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Article

Evaluating Sustainability and Democracy in the Development of Industrial Port Cities: Some Italian Cases

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Abstract: Strategic Environmental Assessment (SEA) is a major policy evaluation tool, for institutional processes, when they need to cope with fundamental risks, give voice to non-human agents, manage commons, and address environmental justice. The interplay of SEA with planning, unravels key issues and criticalities in both urban governance and environmental democracy. How can evaluation be developed to support the process? Structured evaluation methods applied in environmental assessment are maybe not sufficient to solve complex social conflicts. We point out some key reflections with the aim of opening up the discussion, by taking the case study of the environmental assessment of pollutant activities in the main industrial port cities of Southern Italy. They represent, at the moment, the most significant social criticality in our country, related to the interplay between environmental assessment and risk for labor. The paper focuses on the case study by mentioning the evolution of some thoughts about the red stripe that links sustainability, environmental democracy, and social evaluation, and illustrates the issues of these aspects in the case study, with the aim of underlining the difficulty of environmental assessment tools as a major support for planning processes, when social conflicts arise.

Keywords: social conflict; post normality; Strategic Environmental Assessment; industrial port cities; SEA; environmental democracy

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1. Introduction

The aim of the paper is to provide experience-based critical support, to environmental evaluation (and in special mode to the strategic environmental assessment: SEA), by profiling the way in which evaluation can face uncertainty in the context of social conflict. We choose as the case study, the attempt of a sustainable re-development of the southern industrial port cities in Italy that currently represent the key factor of the main environmental conflict in our country.

Beyond the magnitude of the phenomenon, port cities, stand up as a major concern for environmental governance and democracy [1], and are an ideal target for theoretical investigations and practical innovations alike.

During 2008, in fact, for the first time in history, the share of the world population living in urban areas reached 50%, and the figure is expected to rise to 60% by the year 2030 [2]. Most of world urban population lives in coastal cities, and most of the main pollutant activities are still located in their port areas. Five steps characterize the development of port cities [3].

Firstly, the starting point is represented by the ancient port city, looking at a form of sea port considered as an urban center for overseas trade. The port, as an integral part of the city, represented its commercial core. The Nineteenth Century witnessed the "expansion of port cities".

After the second world war, port cities entered into a new stage, represented by the modern "industrial harbor city". This period was characterized by a new physical distinction among port areas and town areas, due to the spatial expansion of factories aside the harbors.

In Italy, more in detail, this expansion was favored by public intervention with the first governmental alliance between Christian-democrats and Social-democrats. The state steel factories, as in Taranto, Venice (Porto Marghera) and Naples (Bagnoli) were born in that period, near port areas, in order to receive coal supply from the sea.

In the fourth stage, the maritime industrial development areas started. Port expansion continued with the support of technical innovation introduced by containers. The end of Fordism damaged local labor markets.

In the Third Millennium "waterfront redevelopment" represented the leading idea for a form of economic and cultural reassessment. From Fisherman's Wharf in San Francisco to Hafen City, urban design modified the harbor space into a new cultural identity, by changing the social structure of both city and port [4]. With regard to Italy, in most cases port cities still remain locked at the fourth step, without having evolved.

A major question for a number of industrial port cities of Italy (and not only Taranto or Brindisi, but also Porto Marghera (Venice) and Bagnoli (Naples)) is represented by the great difficulty in starting a new redevelopment of waterfront and inner harbor.

This is due to the "resistance" of an industrial spatial organization coming from the national policy of industrialization of the Sixties, and still in place. Therefore we still support the existence of pollutant harbors in the proximity of cities that could be culturally and environmentally regenerated. Despite social pressures and environmental evaluation processes, the conservative model is still there, due to the key objective of "labor saving". Maybe we can say that such Italian port cities remain stagnant at the fourth step of port cities development as drafted in Hoyle's classification

The consequences are:

- social fights to obtain a future environmental sustainable development,
- uncertainty of future development, due to the weakness of future labor markets linked with pollutant energy production and steel factories,
- the trade-off between public health and safety and the reservation of jobs related to the industrialist context,
- ineffectiveness of institutional evaluation in addressing plans, despite the used approach (social balance of plan, multi-criteria evaluation, *etc.*).

After this initial premise, the paper starts with a brief literature review of the inter-action between environmental democracy and urban governance. Among urban planning and social mobilization; those interactions generate a demand for more effective environmental evaluation as a support to the plans and policies.

Whereas there is no need to trace democracy back to the polis, we notice that the literature on urban governance played an important role in advancing the general understanding of the concept [5–7].

We refer in particular to those environmental evaluation procedures that challenge the ways societies deal with collective action in the public domain (for instance, local and global commons, environmental justice, *etc.*). We investigate the role of evaluation in influencing how democratic the modes of governance of environmental issues at the city-level are, and the mutual relations alike.

In the subsequent sections, we first provide some background information on SEA and urban planning. After that, we present some reflections on the relationship between sustainability, environmental democracy, and social conflicts, considered as key elements to solve issues of the sustainability of processes. The last sections are devoted to some case studies regarding environmental conflicts and environmental impact assessments in the Italian industrial port cities of Brindisi and Taranto. We conclude by pointing out some key concepts with the aim of supporting the debate about effectiveness of evaluation beyond arising social conflicts.

2. Environmental Evaluation and Urban Governance

In this section we trace a brief profile of Environmental Evaluation (EE), according to the effectiveness it can have on urban governance

Since its very early days, environmental evaluation aroused high expectations among the advocates of environmental protection. The original intentions of the U.S. National Environmental Policy Act (NEPA) of 1969, from which EE originated, envisaged a mechanism that could improve not only specific plans or projects, but also change institutions, world views and behaviors by instilling ecological rationality into systems of governance [8].

The idea that EE should engage with decision-making and the institutional, administrative, cultural and political context to deliver change in the way environmental issues are being handled, has resonated throughout the evolution of EE theory and practice.

Bartlett and Kurian [9] developed what is still the most highly cited attempt at theorizing the interplay between EE and policy making. They identified the following six implicit models:

- the pluralist politics model centers on democratizing decision making by securing increased opportunities for public participation;

- under the institutionalism, EE aims at changing political institutions in terms of norms, principles, mandates, rules, routines and orientations by incorporating environmental values;
- the organizational politics model emphasizes the chance to enhance the role of environmental advocates into formal organizations (public or private) that are required to engage in EE;
- the symbolic politics model detects an ambivalent trend entailing either the legitimization of decisions by hiding them behind a cumbersome, yet often irrelevant, scientific inquiry, or by an attempt to reaffirm the moral supremacy of environmental values;
- the political economy model brings business actors and economic interests—largely neglected in most EE literature—back to the foreground because EE may alter economic opportunities, risks and constraints;
- the information processing model positions EE's role in decision-making as a technique for generating, organizing, and communicating information to a central, apolitical, decision maker.

Despite the fact that five out of six models take politics explicitly into account, the information processing model proved to be by far the closest to actual EE practices. A long standing critique of EE as poorly cognizant of the inherently political, social and cultural conditions amid which it is supposed to occur, paved the way for a renewed interest in EE processes, instead of the usual focus on procedures [10]. A first argument put forward by scholars was that EE was imbued with instrumental rationality [11] in that it assumed a central decision-maker, following orderly sequential steps where decisions are led by previously formulated goals, and grounded in scientific evidence.

Kørnøv and Thissen [12] tried to discuss the role of EE practitioners in the real world of decisions—where interdependent actors mingle facts and values over unpredictable rounds of interaction—and contrasted technicians (presenting value-free scientific evidence) with mediators (structuring the discussion and searching for compromise) and advocates (taking partisan stances and trying to steer the whole process towards definite directions). Nilsson and Dalkmann [13] joined in blaming EE for relying exclusively on rationalism, and tapped into decision-making theory and policy analysis to propose a mix of analytical and deliberative methods to handle the inherently political and value-laden nature of EE.

Some literature references [14,15] underline that EE scholars and practitioners tend to communicate only among themselves, which can explain the limited grip on policy making. These authors suggest a framework centered on the concept of decision scoping, that is, understanding what decisions/actions policy makers are expected to make at each stage of the process, the type of environmental information required, and the time and resources available in order to identify the most appropriate contribution of Strategic Environmental Assessment (SEA) in the process.

There is now a growing consensus on the need for EE to venture into the meanderings of decision making [12], as well as into the appreciation of how social, cultural, political and institutional conditions are likely to influence the way EE is carried out in different governance contexts [16,17].

The EE literature is thus becoming ever more interested in addressing issues relevant to governance and democracy. For instance, some argue that EE should entail an explicit focus on substantial ecological and ethical requirements, especially in terms of environmental justice [11,18].

Others maintain that EE should help overcome the general resistance towards taking environmental objectives on board in all policy sectors [19], by involving environmental professionals, departments,

and agencies to promote transformational change [16] without watering down environmental concerns [20].

As for democratization, EE could urge public and corporate officials to share decision making with the public in different ways, for instance by becoming the stage for the contest of competing interests, or rather a platform used by socially marginalized groups to alter the uneven distribution of environmental costs and benefits [21]. More common perspectives on participation within EE processes include [13]:

- a normative argument stating that citizens have the right to be informed and participate according to democratic principles;
- a substantive argument stating that people's knowledge can complement scientific and administrative expertise;
- an instrumental argument stating that participatory decision making can secure acceptance and trust.

A mix of normative and strategic motivations seems to underpin the provisions for democratizing decision making that have been subsequently included in the legislation on all major forms of EE.

3. The Tool of Strategic Environmental Assessment

In this section we analyze the relationship between complex social and institutional planning processes that can be supported by Strategic Environmental Assessment (SEA). SEA is the latest form of EE to be formally introduced into legislative frameworks worldwide. SEA addresses plans and programs, and covers a wide range of issues subsumed under the vaguely defined "environment" label. Indeed, by the time SEA got institutionalized as a new policy format in the EU—the SEA Directive dating back to 2001—the link between environmental issues and democratic governance had been brought to the fore by the 1992 Rio Declaration (Principle 10), and afterwards enshrined in the Aarhus Convention. The "Convention on access to information, public participation in decision-making and access to justice in environmental matters"—negotiated in the framework of the United Nations Economic Commission for Europe (UNECE)—is possibly the "most ambitious venture in the area of environmental democracy so far undertaken under the auspices of the United Nations" [22].

Besides SEA, the broader family of EE we refer to in this study definitely includes Environmental Impact Assessment (EIA) and Habitats Regulations Assessment (HRA), and covers other forms of analysis and evaluation such as the Integrated Environmental Permit (IEP) system under the Integrated Pollution Prevention and Control (IPPC) regime, Major Accident Risk Assessment (MARA, under the Seveso Directives), and Reporting on the State of the Environment (RSE) in the context of local Agenda 21 processes and environmental management systems, following either European (EMAS) or international (ISO 14001) standards.

The reasons for acknowledging these links are manifold:

1. the separation between SEA and EIA has been either late (e.g., the original 1978 draft EU Directive addressed both projects and plans, which were eventually covered by two separate acts adopted respectively in 1985 and 2001) or incomplete, as the 1969 U.S. NEPA did not make distinctions between project level EIA and what has come to be known as programmatic environmental impact statement [23];
2. SEA is embedded in a tiering system which entails a very close integration with EIA and/or HRA, to such an extent that both are set in Directive 2001/42/EC as cornerstones to inform of screening, and SEA is only conceptualized insofar as HRA is already needed, or EIA is foreseen downstream;
3. all forms of environmental evaluation must rely on common resources (such as baseline environmental analysis and monitoring systems) and rules (e.g., access to information, participation in decision making and access to justice according to the requirements of the Aarhus Convention);
4. so far these different procedures have been backed by common (albeit weak) theorizing, and were developed by largely overlapping communities of practitioners.

Today, even those forms of EE that had been introduced before the entry came into force of the Aarhus Convention, have been amended so as to comply with its requirements [24]. However, despite the contribution of EE, environmental democratization is progressing slowly [25].

4. Evaluation of Sustainability in the Urban Development Process and Environmental Conflicts

As can be perceived below, the introduction of forms of environmental evaluation of plans and planning processes does not guarantee *a priori* to reach a sustainable form of planning and governance. In this section we treat some definitions that give an idea of the complexity of the issues of sustainability.

Sustainability has been defined by the identification of its essential components, prerogatives, and goals in the Brundtland Report [25]. Immediately after, the Rio Conference emphasized the question of infra/inter-generational equality. Finally Serageldin and Steer [26], described as "pillars of sustainability" the well-known triangular relationship among environmental protection, economic prosperity and social equity. Some scholars [27,28], reflecting on the support to sustainable processes, enlarged the concept by a wider hexagonal classification, which embraces the concept of "Finware" (that brings to mind Serageldin's economic dimension), "Ecoware" (that brings to mind Serageldin's environmental dimension), and "Civicware" (that brings to mind Serageldin's social dimension); Software, Hardware and Orgware stand for more instrumental aspects, to achieve results in terms of social equity, environmental preservation and economic wealth.

In fact, referring to urban spatial systems and communities, the hexagonal model focuses on the inter-connection among six different forms of capitals: the ecoware refers to the natural capital: environment, natural resources, landscape, energy consumption, waste management; the civicware is that social capital that pertains to intra- and inter-generational equity, community involvement, local quality of life and, consequently, the environmental democracy and the preservation of commons for future generation; the finware concerns private and public financial capitals, with economic attractiveness and dynamism; hardware refers to the man-made capital, including built environment

and technologies [29], land use, transports; orgware represents the institutional capital that qualifies policies and local governance and that supports the public-private partnership; software is the human capital based on knowledge, culture and education.

Assessing the sustainability of a process means to appraise the challenge of the future, and there is not a stake that can be evaluated without a large uncertainty for survival of the future generation.

If we link the fundaments of sustainability with the evaluation of planning and governance, intended as assessing the way they obtain environmental democracy, we can see how much is facing in terms of complexity, conflict, nonequivalent descriptions and points of view.

Non-sustainability is evident when some actions in the field of sustainability, conflict with each other instead of converging on the same addresses (e.g. Ecoware *versus* Finware, or social equality *versus* economic wealth).

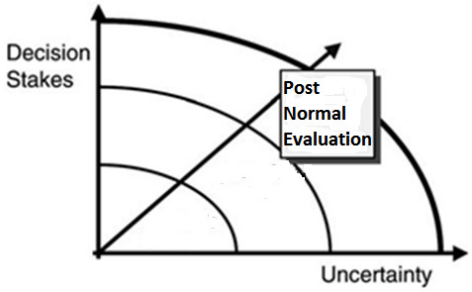
Also community is not unanimous in looking at the environmental issues. It is not obvious that the "fair social responsibility" of the environment has a single definition [30]. The concern of the environment is not unique, and different points of view about the environment are conflicting [31].

The need of complex social and environmental assessment arises during the process, when the public has to "defend" the property rights on commons, against the development rights of the stakeholder [32].

Munda takes up the theme of democracy, when he combines multi criteria analysis looking at a multi-group vision, in Social Multicriterial Evaluation on environmental issues [29].

He tries to translate the analysis of conflict, supported by social planning balance sheet, or social Multicriteria Evaluation [33]. The latter also considers the SMDM (Social Multicriteria Decision Making) an evaluation procedure adapted to contexts of great uncertainty and relevant conflict. Structured evaluation could seem insufficient. Figure 1 shows what happens when the uncertainty rises and the stake is high: for instance, when the environmental damage refers to pollution and public health. The decision stake (in case studies, for instance, the social cost of industrial reconversion: the loss of labor against environmental health) is high and the trust in evaluation decreases: the evaluator plays in the field of so called "post-normal" evaluations [34]. The link between multidimensional evaluation with the assessment of sharing/social conflict is clearly present. Also, more generally speaking, structured methods, such as multidimensional/multigroup, should seek a better connection between the political complexity of the decision arena and the uncertainty about future environmental/social effects [35].

Figure 1. Relationship between stakes and uncertainty: the post-normal evaluation.



As suggested by the same authors, interviews or statistical surveys can support structured evaluation methods. This kind of integrated evaluation is naturally useful in the case of institutional evaluation (like SEA), when the process accompanies the development of plans or programs that "*per se*" utilize the joining of hard analyses with social investigation [35,36].

The case studies show the application of methods both by structured evaluation and social investigation. In detail, in the case of Taranto the application of social investigation was preferable, due to the strong evidence of social conflict arising in the process. Instead in the case of Brindisi, there was an attempt to consider the conflict inside the structured evaluation, as the model of SMDM suggests, because the same conflict is more "latent", even if strongly afflicting the urban development.

5. Case Study: Planning and Environmental Policies in Brindisi and Taranto

In this section we describe two problematic decision arenas where the traditional trade-off between market and environmental externality arise as a dramatically complex question, putting on evidence where the relation between the relevance of the stake and the need of evaluation methods is able to manage multiplicity.

Taranto and Brindisi, the two most air polluted Italian cities by industry and energy production are investigated. Figure 2 shows the location of the most air pollutant industrial activities in Italy. The color and the size of the circles show the relevance of the pollution. Except for Sardinia and the Po Valley, the problem characterizes port areas, and the worse situations are represented by the case studies of the paper. The dock of Brindisi is developed with a "Y" shape in two bays. A bay on the west coast overlooks predominantly naval facilities, while the other overlooks the commercial port and industrial area. Behind the seat of the Navy there is the airport and an ONU Camp of "Blue Helmets".

As for many natural ports, Brindisi harbor has witnessed different uses evolving throughout the history of the city: the military function, the commercial, the industrial and the residential function.

Being one of the richest cities of "Magna Grecia", with a privileged connection to the Balkans and Greece, and easily protected from sea attacks, thanks to the depth of its bays, it was a powerful military and commercial port. Both the Roman roads "Via Traiana" and "Via Appia" extended their paths to Brindisi. "Via Appia" as well reached Taranto, a further great ancient Greek port-city of Apulia.

The national industrial policy of the sixties provided by the Italian government, provided the southern city of Brindisi, Taranto, Naples with industrial pools. In Bagnoli (Naples) and Taranto steel factories were set up. In Brindisi a petro-chemical complex was created. All these functions still remain in the city of Brindisi.

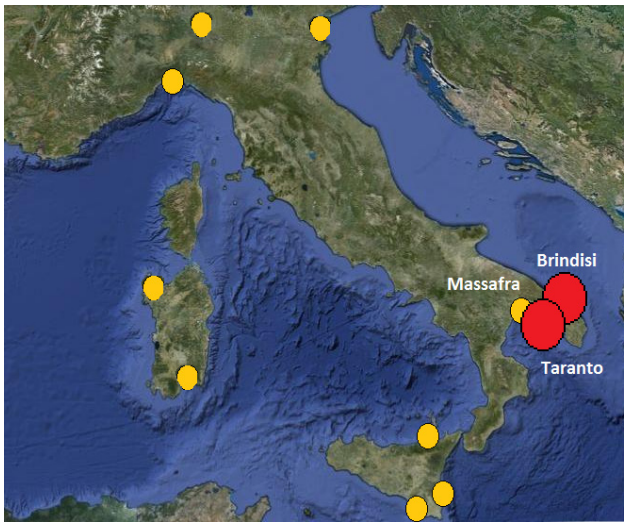
For each one of these functions many institutional actors play their role. In the territory of Brindisi two coal-fired plants disseminate their pollution to both atmosphere and soil. The concentration of such power production (that is sufficient for three or four southern regions) in such a small area conflicts with the aim of preserving environmental justice, since the local environmental impacts of the energy production, are suffered only by a single urban community. The smaller power station, named "Enipower", is located inside the port area, the bigger one, named "Federico II", is installed in the area of Cerano, on the southern border of the municipal territory. A third consequent relevant impact is due to the polluting coal wharf situated in the port, that supplies the two plants.

Finally, the Central "Federico II" in Cerano is supplied by an underground conveyor belt that contaminates the soil in crossing and poisons the countryside for miles, from the port to the station. The reports of ARPA, the Regional Agency for Environmental Protection of the area polluted by the conveyor belt are published on the website of the Region. Their reports shows that the crops in the area passed under by the conveyor belt cannot be sold in the food market.

Inside the port and in the terrain that is covered by the belt the level of heavy metals and oxides is the highest of the region, and also of other regions. The two plants produce twice the energy necessary to supply the entire regional demand. If we consider in addition the existing solar energy and the future wind farm (still projected), inside the Municipality of Brindisi the energy supply for half of the southern part of Italy (excluding Sicily) is produced.

The air pollution level is the highest of Apulia, and many studies on health in those urban centers of Salento aligned in the south axis passing through Cerano and the Port of Brindisi (small towns, namely Torchiarolo, San Donaci, Campi Salentina) have been carried out.

Figure 2. Location of Brindisi and Taranto in the Italian Peninsula.



Taranto hosts the biggest steel factory in Europe, owned by the Ilva Company. For three decades, the city of Taranto, together with the industry that was previously property of state (with the name of Italsider) and later became privatized (bought by Ilva), were unable to produce proposals for alternative development and kept the same industrialist policy of the 1960s.

The effect of such a policy can be seen as well in Taranto. The impact of the steel factory is extensive due to the storage area for minerals and coal named "Parco Minerali", and to the chimneys of eight plants.

According to the Report of the European Agency for the Environment in the year 2011 [37] concerning the pollution from industrial facilities in Europe, more than 60 Italian factories appeared in the list of the 622 most "toxic" of the continent (as shown in Table 1).

Surprisingly, Ilva in Taranto is not the first among Italian sites. The record for the most polluting site in Italy (the 18th place on the list EEA) belongs to thermal coal Federico II of Cerano, which is at 18th place in the ranking of the most pollutant facilities in Europe.

The second Italian site on the list is owned by Ilva: consequently, in the same region of the south of Italy, the two biggest pollutant activities of the entire nation are located.

Table 1. The first fifteen air polluting activities in Italy in the year 2011 [37].

Location	Activity	Environmental damage costs in euro	Environmental damage costs in percentage
Brindisi	Energy—Thermal power stations and other combustion installations	1243	17,9%
Taranto	Production of pig iron or steel melting and continuous casting	746	10,8%
Sarroch	Energy—Mineral oil and gas refineries	582	8,4%
Taranto	Energy—Thermal power stations and other combustion installations	511	7,4%
Sassari	Energy—Thermal power stations and other combustion installations	559	8,1%
Venezia	Energy—Thermal power stations and other combustion installations	407	5,9%
Quiliano	Energy—Thermal power stations and other combustion installations	417	6,0%
San Filippo Del Mela	Energy—Thermal power stations and other combustion installations	393	5,7%
Augusta	Energy—Mineral oil and gas refineries	386	5,6%
Sannazzaro De' Burgondi	Energy—Mineral oil and gas refineries	350	5,0%
PrioloGargallo	Energy—Mineral oil and gas refineries	313	4,5%
Portoscuso	Energy—Thermal power stations and other combustion installations	269	3,9%
Civitavecchia	Energy—Thermal power stations and other combustion installations	233	3,4%
Milazzo	Energy—Mineral oil and gas refineries	303	4,4%
Ferrera Erbognone	Energy—Thermal power stations and other combustion installations	226	3,3%

The European Agency for the Environment estimates the total cost of pollution at 1.25 billion Euros for the "Federico II" plants in Brindisi, and 0.75 billion Euros for "Ilva" in Taranto.

The data about environmental damage are partial, as they refer only to air pollutants. There is no consideration of the underground pollution of soil and aquifers in the data of the EEA report, therefore the impact of coal and minerals, that affects the environment both in Taranto and in Brindisi, is not considered.

6. Pollution Prevention and Delayed Control in the Process of Integrated Environmental Permit in Taranto

In Taranto a major case of environmental conflict has been analyzed, referring to the ILVA steel factories and steelworks. The processes that developed around the application for an Integrated Environmental Permit (IEP) by ILVA steelworks possibly constitutes the most relevant, and contested episode of environmental governance in Taranto in the past and the present in Italy.

The issue ought to be extraordinary, as this is a gigantic plant in many aspects. The largest steelworks in Europe, the ILVA establishment in Taranto is also the biggest source of dioxins and other POP emissions in the whole continent, let alone in Italy. Figure 3 shows clearly how the "Industrial Port city" goes outside the urban boundaries, and outside the ancient harbor, and how much wider with respect to the ancient city. At the same time, this is the one plant having the greatest number of employees in Italy (about 11,000), and it accounts for 75% of the total GDP of the city.

The Integrated Pollution Prevention and Control system aims at minimizing pollution from various types of industrial installations, by taking into account their global environmental performance before granting a permit. In order to deliberate on applications for an Integrated Environmental Permit (IEP), licensing authorities refer to Best Available Techniques (BAT), jointly defined in a collaborative effort by experts from the EU Member States, industry and environmental organizations.

Only 41 IEPs out of 191 applications have been issued under the national procedure, more than two years past the implementation deadline set in the EU Directive. This failure earned Italy the umpteenth infringement procedure on environmental matters to be opened by the EC.

A brief chronological account of this matter should start with a series of agreements spanning over four years and beginning in 2003. Within this framework, a broad array of environmental and local authorities, research institutes and experts appointed by the company, joined efforts with a view to complying to the (then) recently enacted national requirements for IEP.

Figure 3. The great steelworks in Taranto.



The company eventually filed an application on the very last day on which it was allowed to (in 2007). A participation plot point may be identified in the summer of 2007, when the local branch of the national cancer patients association entered the process by filing a well-thought out comment to the Ministry of the Environment. The association complained about the poor quality of the information disseminated by the company, the lack of monitoring data and pollution prevention measures, the absence of adequate information and participation activities. Due to the mission of the association, as well as to the personal expertise of the legal scholar who volunteered to draft the text, this comment introduced several original elements when compared to what had been till then the focus of the environmental NGOs.

First, health rather than pollution became the key issue to be debated. Second, there is a direct reference to the Italian Constitution (where health is established as a fundamental human right and a matter of social interest) rather than to EU legislation alone.

Third, the objections raised were backed by accurate and well documented arguments. This strategy contributed to raising public awareness on the inadequacy of the way the procedure had been managed, which in turn might have added to the general difficulties in bringing about the stalemate that continues today.

In the spring of 2008, an allegedly decisive attempt at institutional cooperation took off in the guise of an agreement reached by ILVA together with five more enterprises based in the industrial area of Taranto, and all relevant authorities (including four different Ministries, the regional and provincial governments, the two directly affected municipalities, and both the national and regional environmental protection agency) on the other side. However, local civil society started challenging the manifest inability of the parties to deliver actual change to the industrial operations. In the wake of a series of street protests, petitions and official objections, the relations between the newly elected national government (right-wing oriented) and the left-centre regional government worsened. By the end of 2008, the Governor of Apulia had suddenly decided that the environmental upheaval in Taranto called for drastic measures, and enacted a legally-binding reduction in dioxins and related pollutants from the outrageous threshold of 10,000 ng/m^3 down to the 0.4 ng/m^3 provided by international environmental agreements.

At the beginning of 2010, neither the formal IEP procedure nor the related disputes had come to an end. Meanwhile, there have been two developments formally falling beyond the scope of the IEP which nevertheless sheds light on the environmental governance dynamics in Taranto.

In 2012, Taranto became the most important symbol of environmental conflict in Italy, due to the judicial action promoted by the Crime Justice Court of Taranto. After a crime inquiry, the public prosecutor of the Court initiated a procedure to block of the activity of the factory. The Nation was gripped by the drama of accounting, on one side with the risk of losing thousands of jobs, and on the other side, the risk of continuing to witness a constant menace to public health, accounting for the highest concentration of diagnoses of cancer of the Apulia Region.

In the following lines we discuss some major issues on which the furthest reaching legislative framework for environmental democratization, that is, the Aarhus Convention, is supposed to rest. Among these, communication, participation and environmental justice were focused in the case of Taranto.

With the aim of integrating institutional EE (in the way depicted at the end of paragraph 3) with a kind of social soft evaluation, a series of semi-structured interviews has been carried out with evaluators, planners, public officials, NGO representatives and active citizens. The interviewees were asked to elaborate on their ownership of EE; the contribution of EE to developments along the four dimensions of Aarhus (communication, participation, access to justice, and capacity building); and more importantly, on the potential of EE to reframe urban governance in terms of networks and discourses. The request for an interview was motivated with the interviewee's participation in one or more EE episodes, and the interview always started by letting him/her tell a personal story about the episode (which often resulted in long-drawn-out discussions).

We tried to focus on those issues on which we could not derive thoughtful insights based on the systematic analysis of evaluation documents. These included:

1. the processes by which a person becomes an active environmental citizen;
2. how experts (and non-experts alike) can blend analytical and deliberative action;
3. what kind of organizational learning is forced upon local authorities to adapt to EE;
4. how businesses perceive EE, and what role do they choose to play;
5. whether there is evidence of a relational nature of EE processes in general (co-evaluation) and of the shaping of policy-relevant knowledge in particular;
6. in general, whether EE has contributed to reframing both governance discourses (the way environmental issues are constructed) and networks (the relationships among social actors).

The list of the anonymous profiles (in respect of their privacy) who were interviewed is the following:

1) a legal scholar (currently affiliated to the University of Marseille) who volunteered as an advisor to the cancer patients association during the ILVA Steelworks IEP process;
2) an architect holding a PhD degree in Sustainable Development Policies, responsible for SEA-related activities and involved in the drafting of the regional Report on the State of the Environment at the Regional Environment Protection Agency;
3) the founder of a long-established grassroots organization and coordinator of the largest NGO platform (he holds a degree in philosophy, and teaches at a local secondary school);
4) an engineer who coordinated a special report on the state of the environment in Taranto for the Regional Environment Protection Agency (he is based at the agency's provincial department in Taranto), and who had previously been working on Taranto's local Agenda 21;
5) an environmental engineer (holding a PhD degree in the same subject matter), responsible for Major Accident Risk Assessment-related activities at the Regional Environment Protection Agency;
6) a researcher in urban and regional planning affiliated to the Technical University of Bari, and based at the branch in Taranto;
7) an environmental engineer who carried out three SEAs in Taranto's urban regions (for the Strategic Plan, a Wind Farm Spatial Plan and a Municipal Spatial Strategy);
8) a lawyer and justice of the peace who also coordinates one of the most active grassroots organizations, which is currently campaigning for a referendum to shut down the most polluting industrial plant;

9) the public official who is in charge of the Department for the regeneration of Taranto's historical sites, an architect by background who has also been involved in virtually all urban projects and plans over the last 20 years.

Even if not directly involved in the interviews, the Port Authority was considered as well as a reference point in the process. In fact, the new docks (shown in Figure 3) function mainly for trades connected with the steelworks. Companies represent a key element in the social pressure that raises the stakes of the decision making, since they are threatening to leave the harbor of Taranto, if the ILVA steelworks closes.

6.1. Communication

Environmental evaluation in Taranto crucially relies on, and contributes to, the spread of relevant information. Although information processing is considered to be the least articulated, and possibly a naive, theory on how EE works [7], it is evident that the dissemination of information is a powerful means of influencing governance dynamics, rather than the denial of access to it.

Special attention by interviewees has been devoted to the role of information in the processes they participated in. For instance, the first plot point in the never ending dispute around the steelworks IEP occurred when some social and environmental activists discovered in the news that the procedure was about to be completed, and challenged the terms of reference on the grounds of insufficient technical information being made available.

Although more and more environmental information is being produced as a consequence of EE practices, it is often found to be fragmented. No GIS-based environmental information system is publicly available, although this has been considered a basic requirement of environmental governance ever since the first wave of environmental policy innovations in the 1960s [38,39].

6.2. Participation

The intensity of public participation in Taranto has become so evident that it may seem too obvious to linger on this aspect. However, what is here under scrutiny is not participation in environmental matters as such, but rather the relationship between participation and EE practices. Moreover, a broader concept of participation is assumed to account for the seamless rearrangement of social networks across the boundaries of state, civil society and the market, as well as between different administrative levels [40,41].

EE processes in Taranto are found to have had an uneasy relationship with participation. On the one hand, it is by following through the storylines of key EE episodes that environmental citizenship becomes activated: the first platform of intermediate actors emerged as a reaction against the proposed re-gasification terminal—which was played out in the framework of the related EIA. Then, it was the diversified approach to another EE process, namely accepting or rejecting the idea that IEP could ecologically modernize [42,43] the heavily polluting steelworks, which can explain why the same platform breaks up. By indulging in reshaping spaces of problem representation, groups may tap into undiscovered relational resources and enhance the bonds among active citizens, but at the same time the bridging potential of EE practices gets lost.

It could be argued that, while EE processes should promote public participation, they are in fact not flexible and open enough to embrace its unexpected consequences. This results in a range of actions, such as street protest and manifestations or food contamination awareness-raising campaigns, yet having an impact on the very issues EE tries to regulate, and therefore falling into the category of parallel public participation. Another probable outcome could be mobilizing the institutions of direct democracy, first and foremost referenda [44].

In the accounts of civil servants and practitioners, there is also room for a critique of the environmental movement's bias towards reactive rather than proactive approaches. It has been suggested that, had the same efforts deployed in opposing the re-gasification terminal been directed at influencing the potentially permeable, and publicly funded strategic plan, the outcome would have been much more beneficial for the citizens. However, reactive motivations are exactly what scholars blame for the lack of public participation in strategic planning processes [45].

These critiques notwithstanding, and possibly arguing against the usefulness of institutionalized forms of environmental evaluation, the rise of non-invited public participation [46] marked a sharp departure from the apathy of local communities that had been repeatedly observed in the area [47].

6.3. Access to Justice

There is hardly an episode of EE that comes to an end without a lawsuit being filed. The levels range from the Regional Administrative Court (e.g., the "Taranto Futura" association suing the Mayor of Taranto for failing to protect citizens' health despite the IEP procedures) to the Crime Court of Justice of Taranto (e.g., the inquiry on the relationship between pollution and cancer deaths) to the Court of Justice of the European Union (e.g., the European Commission opening infringement procedures against Italy for issuing a development consent for the waste incineration plant in Massafra, without first providing for the EIA, and then for not respecting the provisions on participation). Overall, such a reliance on judicial reviews for the ultimate settlement of controversies might reflect a deep distrust in both participatory and deliberative processes, and also in the role of experts, which ironically becomes even more important in so called litigation science [47].

Stakeholders resort strategically to litigations (and to confrontational approaches in general) to re-position themselves in governance networks, by opting in and out of collaborative frameworks so as to strengthen their influence [21]. For instance, the municipal and provincial government first sued the steelworks company for environmental damages, but then withdrew on the promise of important funding made by the national government. Now the question is again being proposed due to the inquiry carried out by the Crime Justice Court of Taranto that also caused direct mediation by the National government in order to find a compromise between health and work.

Besides all the manifest litigations, there are as many perceived conflicts of interest undermining mutual trust. These include civil servants and practitioners who systematically try to earmark strategic funding for road constructions and waste water treatment facilities, and the national IEP commission being comprised experts who are on the payroll of the very same companies they are supposed to control.

One might well wonder whether any of the known institutions for alternative dispute resolution, such as the top-down establishment of an environmental ombudsman [48] and the introduction of

appeal rights in the planning system, or the bottom up organization of a Citizens' Clearinghouse for environmental issues [49] could have significantly changed such constant confrontations.

6.4. Capacity Building and Effectiveness of Evaluations

Even under less demanding conceptions of environmental democratization and evaluation than those that have been maintained throughout this dissertation, the relevance attributed to capacity building is there to signal how far current practices are from their idealized counterparts.

In Taranto, there seems to be a remarkable knowledge of production and sharing activity taking place with regard to EE episodes, which however falls short of institutionalizing. There are multiple facets to this trend.

Dealing with a structural organizational deficit, the key institutional players performed differently. The municipal government has seen its human resources and financial capacity steadily decrease over recent years and more importantly has not prioritized the environment as a strategic policy area. Until yesterday, before the inquiry for crime, there was neither a councillor, nor an executive officer, exclusively devoted to the overwhelming environmental crisis in Taranto.

On the other hand, the scientific director of the REPA plainly declared that, although willing to investigate more in depth, the inability to fulfill the tasks required under the IEP procedure for the ILVA steelworks was the best indicator of an overall weakness in the Regional Agency.

7. Evaluation in the SEA of Brindisi

The key element that we wish to underline here is the way the political representatives of Brindisi asked for a structured evaluation method in support of a relevant SEA process for the city. In 2009 the City Council initiated the development of the new General Plan of Brindisi.

The intention of city administrators was to close the power plant located in the dock, and move the coal pier near to Cerano, thus eliminating the devastating conveyor belt. The intention was uncertain and complex, and the facts traduced, especially in the interplay with a series of institutional conveyors.

The active institutions in the management of the port city, in fact, are: the Port Authority of Brindisi, two or three Ministries (defense, environment, economic development), the Apulian Region, the energy supplier (Enel and Enipower), that are public-participated companies and were fully state owned companies in the past.

In the past, *desiderata* of the Municipality were broken, due to the relational weakness of the City Councillors to the others institutions, which were aiming to protect the national and local energy policy more than the urban public wealth. The increasing awareness of the environmental issues by the community strengthened the social support to the Brindisi Council, but without any real effect.

The starting process of the General Plan, therefore, became an occasion to point out the question of environmental issues of the city. The Mayor of Brindisi charged a politically experienced planner, who in the Eighties was the regional delegate for town planning, to be delegate in the City Council of Brindisi, to follow the urban polices.

The inter-action between the Planning Office of the Municipality, the professional and consultant in charge of the Plan and its SEA procedure, and the City Council Delegate, emphasized the political and communicative dimension of the SEA Report.

Thus, the accuracy of the PRPG, by choice of the City Council, should be enough to emphasize the major territorial themes on energy and pollution. The main topics are accounted for between the active parts: the City Administration, the Regional Directors, the Ministries of the Environment, Defense, Infrastructure, the Port Authority, the energy supplier Enel and Enipower.

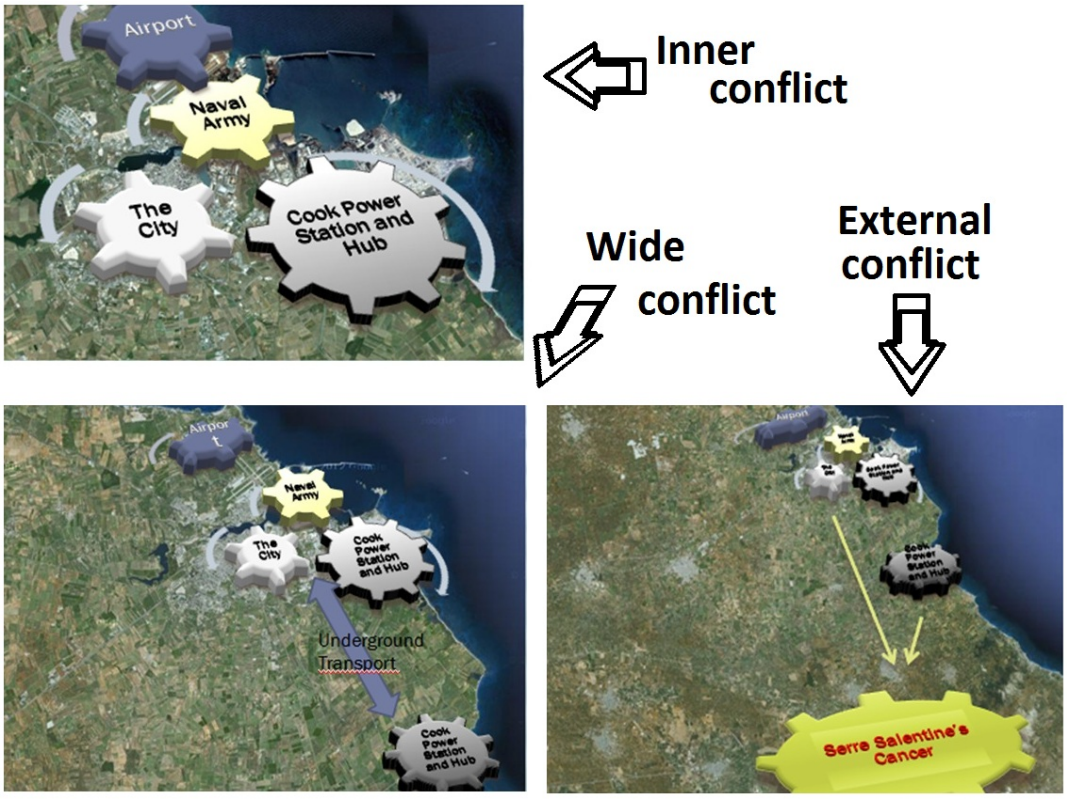
The presence of significant interests and institutional pressures, all of them legitimate but not automatically converging towards a shared scenario for the development of Brindisi has generated a variety of often conflicting interpretive frameworks in the past, for which it is difficult to find an immediate solution as well as the start of a clear policy with a consistent ecological, economic and social basis.

The intention of the Municipality was to stop the activity of the Enipower plant to improve the environmental condition of the inner part of the city and, in the wide territory, of the polluted countryside of Brindisi.

Furthermore Brindisi is the crucial crossroad for three different environmental conflicts, that lighten the question of environmental democracy all over the Apulia Region and moreover, all of Italy, told as follows. This solution does not affect the Federico II plant's activity. This activity is likely the main cause of cancers outside of the Brindisi jurisdiction. Due to the wind direction, air pollutants cross the area of "Serre Salentine" and the northern coast of the county of Lecce, the main urban center of the extreme South of Apulia.

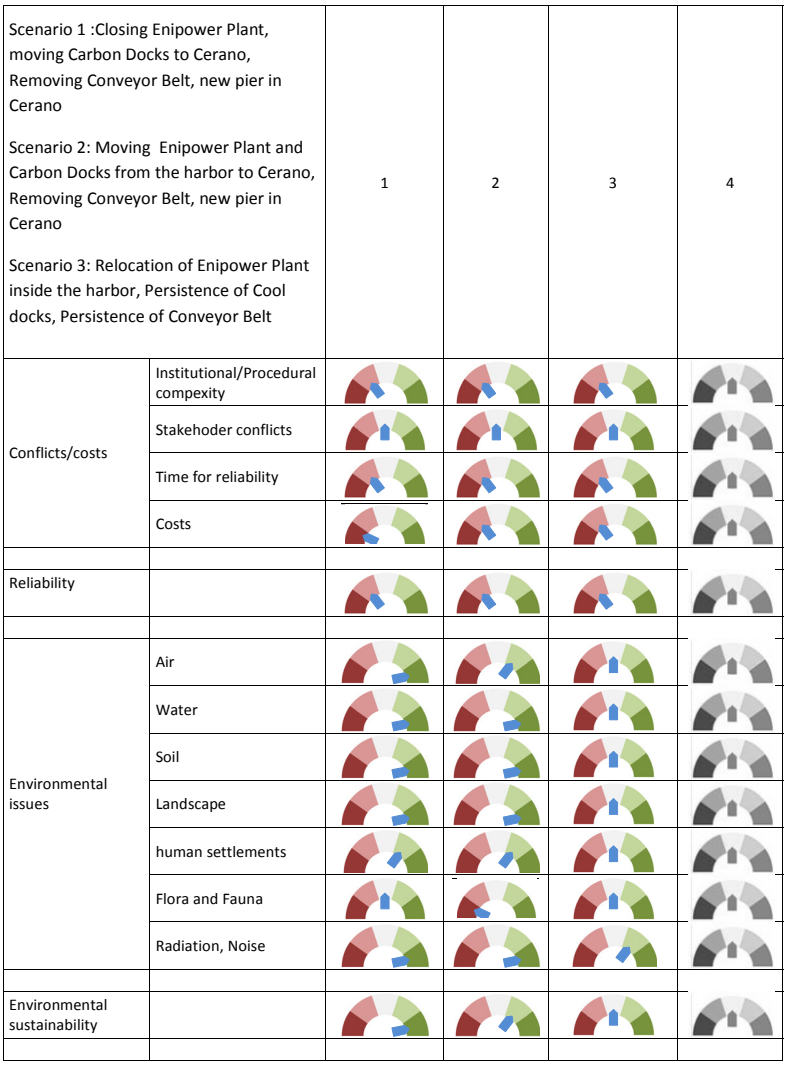
This conflict is an external one, if we look at the urban reality of Brindisi, but its relevance is obviously the greatest (Figure 4).

Figure 4. The three levels of conflict in the area of Brindisi.



Thus, in order to evaluate the proposed scenario (as said before, shared by all public representatives inside the city council), the Environmental Sustainability Dashboard was chosen, to assess both the complexity of the conflict and the environmental changes.

Figure 5. Evaluation of the interaction of environmental stakes and uncertainty in the Preliminary SEA Report of the General Plan of Brindisi



The approach was inspired by the search for integrating community impact evaluation and environmental impact assessment [50].

The final balance between benefits and costs is represented through the "Sustainability Dashboard", (Word Bank) used as an indicator of intensity of judgment suitable for qualitative assessments, derivable, as appropriate, by scores constructed on the basis of an "AHP" evaluation that prioritize aspects of evaluation in a multi-level approach [51] built on expert judgment, or quantitative predictions. Figure 5 shows the results.

The judgments expressed inside the feasibility dashboard are the result of the counterbalance between conflicts. The dimension of the conflict is due to the level of divergence/convergence measured by the correlation of preference expressed by stakeholder and translated in scores.

Both feasibility and environmental issues are based on the opportunities and risks that are set in the future development derived by a SWOT analysis (Strengthness-Weakness-Opportunities-Threats) [52,53].

Key scenarios relate to large problems:

1) the issue of the conversion of the port, after a possible closure of the systems for energy production, ancillary services and their environmental consequences;
2) the issue of the construction of the re-gasification plant and its place;
3) the issue of environmental rehabilitation of the North Coast;
4) the rationalization of infrastructure and re-urbanization of settlements.

Proposals have been summarized on factsheets, accompanied by a brief text description and take into account some important aspects. Figure 5 shows two parts of the evaluation. In the first part of the evaluation, costs and conflicts are assessed as a measure of the reliability/uncertainty of the future scenario where the proposal can be implemented. In the second part the stake is represented by the positive/negative environmental effects that configure the importance of the stake.

Therefore the first considered aspect is the feasibility of planning action, depending on institutional and economic factors (related to the measure of uncertainty), the second aspect is the potential cost/benefit generated by the realization of the action plan on the environment (related to the relevance of the stake).

These issues are taken from the analyses contained in the Preliminary Report of the General Plan. The expected effect of the evaluation according to the intention of the public commitment inside the City Council, was to put on the table in the debate an "objective" analysis that shows how much the conflict among actors can be dangerous for the preservation of public health and environment, paralyzing the management of energy policies in the local context. The trust in the communicative power of the evaluation is due to the public dimension of the SEA report, that until now represents in this context the only institution public document devoted to produce a social consultation. The idea of the Municipality Councillors appears almost utopist, but in some sense modernly utopist, if we consider that the Council would try to give to the community an institutional document proving how crucial the institutional negotiation on energy policy is for the public health. So the Municipality of Brindisi in some way considered in the facts a structured evaluation as a tool for the community. Such an approach was missing in Taranto.

8. Concluding Remarks

We conclude our work by highlighting some of the issues we met with, which might be of general interest to the debate on environmental governance and democracy. We tried to answer some of the questions as follows.

A first major question is related to how evaluation can follow the social process in an arena where the demand for sustainable environment and the economic system are in conflict.

Where do we have to look for participation when we set an institutional EE? Only in the institutional arenas set up within planning processes? What about all the kinds of public and institutional involvement revolving around the mechanisms of representative democracy How effective

are the different forms of participation in influencing the decision making process? How do different implementation strategies interact with deliberation to strike a balance between the rights of direct stakeholders and the claims of voiceless agents (other species, future generations, marginalized groups, *etc.*)?

Each legislative, planning or political act influences the environmental governance arrangements only to a limited extent in a given territorial community, where many initiatives are likely to develop at the same time. Moreover, most actors have complex stakes: within local authorities, different coalitions and networks often push for contradictory agendas, while local communities are anything but united when faced with environmental issues.

The evaluation methods can support the participatory process inside town planning, as literature shows, but the case puts on evidence that the methods strengthen only by institutional concern.

Our experience drafts a possible method to involve the process stakeholders and social representatives. However, at least in the case of Taranto, all knowledge collected from interviews could be useful in order to provide a better understanding of the social conflict, and to progress towards more shared solutions. Although it was only when the inquiry of the Court of Justice started—and the closing of the steel factory was depicted as a future scenario—that social mobilization became socially and institutionally relevant.

A second question is related to new environmental policy tools (from the likes of SEA, from the institutional point of view, and the social and technical multidimensional assessment from the methodological point of view,): they have materialized worldwide as standardized procedures, yet their actual evolution is often a tale of diffusion without convergence [54], as national, regional and even local contexts tend to shape their substantial nature to a major extent. Then, would it be advisable to emphasize key process features (inclusiveness, accountability, interdisciplinarity, *etc.*)?

The case of Brindisi shows that is possible to depict and to support by structured evaluation the "measure" of the relationship between stakes and that kind uncertainty due to the lack of convergence among the main actors.

In some sense "new" stands for the importance given by the local decision maker to the structured evaluation, seen as a more defensible tool in the debate with the external institutional author.

The trust in the effectiveness of the method could be proof of increasing awareness of environmental themes, and consequently on such methods that put on the arena a new basis for negotiation and strengthening the role of those decision makers that want to contribute to the evaluation.

The last question refers to the future of industrial port cities depicted by the case study.

A possible redevelopment is visible, also in context (as used in examples) where the old economic system at the moment still results in winning out against the demand for a more sustainable future; if the convergence among the peace of institutions is more environmentally responsible and the peace of society representatives are more institutionally responsible it will become more effective. The last consideration of paragraph 5 indicates that if the convergence is in the facts, the evaluation will also be more effective.

Conflict of Interest

The authors declare no conflict of interest. The paper is due to a joint effort but each author gave his own contribution. Specifically, Attardi wrote the first paragraph, Bonifazi the second and sixth paragraphs, and Torre the third, fourth, fifth, sixth and seventh paragraphs.

References

1. Fusco Girard, L. Sustainability, creativity, resilience: Toward new development strategies of port areas through evaluation processes. *Int. J. Sustain. Dev.* **2010**, *13*, 17–30.
2. United Nations-Department of Economic and Social Affairs. *World Urbanization Prospects: The 2008 Revision*; United Nations: New York, USA, 2008.
3. *European Port Cities in Transition*; Hoyle, B.S., Pinder, D.A., Eds.; Halsted Press: New York, USA, 1992.
4. Ducruet, C.; Lee, S.W. Frontline soldiers of globalisation: Port–city evolution and regional competition. *Geojournal* **2006**, *67*, 107–122.
5. Fusco Girard, F. Symbioses strategies for sustainable company management. *Int. J. Sustain. Dev.* **2009**, *12*, 248–263.
6. Coaffee, J.; Healey, P. My voice: My place: Tracking transformations in urban governance. *Urban Stud.* **2003**, *40*, 1979–1999.
7. Irazabàl, C. *City-Making and Urban Governance in the Americas: Curitiba and Portland*; Ashgate Publishing Limited: Aldershot, UK, 2005.
8. Bina, O. A critical review of the dominant lines of argumentation on the need for Strategic Environmental Assessment. *Environ. Impact Asses.* **2007**, *27*, 585–606.
9. Bartlett, R.; Kurian, P. The theory of environmental impact assessment: Implicit models of policy making. *Policy Polit.* **1999**, *27*, 415–434.
10. Brown, A.L.; Thérivel, R. Principles to guide the development of Strategic Environmental Assessment methodology. *Impact Assess. Proj. Apprais.* **2000**, *18*, 183–189.
11. Jackson, T.; Illsley, B.M. An analysis of the theoretical rationale for using strategic environmental assessment to deliver environmental justice in the light of the Scottish Environmental Assessment Act. *Environ. Impact Asses.* **2007**, *27*, 607–623.
12. Kornov, L.; Thissen, W. Rationality in decision and policy-making: Implications for Strategic Environmental Assessment. *Impact Assess. Proj. Apprais.* **2000**, *18*, 191–200.
13. Nilsson, M.; Dalkmann, H. Decision-making and strategic environmental assessment. *J. Environ. Assess. Pol. Manag.* **2001**, *3*, 305–327.
14 Nitz, T.; Brown, A.L. SEA must learn how policy making works. *J. Environ. Assess. Pol. Manag.* **2001**, *3*, 329.
15. Cashmore, M. The role of science in environmental impact assessment: Process and procedure *versus* purpose in the development of theory. *Environ. Impact Assess. Rev.* **2004**, *24*, 403–426.
16. Fischer, T.; Gazzola, P. SEA effectiveness criteria—Equally valid in all countries? The case of Italy. *Environ. Impact Asses.* **2006**, *26*, 396–409.

17. Hilding-Rydevika, T.; Bjarnadóttirb, H. Context awareness and sensitivity in SEA implementation. *Environ. Impact Asses.* **2007**, *27*, 666–684.
18. Connelly, S.; Richardson, T. Value driven SEA: Time for an environmental justice perspective? *Environ. Impact Asses.* **2005**, *25*, 391–409.
19. Lafferty, W.M.; Hovden, E. Environmental policy integration: Towards an analytical framework. *Environ. Polit.* **2003**, *12*, 1–22.
20. Scrase, J.I.; Sheate, W.R. Integration and integrated approaches to assessment: What do they mean for the environment? *J. Environ. Pol. Plann.* **2002**, *4*, 275–294.
21. O'Faircheallaigh, C. Public participation and environmental impact assessment: Purposes, implications, and lessons for public policy making. *Environ. Impact Asses.* **2010**, *30*, 19–27.
22. Stec, S.; Casey-Lefkowitz, S.; Jendrośka, J. *The Aarhus Convention: An Implementation Guide*; Regional Environmental Center for Central and Eastern Europe: Szentendre, Hungary, 2000.
23. Bass, R.; Herson, A. Environmental Impact Assessment of Land-Use Plans: Experience under the National Environmental Policy Act and the California Environmental Quality Act. In *Handbook of Environmental Impact Assessment*; Petts, J., Ed.; Blackwell Scientific: London, UK, 1999; pp. 273–299.
24. Hartley, N.; Wood, C. Public participation in environmental impact assessment—Implementing the Aarhus Convention. *Environ. Impact Asses.* **2005**, *25*, 319–340.
25. Bugge, H.C.; Watters, L. Perspective on sustainable development after Johannesburg on the fifteenth anniversary of our common future: An interview with Gro Harlem Brundtland. *Georgetown Int. Environ. Law Rev.* **2002**, *15*, 359.
26. Serageldin, I.; Steer, A. Valuing the Environment. In *Proceedings of the First Annual International Conference on Environmentally Sustainable Development*, New York, USA, 1994; World Bank: New York, USA, 1994.
27. Nijkamp, P.; Vleugel, J.M.; Bakis, H. *Missing Networks in Europe: Hardware, Software, Orgware, Finware, Ecoware*; International Geographical Union: Cape Town, South Africa, 1992.
28. Fusco Girard, L.; De Toro, P. Integrated spatial assessment: A multicriteria approach to sustainable development of cultural and environmental heritage in San Marco dei Cavoti, Italy. *Cent. Eur. J. Oper. Res.* **2007**, *15*, 281–299.
29. Fichera, C.R.; Modica, G.; Pollino, M. GIS and remote sensing to study urban-rural transformation during a fifty-year period. *Lect. Notes Comput. Sci.* **2011**, *6782*, 237–252.
30. Munda, G. A NAIADE based approach for sustainability benchmarking. *Int. J. Environ. Tech. Manag.* **2006**, *6*, 65–78.
31. Cerreta M.; Mele, R. A landscape complex value map: Integration among soft values and hard values in a spatial decision support. *Lect. Notes Comput. Sci.* **2012**, *7334*, 653–659.
32. Di Fazio, S.; Modica, G.; Zoccali, P. Evolution trends of land use/land cover in a Mediterranean forest landscape in Italy. *Lect. Notes Comput. Sci.* **2011**, *6782*, 237–252.
33. Lichfield, N. *Community Impact Evaluation*; University College: London, UK, 1996.
34. Funtowicz, S.; Ravetz, J.R. The worth of a songbird: Ecological economics as a post-normal science. *Ecol. Econ.* **1994**, *10*, 197–207.

35. Munda, G. *Social Multi Criteria Evaluation for a Sustainable Economy*; Springer: Berlin, Germany, 2008.
36. Munda, G. Social multi-criteria evaluation: Methodological foundations and operational consequences. *Eur. J. Oper. Res.* **2004**, *158*, 662–677
37. Guerreiro, C.; Larssen, S.; de Leeuw, F.; Foltescu, V. *Air Quality in Europe—2011 Report*; European Environment Agency: Copenhagen, Denmark, 2011.
38. Fichera, C.R.; Modica, G.; Pollino, M. Land cover classification and change-detection analysis using multi-temporal remote sensed imagery and landscape metrics. *Eur. J. Remote Sens.* **2012**, *45*, 1–18.
39. Cerreta, M.; Panaro, S.; Cannatella, D. Multidimensional spatial decision-making process: Local shared values in action. *Lect. Notes Comput. Sci.* **2012**, *7334*, 54–70.
40. Rhodes, R. *Understanding Governance: Policy Networks, Governance. Reflexivity and Accountability*; Open University Press: Maidenhead, UK, 1997.
41. Healey, P. *Collaborative Planning: Shaping Places in Fragmented Societies*; UBC Press: Vancouver, BC, Canada, 2006.
42. Hajer, M.A. *The Politics of Environmental Discourse: Ecological Modernization and the Policy*; Oxford University Press: Oxford, UK, 1995.
43. Mol, A.P.J.; Spaargaren, G. Ecological modernisation theory in debate: A review. *Environ. Polit.* **2000**, *9*, 17–49.
44. Stoeglehnera, G.; Brownb, A.L.; Kørnøv, L.B. SEA and planning: 'Ownership' of strategic environmental assessment by the planners is the key to its effectiveness. *Impact Assess. Proj. Apprais.* **2009**, *27*, 111–120.
45. Sheate, W.R.; Partidario, M.R. Strategic approaches and assessment techniques—Potential for knowledge brokerage towards sustainability. *Environ. Impact Asses.* **2010**, *30*, 278–288.
46. Chilvers, J.; Evans, J. Understanding networks at the science-policy interface. *Geoforum* **2009**, *40*, 355–362.
47. Jasanoff, S. Representation and re-presentation in litigation science. *Environ. Health Persp.* **2008**, *116*, 123–129.
48. Faber, D.; McCarthy, D. The evolution of the Environmental Justice Movement in the United States: New models for democratic decision-making. *Soc. Justice Res.* **2001**, *14*, 405–421.
49. Cerreta, M.; De Toro, P. Assessing urban transformations: A SDSS for the master plan of Castel Capuano, Naples. *Lect. Notes Comput. Sci.* **2012**, *7334*, 168–180.
50. Camarda, D.; Romandini, M.; Torre, C.M. Wetlands, coastline, historical heritage *vs.* urban spread: A complex integrate planning experience in Taranto, Italy. *Opt. Médit.: Série A* **2002**, *53*, 123–135.
51. Saaty, T.L. *Multicriteria Decision Making—The Analytic Hierarchy Process. Planning, Priority Detting, Resource Allocation*; RWS Publishing: Pittsburgh, USA, 1988.
52. Cerreta, M.; De Toro, P. Integrated spatial assessment for a creative decision-making process: A combined methodological approach to strategic environmental assessment. *Int. J. Sustain. Dev.* **2010**, *13*, 17–30.

53. Cerreta, M.; De Toro, P. Strategic environmental assessment of port plans in Italy: Experiences, approaches, tools. *Sustainability* **2012**, *4*, 2888–2921.
54. Bell, M. Dialogue and isodemocracy: An essay on the social conditions of good talk. *Rev. Int. Sociol.* **2001**, *11*, 281–297.

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