the technical opinion. Clini: «In the AIA there is everything for health»."—our translation]

6. "La Repubblica" newspaper

a. Unknown author (24th July 2012). "Inquinamento llva, i comitati all'Aja «Genocidio e crimini contro l'umanità»." [Unknown author. "Pollution llva, the Aja committees «Genocide and crimes against humanity»."—our translation]

b. Unknown author (26th July 2012). “Ilva: sigilli e 8 arresti, è sciopero a oltranza. Il gip: “Dagli impianti, malattia e morte”.” [Unknown author. “Ilva: seals and 8 arrests, it is strike to the bitter end. The investigating judge: «From implants, illness and death».”—our translation]
c. Unknown author (6th August 2012). “Ilva Taranto: Clini, non ho nessuna intenzione di dimettermi.” [Unknown author. “Taranto’s Ilva: Clini, I have no intention of resigning”—our translation]
d. Paolini, R. (10th September 2012). “Auto, elettrodomestici, tubi quanto conta l’acciaio Ilva per l’industria italiana.” [Paolini, R. “Cars, appliances, pipes, how much does Ilva’s steel count for the Italian industry”—our translation]
e. Unknown author (17th September 2012). “Ilva, mortalità più alta del 10%. Giallo sul nuovo studio dell’Iss.” [Unknown author. “Ilva, mortality higher than the 10%. Mystery about the new study by ISS”—our translation]
f. Unknown author (20th September 2012). “Ilva, Clini: “Manipolati i dati su tumori”. E anche Bonelli querela il ministro.” [Unknown author. “Ilva, Clini: Cancer data manipulated”. Bonelli sues the Minister too”—our translation]
g. Diliberto, M. (25th September 2012). “Ilva, il gip boccia il piano di risanamento Clini: decidiamo noi, senza interferenze.” [Diliberto, M. “Ilva, the preliminary inquiry judge rejects the recovery plan. Clini: we decide, without interference”—our translation]
h. Unknown author (28th September 2012). “Ilva, una manifestazione a Roma “Meno emissioni con la nuova Aia”.” [Unknown author. “Iva, an event in Rome “Less emissions with the new AIA”—our translation]
i. Diliberto, M. (15th October 2012). “Ilva, l’appello di Napolitano “Intesa tra magistrati e istituzioni”.” [Diliberto, M. “Ilva, the call of Napolitano: «agreement between magistrates and institutions»”—our translation]
j. Unknown author (20th October 2012). “Clini: Per salvare l’Ilva l’unica via è quella dell’Aia.” [Unkown author. “Clini: to save Ilva the only way is that of AIA”—our translation]
k. Ricapito, V. (9th December 2015). “Ilva, il processo ‘Ambiente svenduto’ ripartirà da zero: nel verbale mancava il nome di un legale.” [Ricapito, V. “Ilva, the ‘Sell out environment’ process’ will start from the beginning: the name of an attorney was missing in the minute”—our translation]
l. Cassano, A. (16th December 2015). “Ilva, un’altra beffa per le aziende dell’indotto: il governo boccia l’emendamento pd per sostenerle.” [Cassano, A. “Ilva, another insult to the companies of the sub-sector: the government rejects the pd amendment to support them”—our translation]
m. Ricapito, V. (25th December 2015). “Ilva, l’affondo di Emiliano: “Se continua a inquinare chiederò lo stop alla produzione”.” [Ricapito, V. “Ilva, the Emiliano thrust: «If it continues to pollute, I will ask for the stop of the production».”—our translation]
n. Unknown author (28th December 2015). “Ilva, la proposta di Emiliano al governo: “Affidiamola all’Enel. Mittal è una condanna”.” [Unknown author. “Emiliano’s proposal to the government: «Let’s entrust Ilva to Enel. Mittal is a blame».”—our translation]

o. Randacio, E. (26th January 2016). "Ilva, Bruno Ferrante indagato a Milano per bancarotta." [Randacio, E. "Ilva, Bruno Ferrante investigated for bankruptcy in Milan"—our translation]
p. Unknown author (26th January 2016). "Ilva, Palazzo Chigi assicura: "La Ue ha detto sì ai lavori per le bonifiche e a tutela della salute"." [Unknown author. "Ilva, Palazzo Chigi assures: «The EU has said yes to the works for the reclamations and health protection»."—our translation]
q. Unknown author (27th January 2016). "Ilva, via libera del Senato: è legge il decreto sulla cessione a terzi." [Unknown author. "llva, the ok by the Senate: the decree on the sale to third parties is law"—our translation]
r. Unknown author (28th January 2016). "Ilva, gli operai di Taranto chiedono più soldi: "Altrimenti protestiamo come a Genova"." [Unknown author. "Ilva, the workers of Taranto ask for more money: «Otherwise we protest as in Genoa»."—our translation]
s. Ricapito, V. (27th February 2016). "Taranto, più diossina in strada che nello stabilimento Ilva: polemiche per i dati shock." [Ricapito, V. "Taranto, more dioxin in the streets than in the Ilva plant: controversy for the shock data"—our translation]
t. Minella, M. (27th March 2016). "Ilva, la cordata italoturca: privati e Cassa Depositi alleati con Erdemir." [Minella, M. "Ilva, the Italo-Turkish consortium: private individuals and Cassa Depositi allied with Erdemir"—our translation]
u. Ricapito, V. (30th March 2016). "Ilva, Fabio Riva lascia il carcere: ai domiciliari dopo il sì del tribunale del riesame di Taranto." [Ricapito, V. "Ilva, Fabio Riva leaves the prison: at home after the yes of the court of the review of Taranto"—our translation]
v. Ricapito, V. (30th March 2016). "Ilva, a Taranto altri due incidenti in poche ore: i due operai feriti non sono gravi." [Ricapito, V. "Ilva, in Taranto two more accidents in a few hours: the two wounded workers are not serious"—our translation]
w. Unknown author (6th September 2016). "Ilva, Clini: "Non trattiamo sull'Aia" Confindustria: "Chiudere? Un disastro"." [Unknown author. "Ilva, Clini: We do not deal with AIA Confindustria: To close? A disaster"—our translation]

7. La Stampa newspaper

a. Corbi, M. (28th July 2012). "Ilva, nel quartiere Tamburi coperto di polvere rosa. Siamo morti viventi." [Corbi, M. "Ilva, in the Tamburi district covered by pink dust. «We are living dead»"—our translation]
b. DiTodaro, F. (3rd October 2016). "Ilva choc, a Taranto + 30% di bambini malati." [DiTodaro, F. "Ilva choc, in Taranto + 30% of sick children"—our translation]

8. "Panorama" magazine

a. Amadori, G. (3rd June 2013). "Ilva, la grande guerra." [Amadori, G. "ILVA, the great war"—our translation]

b. Petrelli, M. (7th September 2013). “Ilva e salute, i dati della discordia.” [Petrelli, M. “Ilva and the health, the discord data”—our translation]
c. Luciano, S. (13th September 2012). “Ilva, la chiusura e il fallimento di Enrico Bondi.” [Luciano, S. “Iva, the closure and the Enrico Bondi failure”—our translation]
d. Cordasco, G. (13th September 2013). “Caso Ilva, ora si pensa a un super-commissario.” [Cordasco, G. “Ilva case, now it is matter of a super-commissioner”—our translation]
e. Petrelli, M. (19th September 2013). “Ilva, le responsabilità dei Riva e della procura.” [Petrelli, M. “Ilva, the Riva and the prosecutors’ responsibilities”—our translation]
f. Petrelli, M. (22th September 2013). “L’Ilva produrrà acciaio pulito. Ma a che prezzo?” [Petrelli, M. “Ilva will produce “clean” steel”. But at what price?—our translation]
g. Petrelli, M. (5th July 2014). “Ilva, mortalità infantile cresciuta del 21%.” [Petrelli, M. “ilva, children mortality increases by the 21%”—our translation]
h. Cordasco, G. (10th February2015). “Ilva Taranto, ecco quale sarà il futuro dello stabilimento.” [Cordasco, G. “Tarantos’ Ilva, here’s what the future of the plant will be”—our translation]
i. Unknown author (5th June 2015). “Fiat chiude i rapporti con Ilva: la mail-documento.” [Unknown author. “Fiat closes its relations with Ilva: the mail-document”—our translation]
j. Unknown author (23th July 2015). “Ilva di Taranto, 47 rinviati a giudizio: c’è anche Vendola.” [Unknown author. “Tarantos’ Ilva, 47 deferred to judgment: among them also Vendola”—our translation]
k. Piperno, A. (4th November 2015). “Ilva, parla Piero Gnudi: Nella Legge di Stabilità una garanzia per l’azienda.” [Piperno, A. “Ilva, Piero Gnudi speaks: in the Stability Law a guarantee for the company”—our translation]
l. Adnkronos (11th January 2016). “‘Operazione ‘Ilva’, Clini: Fu un atto contro il Paese.” [Adnkronos. “Operation ‘Ilva’, Clini: It was an act against the country”—our translation]
m. Unknown author (20th January 2016). “Ilva: i perché dell’indagine dell’Unione europea per aiuti di Stato.” [Unknown author. “Ilva: the reasons of the EU inquiry on state’s aid”—our translation]

9. Italian TV inquiry show “REPORT”

a. Report (September 2013). “Patto d’acciaio. [Report television show. “The steel pact”—our translation]
b. Report (18th November 2013). “Aggiornamento Patto d’acciaio.” [Report television show. “The steel pact” update—our translation]
c. Report (2013). Prezzo e valore dell’aria.” [Report television show. “Air price and value”—our translation]

d. Report (23rd July 2015). "ILVA: Disastro ambientale, 47 a giudizio e due condanne." [Report television show. "ILVA: environmental disaster, 47 in courts and 2 convictions"—our translation]
e. Report (10th April 2016). "No, tu no!" [Report television show. "No, not you!"—our translation]

10. PEACELINK environmental association blog

a. Peacelink (8th August 2014). "Cronologia delle lotte dei cittadini." [Peacelink blog. "Chronology of the citizens fights"—our translation]
b. Peacelink (22nd December 2015). "Riscontro a richiesta dell'associazione Peacelink del 22 dicembre 2015 in merito all'esercizio dell'impianto altoforno 1 dell'ILVA S.p.A. (Taranto)". [Peacelink blog. Required feedback about the use of the blast furnace 1 of ILVA S.p.A. (Taranto"—our translation]
c. Peacelink (13th January 2016). "ILVA: Afo1 fermo dal 2012. Ispra: afo1 è in esercizio!" [Peacelink blog. ILVA: Blast furnace 1 stop from 2012. IPRA: blast furnace is in action!"–our translation].
d. Peacelink (9th March 2016). "L'Ilva e Kant: i nuovi limiti della diossina rinviati a giugno 2017." [Peacelink blog. "ILVA and Kant: the new dioxin limits postpone to June 2017"—our translation]

References

Adams, B. (2008). *Green development: environment and sustainability in a developing world*. London: Routledge.

Asenova, D., McKendrick, J., McCann, C. & Reynolds, R. (2015). Redistribution of social and societal risk: The impact on individuals, their networks and communities in Scotland. http://www.jrf.org.uk/sites/files/jrf/social-societal-risk-full.pdf. Accessed 6 July 2017.

Auerbach, C., & Silverstein, L. (2003). *Qualitative data: An introduction to coding and analysis*. New York: New York University Press.

Bebbington, J., & Unerman, J. (2018). Achieving the United Nations Sustainable Development Goals: an enabling role for accounting research. *Accounting, Auditing & Accountability Journal, 31*(1), 2–24.

Benn, S., & Dunphy, D. (2007). *Corporate governance and sustainability. Challenges for theory and practice*. London: Routledge.

Bulkeley, H. (2005). Reconfiguring environmental governance: Towards a politics of scales and networks. *Political Geography, 24,* 875–902.

Bulkeley, H., Perkins, A., Jordan, R., & Selin, H. (2013). Governing sustainability: Rio+20 and the road beyond. *Environment and Planning C: Government and Policy, 31,* 958–970.

Dean, M. (2009). *Governmentality: Power and rule in modern society*. London: SAGE.

Diletti, G., Ceci, R., Scortichini, G., & Migliorati, G. (2009). Dioxin levels in livestock and grassland near a large industrial area in Taranto (Italy). *Organohalogen Compounds, 38,* 2359–2363.

DW. (2018). *First came jobs, then came death*. https://www.dw.com/en/first-came-jobs-then-came-death/g-42603241. Accessed January 15, 2019.

European Commission. (2017). *State aid: Commission concludes in-depth investigation on support to Italy's largest steelmaker ILVA S.p.A. in A.S. and orders recovery on two measures that involved illegal State aid*. http://europa.eu/rapid/press-release_IP-17-5401_en.htm. Accessed January 15, 2019.

European Parliament. (2015). *The ILVA industrial site in Taranto*. Resource document. Directorate General for internal Policies. Policy department A: Economic and scientific policy. http://www.europarl.europa.eu/RegData/etudes/IDAN/2015/563471/IPOL_IDA(2015)563471_EN.pdf. Accessed December 5, 2015.

Foucault, M. (1981). The order of discourse. In R. Young (Ed.), *Untying the text: A post-structuralist reader* (pp. 48–79). London: Routledge.

Foucault, M. (1991). Governmentality. In G. Burchell, C. Gordon, & P. Miller (Eds.), *The Foucault effect: Studies in governmentality*. Hemel Hempstead: Harvester Wheatsheaf.

Foucault, M. (2007). *Security, territory, population: lectures at the Collège de France, 1977–78*. Basingstoke: Palgrave Macmillan.

Frickel, S., & Davidson, D. (2004). Building environmental states. Legitimacy and rationalization in sustainability governance. *International Sociology, 19*(1), 89–110.

Funnell, W., Antonelli, V., & D'Alessio, R. (2018). Accounting and psychiatric power in Italy: The royal insane hospital of Turin in the 19th century. *Critical Perspectives on Accounting*. https://doi.org/10.1016/j.cpa.2018.08.004.

Gouldson, A., & Bebbington, J. (2007). Corporations and the governance of environmental risk. *Environment and Planning C: Politics and Space, 25*(1), 4–20.

Gouldson, A., Lidskog, R., & Wester-Herber, M. (2007). The battle for hearts and minds? Evolutions in corporate approaches to environmental risk communication. *Environment and Planning C: Politics and Space, 25*(1), 56–72.

Graham, J. D., & Wiener, J. B. (1995). *Risk vs. risk—Tradeoffs in protecting health and the environment*. Cambridge: Harvard University Press.

Gray, R. H., & Milne, M. (2004). Towards reporting on the triple bottom line: Mirages, methods and myths. In A. Henriques & J. Richardson (Eds.), *The triple bottom line: Does it all add up?*. London: Earthscan.

Greenspec. (2019). *Steel production and environmental impact.* http://www.greenspec.co.uk/building-design/steel-products-and-environmental-impact/. Accessed January 8, 2019.

Hart, S. L. (1997). Beyond greening: Strategies for a sustainable world. *Harvard Business Review, 75*(1), 66–77.

Lawhon, M., & Patel, Z. (2013). Scalar politics and local sustainability: Rethinking governance and justice in an era of political and environmental change. *Environment and Planning C: Government and Policy, 31,* 1048–1062.

Martinelli, D., Mincuzzi, A., Minerba, S., Tafuri, S., Conversano, M., Caputi, G., et al. (2009). Malignant cancer mortality in province of Taranto (Italy). Geographic analysis in an area of high environmental risk. *Journal of Preventive Medicine and Hygiene, 50,* 181–190.

McKinlay, A., & Pezet, E. (2010). Accounting for Foucault. *Critical Perspectives on Accounting, 21*(6), 486–495.

Meadowcroft, J., Farrel, K., & Spangenberg, J. (2005). Developing a framework for sustainability governance in the European Union. *International Journal of Sustainable Development, 8*(1–2), 3–11.

Miller, P. (2001). Governing by numbers: Why calculative practices matter. *Social Research, 68,* 379–396.

Mitis, F., Martuzzi, M., Biggeri, A., Bertollini, R., & Terracini, B. (2005). Industrial activities in sites at high environmental risk and their impact on the health of the population. *International Journal of Occupational and Environmental Health, 11,* 88–95.

Olmez, G. M., Dilek, F. B., Karanfil, T., & Yetis, U. (2016). The environmental impacts of iron and steel industry: A life cycle assessment study. *Journal of Cleaner Production, 130*(1), 195–201.

Phillimore, P., Schlüter, A., Tanja Pless-Mulloli, T., & Bell, P. (2007). Residents, regulators, and risk in two industrial towns. *Environment and Planning C: Politics and Space., 25*(1), 73–89.

Power, M. (2007). Corporate governance, reputation, and environmental risk. *Environment and Planning C: Politics and Space, 25*(1), 90–97.

Russell, S., & Frame, B. (2013). Technologies for sustainability: A governmentality perspective. *International Journal of Sustainable Development, 16*(1–2), 91–106.

Russell, S., & Thomson, I. (2008). Accounting for a sustainable Scotland. *Public Money and Management, 28*(6), 367–374.

Russell, S., & Thomson, I. (2009). Analysing the role of sustainable development indicators in accounting for and constructing a sustainable Scotland. *Accounting Forum, 33*(3), 225–244.

Scholz, R. W. (2011). *Environmental literacy in science and society: From knowledge to decisions*. Cambridge: Cambridge University Press.
Shiroyama, H., Yarime, M., Matsuo, M., Schroeder, H., Scholz, R., & Ulrich, A. E. (2012). Governance for sustainability: Knowledge integration and multi-actor dimensions in risk management. *Sustainability Science, 7*(1), 45–55.
Spence, L., & Rinaldi, L. (2014). Governmentality in accounting and accountability: A case study of embedding sustainability in a supply chain. *Accounting, Organizations and Society, 39,* 433–452.
Stacchezzini, R. (2012). *Accounting e potere: il contributo interpretativo del governmentality framework*. Milano: Franco Angeli.
Tait, J., & Chataway, J. (2007). The governance of corporations, technological change, and risk: Examining industrial perspectives on the development of genetically modified crops. *Environment and Planning C: Politics and Space, 25*(1), 21–37.
Whitehead, M. (2006). *Spaces of sustainability: Geographical perspectives on the sustainable society*. London: Routledge.
Wilshusen, P., & MacDonald, K. (2017). Fields of green: Corporate sustainability and the production of economistic environmental governance. *Environment and Planning A, 49*(8), 1824–1845.
Worldsteel Association. (2019). *Safety and heath*. https://www.worldsteel.org/steel-by-topic/safety-and-health.html. Accessed January 8, 2019.

Alessandro Lai is Professor of Accounting at the Department of Business Administration, University of Verona (Italy). His research areas are accounting, accountability and corporate governance, both in contemporary and historical settings. He has published articles on *Accounting, Auditing & Accountability Journal, Accounting History, Business Strategy and the Environment, Critical Perspectives on Accounting, Journal of Cleaner Production, Journal of Management and Governance, and Meditari Accountancy Research.*

Silvia Panfilo is Post-doc Researcher and Lecturer of Accounting at Ca' Foscari University of Venice (Italy). Her research areas are accounting, risk management and corporate governance. She was visiting PhD Student at North Carolina State University (USA). She has published book chapters and papers in international conference proceedings. She was awarded at the 2017 AIDEA Emerging Scholar Colloquium for the Best Paper Award.

Riccardo Stacchezzini is Associate Professor of Accounting at the Department of Business Administration, University of Verona (Italy). His research spans across accounting, accountability and corporate governance disciplines. He has published articles on *Accounting, Auditing & Accountability Journal, Accounting History, Business Strategy and the Environment, Critical Perspectives on Accounting, Journal of Cleaner Production, Journal of Intellectual Capital, Journal of Management and Governance, and Meditari Accountancy Research.*

Affiliations

Alessandro Lai[1] · Silvia Panfilo[2] · Riccardo Stacchezzini[1]

Silvia Panfilo
silvia.panfilo@unive.it

Riccardo Stacchezzini
riccardo.stacchezzini@univr.it

[1] Department of Business Administration, University of Verona, Verona, Italy

[2] Department of Management, Ca' Foscari University of Venice, Venice, Italy