

# Reliability of Strategic Environmental Assessment for Territorial Management: General Criticisms and a Proposed Approach in the Presence of Relevant Accident Risk Facilities

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## Abstract

This electronic document is a “live” template. The various components of your paper [title, text, heads, etc.] are already defined on the style sheet, as illustrated by the portions given in this document. The Strategic Environmental Assessment (SEA) is a procedure with a wide application, that has a very important role in sustainable territorial development. The aim of this work is to carry out some evaluations after the initial period of application, also based on the data of a particularly complex territory, Lombardy Region (Northern Italy), which is characterized by a very high concentration of population, industrial activities and economic interests. The evaluations reveal some critical aspects that negatively influence the correct application of the SEA in Italy, with consequences on the territorial governance. One of these critical aspects is the need to define specific standards and parameters for carrying out a SEA on the different environmental themes. One of these is the assessment of the anthropic risk, which may initially be approximately defined as the industrial risk during territorial planning and programming. On this matter, we suggest adopting a methodological approach that is found in specific guidelines for anyone that produces the Environmental Report in support of the SEA, and for councils that have to produce a Technical Examination Paper of the Relevant Accident Risk, in order to assess the industrial risk, also when there are companies with a relevant accident risk.

## Keywords

*Criticism; Relevant Accident Risk; Strategic Environmental Assessment; Territorial Planning*

## Introduction

The Strategic Environmental Assessment (SEA) is now a

widespread procedure used in the practices of planning.

It is often mentioned or evoked, but, probably, only fully known only among the community of specialists who deal with problems linked to the production of plans at various levels. Every approach to the topic of the SEA must go beyond national borders. For example, the Directive 2001/42/EC presents experiences of both European and non-European countries. It is in the international scene that, today, an attempt is being made to identify the possible evolutions and probable refinements of the norm, in order to fine tune the procedures: integration of the assessment with planning and programming is becoming increasingly urgent [1]. The SEA was introduced into the regulations after the Environmental Impact Assessment (EIA) of projects, and yet, from a logical point of view, it precedes it. The SEA is applied to certain types of planning, which may include interventions that may subsequently undergo an EIA. The connection is extremely close and made even more evident by the levels on which the alternatives are chosen. This is one more reason for believing that a good EIA cannot be independent of a previous good SEA [2]. Moreover, it is directly linked to latest applicable technological approaches regarding environmental protection and management [3,4,5].

The notes below stem from the need to provide some elements that serve to define and organize the contents and the sense of this instrument/procedure, and to suggest some interpretations that grasp the critical aspects that seem to characterize this initial period in which it has been applied. In Article 1, in the definition

of the objectives of the Community Directive 2001/42/EC, which we may consider to be the model for all subsequent regulations on the subject, both nationally and locally, there is the following definition: "The objective of this Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations in the preparation and adoption of plans and programs with a view to promoting sustainable development, by ensuring that ... an environmental assessment is made of certain plans and programs which are likely to have significant effects on the environment"[6].

In Italy, the definition given to this procedure by the environmental code (Leg. Dec. 152/2006, and subsequent updates Leg. Dec. 4/2008 and Leg. Dec. 128/2010) interprets the SEA as "the process that entails carrying out a check of subjectability, preparing the environmental report, carrying out consultations, assessing the plan or program, the report and the results of the consultations, expressing a reasoned opinion, and informing on the decision and monitoring."

In Northern Italy, in Lombardy, the SEA was introduced into regional law No. 12/2005.

In the adjacent region of Piedmont, Decree No.

45-2741/2001 had already introduced it for planning interventions for the Turin 2006 Winter Olympic Games. In implementing the definitions and guidance provided, the Environmental Assessment is defined as that "continuous process, which extends throughout the life cycle of the plan/program. Thus, the key meaning of the SEA consists of its ability to integrate the process of planning, making it coherent, by making it sustainable."

The SEA is now a consolidated procedure in the region. To demonstrate this, Table 1 shows that, to date, 439 SEA procedures have been completed in Lombardy, of which 416 relate to council level plans (Territorial Government Plan – TGP), 14 relate to implemented programs, and 9 concern plans and programs that refer to larger interventions. The number of procedures begun to date is even more significant (808, 53, 53 respectively).

The SEA procedure can be assessed in light of a number of years of its application, and presents clear, critical aspects. Some of these are general. Others are specific and must be related to a well-identified problem, namely the presence of companies that have a relevant accident risk. Indeed, in the presence of companies with a relevant accident risk, councils must draw up a technical examination paper of the Relevant

TABLE 1 PRELIMINARY INVESTIGATIONS COMPLETED AND IN PROGRESS IN LOMBARDY REGION [7]

Level	Plan-program	Procedures in progress 2005-2011		Procedures completed 2005-2011	
		SEA Procedures	Checks of subjectability to SEA	SEA Procedures	Checks of subjectability to SEA
Council level	Territorial Government Plans	756	5	412	1
	Variations to the Territorial Government Plans	51	49	4	43
	Total	808	54	416	44
Implementation plans	Program agreements	14	2	4	2
	Implementation, sectorial and regional park management plans	4	3	1	5
	Integrated Intervention and Urban Redevelopment Programs	35	94	9	126
	Total	53	99	14	133
Vast Area Plans	Territorial Plans	19	3	8	2
	Forest, Hunting and Fishing Plans	28	3	1	-
	Waste Management Plans and Programs	6	-	-	-
	Total	53	6	9	2

Accident Risks (as defined in the Italian Min. Dec. of 9 May 2001, *Elaborato tecnico Rischi di Incidenti Rilevanti – EtRIR*), which resembles the Environmental Report that supports the SEA.

Thus, in this report, considerations are made on the general critical aspects of the SEA. Moreover a specific approach is proposed to solve the problem of the uniformity and effectiveness of the environmental compatibility procedures related to the SEA, and to territorial planning when there are companies that have a relevant accident risk. At the international level, countries from South Eastern Europe, such as Romania, have provided assistance for SEA support by producing an environmental report and organizing public consultations through PHARE projects, before entering the EU. After becoming an EU Member State, some environmental consideration was taken into account by the Regional Operational Programme 2007-2013, contributing to the economic and social development disparities between Romania and other EU Member States. Still there are some practical improvements associated with industrial accidental risk, especially in relation also to trans-boundary effects that have to be implemented.

#### Discussion: General Critical Aspects and Open Questions

The necessity to improve the SEA is great and strongly felt throughout Europe. On this matter the Council of Europe, the European Parliament, the European Economic and Social report Committee and the Committee of the Regions provided a recent form on the application and effectiveness of the Directive on the SEA. It covers the inadequacies of the approval of the SEA, which appears to have been increasingly applied by a significant number of Member States in recent years [8]. This consideration may be extended also by considering that the European Union has two potentially conflicting policy goals: the Lisbon Agenda and the Cardiff process which, respectively, aim to make the EU the most competitive and dynamic knowledge-based economy in the world, and to integrate the environment into all EU policies [9].

After five years of application in the main Italian regions, a number of questions can be raised:

- Are we able to state that our plans are more sustainable and that their implementation allows us to leave to future generations resources, environments, territories and landscapes that are less altered, consumed and

compromised? In short, is the direction that has been undertaken the correct one?

- Are we now equipped with suitable regulatory and disciplinary apparatuses and instruments for the objective in hand?
- On the various scales of observation, including regional and local, in what way and with what outcomes will the sustainability of developments take place?

As the SEA procedure is strictly integrated with the more general theme of “governance”, it is appropriate to review its contents and the methods with which it is applied. It is important to make some considerations, and to verify and evaluate the results, which may be uncertain, positive or stimulating, but are all being characterized by the practices at the time of implementation. This is in order to clear the field of potential misunderstandings, to reconsider a number of questions on the theme of research/construction/implementation of objectives and practices directed at environmental sustainability. These considerations stem from a number of basic aspects that relate to the concept of sustainable development, which is directly correlated with the conversion of practices, policies, and instruments.

The first consideration relates to the fact that “sustainability” does not constitute an objective that can be achieved by law, or purely by regulatory means. Despite the latest generation of laws, decrees and memoranda containing often emphatic references to the theme of sustainability, the course that must be traveled is arduous. There are several short-cuts between the body of regulations, the cultural models, the technical-disciplinary approaches and exercises, and the culture of the administration. One need only take a cursory look at recent facts in order to have an idea, albeit partial, of how far apart the actions of these elements are.

The second question concerns the fact that there is no “urban” path to sustainability. The instruments of territorial and urban planning, although sophisticated and conscious, cannot, alone, manage or modify the levels of territorial and environmental imbalance that characterize most of the situations that are affected by these disciplines. Even today, there is limited understanding of the territory in its present state, without being able to influence, significantly, the evolution, in terms of environmental compatibility and safety.

At the time of publication of the M.I.T. Report, "The limits of growth", the following concepts arose:

- the concept of "sustainability" was generated and began to evolve;
- the central point of the authors' consideration, which was taken up again and expressed also in the Brundtland Report, in 1987, consisted of the criticism of an economic model of development that was flat, with respect to the concept of growth (measured in terms of GDP) and indifferent to the quality of the relationship with the environment [10,11,12].

Thus, the suggestions that this type of approach expresses, are aimed at producing "development" policies that can incorporate environmental themes, and deal with these also in terms of outcomes. This type of approach has evolved into different forms and at different times, from the institutional, regulatory and scientific point of view [13,14,15].

The "consequence" of this process has affected many disciplines in environmental, social and territorial sciences. The latter has led to the establishment of a new sensitivity to environmental aspects, which is expressed in a variety of methods and approaches. This constitutes fragments of a discussion that has not yet led sufficiently to reciprocal contact to allow us to make an assessment and measurement of the sustainability/non-sustainability of the developments.

The preliminary considerations made above help us to find an approach to assess efficacy.

The aim of these considerations is to highlight a number of practical planning themes, which are still uncertain, such as making with the objectives conform to the idea of environmental sustainability. As operating practices continue to include uncertain regulations, limited methods and old cultural habits, this goal is difficult to achieve. Some critical aspects and suggestions may be made with respect to the present regulations.

In particular, the open questions must necessarily tackle a number of themes linked to:

- the profile and role of the institutions involved, and their resources;
- the scale and model of the assessments;
- the sense and efficacy of the assessment techniques with respect to the objectives.

For example, some of these questions regard:

- the fact that a number of important themes concerning sustainability escape physical planning of the territory, in its most traditional components and practices;
- in the government's account of the territory, some criteria and indicators are dealt with in necessarily theoretical terms, because of the limitation of the instruments and the uncertainty of sectorial policies (for example, water, energy, mobility)
- the immediate clarification of legislative misunderstandings and ambiguities, which highlight ideological approaches (for example, the theme of "soil consumption");
- current practices in planning territorial transformation and managing urban development are the "new references in the recent history of these disciplines and their related policies." The latter remark provides instruments that appear to escape thorough interpretation in terms of expected effects that are loaded with meanings and symbolic expectations. For example, many planning documents have the characteristics of master plans that present "visions" of urban development and management that are not directly anchored to indicators/descriptors of the physical and environmental transformations of the territory, which are passed on to subsequent (and often uncertain) implementation phases;
- some themes that form the concept of sustainability, are governed by the development of policies implemented by "strong" stakeholders, cost centers and actions. Political-decisional dependence influences the choices and territory models in many important themes, particularly those of mobility, energy management, and water management which, in general political terms are decided at a national or regional level;
- there is general confusion in managing the changes of scale that are dictated by the need to assess plan actions with respect to the most consolidated practices "of the project", and to the relative assessment of the impacts, which can be seen in the evidence of evaluation approaches and editorial techniques of the extremely varied and non-homogeneous Strategic Environmental Assessments. This all

leads to a loss in the effectiveness and reliability of the procedures themselves. Many Environmental Reports written as part of a SEA highlight an overlap or a careless interchangeability of environmental quality indicators and sustainability indicators. In the same way, what is found is the improper use of environmental compatibility criteria in the assessment of sustainability, and the procedures used to make the assessments range from modeling and quantitative approaches (similar to what is contained in the Environmental Impact Studies) to concise, qualitative approaches;

- the role of the public administration has always been partial with respect to the expansion dynamics. Local administrations' interests have often led those who should have "regulated" the growth (and the associated consumption of environmental resources), and uncritically accept its dynamics. In short, we can see an overpowering return to forms of logic that use the concepts of growth and development improperly.

The questions highlighted focus on a series of critical and practical aspects of the SEA.

A significant part of this loss of effectiveness is seen in the quality of the interactions that are established with the reference aspects, be they technical-disciplinary, or operational and regulatory. If we want to reduce this loss in some way, there must be a process of reform that is able to restore meaning and a reciprocal connection to this instrument, with a move towards scenarios that consider the following:

- adoption of standards that are accepted and shared, in terms of the descriptive indicators of sustainability, that will become the reference elements when assessing the associated environmental sustainability;
- giving more sense to, creating a better connection between, the sustainability objectives of policies and the structure of plans and programs at various levels;
- providing the instruments of control at the various levels, with a predictive ability, not only seeing them as a document that records or acknowledges the current state of the territory;

- intervening in the practices of the administration, by promoting a culture of development quality, aimed at environmental sustainability, without which, the relationships between environmental aspects, plans and programs cannot be called positive.

#### Practical Approaches in Case of Industrial Accident Risk

The new approach that has been proposed in Piedmont Region concerns the operating indications that have to be given to local authorities that deal with industrial risk. In the subjectability verification phase or in the Assessment phase of the SEA, the authorities should produce the Technical Examination Paper of Relevant Accident Risk (RAR Technical Examination - EtRIR), in order to prevent the anthropic risk by "adoption of accepted and shared standards, in terms of the descriptive indicators of sustainability, that will become the reference elements when assessing environmental sustainability".

With a view to identifying the significance of environmental effects, but also defining valid medium-long term planning criteria and rules, that characterize the assessment phase of the SEA, it is thought that the assessment of the risk must start with the knowledge of the territory in terms of its anthropic and environmental vulnerability, as well as production load [16].

Only in this way is it possible to establish a reference picture for approving, authorizing, locating, and, realizing compatible and sustainable environmental projects over time.

Similarly, when planning territory purposes in a way that will effectively prevent the harmful effects of industrial risk, it is important to have knowledge of the production activities that are present throughout the municipal territory, and that may constitute a danger for the people and for the environment.

This manner of operation is in line with the principles of Italian Leg. Dec. No. 334/1999, with respect to Seveso Activities and to territorial planning [17]. In the approach suggested, which is applied in the guidelines prepared in Piedmont Region, different planning areas have been defined in connection to the effects of a manufacturing activity such as:

- Direct effects: areas directly affected by an accident resulting from the manufacturing

activity. For Seveso Activities, these coincide with the “damage areas”;

- Indirect effects: areas that are involved indirectly by an accident resulting from the manufacturing activity, and are represented by the exclusion and observation areas.

It is also pointed out that, in the presence of factories that have a relevant accident risk (Seveso Activities), additional technical data is available for assessing the industrial risk, which provides greater detail for the definition of the relationships between the Seveso Activities themselves, and the territorial and environmental vulnerabilities.

Moreover, the assessment of the industrial risk, and, in particular, the RAR Technical Examination, must be an integral part of the council town planning scheme (as TGP), and must consist of technical documents, area maps and constraint maps, as well as urban planning regulations.

In particular, it is essential to standardize the contents of the Environmental Report (which is part of the SEA procedure) with the contents of the RAR Technical Examination.

The assessment phase of the SEA entails the council's producing an environmental report that identifies criteria and conditions for carrying out planning that is environmentally compatible. In particular, for the industrial risk, it should be remembered that, as the two documents are planning instruments, their main objectives are as follows:

- to establish territorial constraints in the areas of influence of manufacturing activities, with suitable environmental and territorial compatibility criteria, guaranteeing that the pre-existing level of risk of the territory will not increase, also by intervening on the structural, design and management characteristics of the new interventions (without having necessarily to resort to additional constraints on the territory);
- to prevent the establishment of situations that are unsustainable from the environmental and urban point of view, by identifying and classifying, the vulnerabilities present throughout the municipal territory, in such a way as not to introduce incompatible production areas in the immediate vicinity of these vulnerabilities.

In view of the above, as the two documents have similar goals, and the same area of application, namely the whole municipal territory, despite the elements that differentiate them (number of environmental aspects considered and the types of production activities analyzed), it is possible to define a list of industrial risk topics common to them.

One possible list of topics for RAR Technical Examination and for the industrial risk part of the Environmental Report is as follows:

#### Introduction

An indication of the regulations that apply, complete with the congruity with the planning instruments of a higher level and identification of the aims of the modification to the plan and of the Environmental Report/RAR Technical Examination.

Identification and characterization of the production activities of interest

Summary of the inspection, made by the council, of the industrial activities present in the municipal territory, to identify and characterize the activities in which dangerous substances are kept and handled.

On completion of this chapter, it is necessary for the council to attach, not only the lists, but also a technical and land register map of the area concerned (including also the parts of the territory of adjacent councils, where necessary) on an appropriate scale (scale 1:10,000, 1:4000).

In the regional computer system of the activities with a relevant accident risk, as well as the Seveso Activities, a number of activities, termed “exempt, below limit”, known by the Regional Administration (since 1992, the system data has been gathered and put into a historical context) have also been entered and geo-referenced. These activities are only obliged to analyze the risk regarding the health and safety of workers, and inform the workers that the quantities of dangerous substances that they keep are below the limits set by the Seveso regulation, or they are situated near Seveso Activities.

Furthermore, the computer system also allows checking whether there are Seveso Activities installed in the adjacent councils, and whether the effects of the accident scenarios involve the territory of the council being analyzed.

### ***Brief description of the activities present in the territory***

For every manufacturing activity identified, it is recommended that the dangerous substances used, the impact on transport infrastructure, etc., be documented according to the type of activity.

With respect to the Seveso Activities, a summary must be made of the information provided by the accident scenario manager, which must be characterized by:

- identification and brief description of the accident scenarios;
- identification and coordinates of the danger center;
- probability of occurrence;
- Safety distances for all of the threshold values established by the Min. Dec., of 9/5/2001, on the basis of the type of phenomenon. In particular, for the purposes of territorial planning, the relative distances normally used for emergency planning (for example, the LOC, level of concern) are also useful;
- map of the damage areas, on an appropriate scale, in order to assess the effects and consequences on the municipal territory (1:10000, 1:4000);
- Expected environmental damage category (significant damage, serious damage).

The documentation sent by the manager of the activities may be attached, but only parts that provide elements used in the writing of the RAR Technical Examination.

For easier reading and updating of the RAR Technical Examination, it is useful for the scenarios to be organized in a summary table, and for the document source from which they were derived to be mentioned. Furthermore, the calculations made by the manager of the activity for the damage areas must be mentioned. The result of the calculations should be presented in a single table of the envelopment of the damage areas that lie outside the confines of the activity and the indication of the compatible territorial categories.

When there are no external damage areas, the map will show the scenarios with greatest impact for each physical phenomenon (fire, explosion, toxic release, etc.).

In the event of Seveso Activities situated in

neighboring councils, whose effects may extend directly or indirectly to one's own council, it is necessary to ask the council in which the activity is located, for a copy of the RAR Technical Examination.

### ***Vulnerable territorial and environmental elements***

It is necessary to identify and represent the vulnerable territorial and environmental elements, on a map, possibly on a geo-referenced map (councils are asked to do this also by Prefects' Offices, for the writing of the External Emergency Plans).

### ***Identifying territorial and environmental compatibility***

This chapter explains the situation of territorial and environmental compatibility that emerged for the municipal territory.

This should be presented in table form, with an indication of the critical environmental aspects, the relative causes and the nature (positive or negative) and severity of the effects.

Furthermore, when there are Seveso Activities present, the map summarizing the accident scenarios, complete with indications taken from the External Emergency Plan (EEP) and/or from other plans, in which the parts of the territory deemed critical on the basis of the vicinity to the vulnerable territorial and environmental elements, becomes particularly important.

### ***Conclusions***

In this chapter, it is necessary to analyze each of the critical aspects that emerged.

For the Environmental Report, it is also necessary to associate them with the critical aspects found in the other environmental matrices.

In particular, the Environmental Report/RAR Technical Examination should contain an indication of the territorial constraints and/or other preventive measures that should be adopted in the municipal territory, with particular reference to the allotments that present critical environmental or territorial aspects.

In particular, it will be necessary:

- to specify the limits to the destined uses, in such a way as not to encourage irregular development of manufacturing areas or vulnerable territorial elements;

- To regulate the areas adjacent to the manufacturing activities, by introducing, where necessary, urban-type constraints (e.g. limitations on the destined uses, planning precautions, management indications, etc.) and/or technical-type constraints (request for preventive and/or protective measures for the new installation, etc.).
- To identify management and/or planning precautions inside the new manufacturing areas. All of this must refer to specific technical realization norms, and these must be mentioned and included in the council's town planning scheme, complete also with their position within the pre-existing council town planning scheme.

Lastly, the regulations that relate to the subsequent updating of the RAR Technical Examination must also be included, and sent to the adjacent councils that may suffer the effects of the Seveso Activities.

In particular, on the matter of updating, considering that the subjectability of companies to the Seveso regulations may undergo variations over time, it is suggested that the council update the RAR Technical Examination, at least every two years, but also whenever significant changes are made to the reference context.

## Conclusion

In this work, we have tried to make a critical evaluation of the application of the SEA. At the same time, we have tried to suggest a specific operating approach for the case in which at least one company is at risk of a relevant accident in the territory where a plan or program subject to the SEA (or to a check of subjectability to the SEA) is applied, that is, an area that must be planned, in which it is possible to install industrial activities whose production characteristics cannot be defined beforehand.

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