The Integration of Strategic Environmental Assessment into Urban Planning in the Emilia-Romagna Region

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Abstract. The paper examines the evolution and application of Strategic Environmental Assessment (SEA) within the urban and spatial planning framework of the Emilia-Romagna Region, Italy, highlighting its progressive shift from a procedural compliance tool toward a strategic, integrated decision-support system. SEA in Emilia-Romagna has been conceived since the early 2000s as an embedded component of planning, influencing the formulation of objectives, actions, and implementation pathways. The regional planning reform (LR 24/2017) and its strong focus on urban regeneration and land take reduction led to a reconfiguration of the municipal urban plan (Piano Urbanistico Generale, PUG) that became more strategic, thus influencing the proactive role of SEA. Through the description of a case study, the paper illustrates how SEA supports urban planning by structuring diagnosis, coherence assessment, scenario evaluation, guidance for implementation, and monitoring. The analysis shows SEA's capacity to steer decisions toward sustainability, while also revealing tensions between its strategic ambitions and its increasing responsibility in assessing multidimensional (environmental, social, economic) impacts of redevelopment proposals. The paper concludes by discussing opportunities and limitations of SEA's evolving role and the need for further experimentation to consolidate its effectiveness.

Keywords: Strategic Environmental Assessment (SEA) · Urban Regeneration · Sustainable Spatial Planning

1 Introduction

In the international discourse on sustainability in urban and regional planning, Strategic Environmental Assessment (SEA) is widely acknowledged as a pivotal instrument for ensuring that decision-making processes are systematically aligned with sustainability objectives. Scholars such as Therivel (2010) and Fischer (2007) demonstrate that SEA functions not merely as a technical compliance mechanism, but as a strategic framework capable of embedding environmental, social, and economic considerations from the earliest stages of planning. Within this perspective, SEA operates as a critical interface between long term strategic vision and operational decision-making, ensuring that spatial plans and programmes remain consistent with the foundational principles of sustainable

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O. Gervasi et al. (Eds.): ICCSA 2026 Workshops, LNCS 16764, pp. 250–263, 2027.
https://doi.org/10.1007/978-3-032-30533-6_17

development. Actually, SEA can be conceived as a formalized and systematic process that assesses environmental impacts at strategic level, to be undertaken along with the definition of the plan design and before its implementation. This peculiarity makes SEA quite different from another and previous instrument devoted to evaluating the impact of projects on the environment, namely the Environmental Impact Assessment (EIA).

SEA was introduced in the European policy context in 2001 with the 'SEA directive' (2001/42/EC) that aims to ensure that environmental protection becomes an integral and anticipated part of planning processes, ensuring more sustainable, transparent and informed decisions.

The EC directive required EU member states to introduce a Strategic Environmental Assessment (SEA) procedure in their national legislation to be applied to policies, plans and programs (PPP) with potentially significant environmental impacts. In Italy, the transposition took place organically at the national level through Legislative Decree 152/2006. According to the legislation competences of the Italian Regions, that have the power to define proper laws to tailor and implement national regulatory measures, SEA has been adapted to regional contexts through regional laws that have regulated its application and evaluation objective in a diversified way.

This paper aims to describe the application of SEA in Emilia-Romagna, a Region that has been innovating its urban and spatial planning framework by strengthening the strategic nature of the municipal general plan as well as the effectiveness and reliability of its implementation. The role of SEA in supporting this process, from strategies into actions, has become increasingly relevant, overcoming the mere procedural approach that frequently characterized the practical application of SEA.

2 The Evolution of SEA: From Procedural Extension to Strategic Process

The notion of Strategic Environmental Assessment (SEA) was set in the late 1980s, when the European Commission introduced the term 'strategic environmental assessment' in an interim report, but it dates back to 1969, when the US National Environmental Policy Act introduced the need to undertake environmental assessments of proposed federal actions (Fundingsland Tetlow and Hanusch, 2012; Noble and Nwanekezie, 2017). However, its popularity increased considerably in the early 2000s, when it was endorsed by two important acts, namely the European SEA Directive (2001/42/EC) and the United Nations Economic Commission for Europe (UNECE) 2003 SEA Protocol (UNECE, 2003) that clarified its nature, scope, methodologies and possible applications (Noble and Nwanekezie, 2017). During this quite long period, SEA has undergone a substantial conceptual transformation, and a more profound reinterpretation of SEA emerged, influenced by planning theory, governance studies and sustainability science.

In Europe, SEA was initially conceived as an extension of project-level Environmental Impact Assessment (EIA) (Brunetta 2002; Chaker et al. 2006) diminishing the innovation potential inherent in the strategic dimension of the SEA. On the contrary, unlike EIA, SEA is not embedded in an authorization procedure, but operates as an internal, self-evaluative process within decision-making. In this sense, SEA accompanies the entire policy cycle rather than producing a single conclusive judgement.

This interpretation is consistent with later international contributions that conceptualize SEA as a family of approaches (Dalal-Clayton and Sadler 2005, p. 12) rather than a standardized technique. Moreover, Noble and Nwanekezie (2017) see SEA as a tool capable of covering a rather wide spectrum of approaches that differ from each other in terms of their strategic levels. They range from impact assessment-based approaches (derived from EIA) to more recent strategy-based approaches, oriented towards policy formulation and institutional transformation. IA-based SEA is the typical approach adopted for addressing directive-based SEA systems and requirements, where appraising compliance with specific policies, regulatory or program objectives is central as well as the assessment of the PPP's potential impacts. On the other hand, strategic-based SEA is an approach that evaluates environmental implications of strategic objectives and development pathways at the earliest stage of decision-making, helping shape policies or strategies toward sustainable outcomes before detailed plans are developed (Fig. 1).

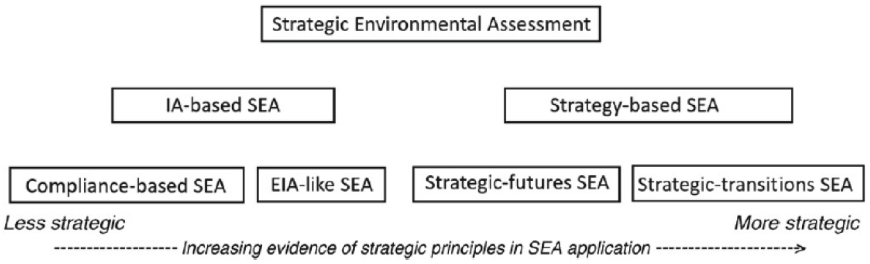

Fig. 1. IA-based and strategy-based conceptualization of SEA (source: Noble and Nwanekezie, 2017)

The objectives attributed to SEA have expanded in parallel with its conceptual evolution. Early SEA systems primarily pursued environmental protection goals, seeking to address cumulative effects, large-scale impacts and long-term risks inadequately captured at project level. Effectiveness was therefore initially interpreted in terms of environmental safeguarding and regulatory compliance (Chaker et al. 2006).

Over time, SEA objectives have broadened considerably. Contemporary SEA is increasingly expected to contribute to sustainable development, integrate environmental, social and economic dimensions, enhance transparency and accountability, and facilitate stakeholder participation and inter-institutional coordination (Tetlow and Hanusch, 2012).

In terms of impacts, Rega and Bonifazi (2011) detected that SEA has improved the procedural quality of European planning, but it still struggles to become a real strategic tool. SEA is still frequently conceived as a procedure to meet legislative requirements, rather than a process which adds real value (Fundingsland Tetlow and Hanusch, 2012), therefore the future challenge is not so much regulatory, but operational and cultural in order to make evaluation an integral and anticipated part of decisions, overcoming the logic of administrative compliance and to affirm it as a concrete support for public choices (Rega and Bonifazi, 2011).

This strategic role is further stressed when it comes to new global planning challenges. In addition to its traditional role of integrating sustainability goals, SEA is now

used to incorporate considerations related to new sustainability issues, such as climate change (Isola et al. 2024), urban resilience (Anelli et al. 2025) or biodiversity protection and ecosystem services (Geneletti et al. 2015; Geneletti, 2016). In this sense, SEA is configured as a strategic device capable of linking environmental, social and economic objectives with new global priorities, making urban and territorial planning more resilient, equitable and future-oriented.

3 SEA in the Planning Framework of the Emilia-Romagna Region

In Italy SEA was introduced by the Legislative Decree 152/2006 implementing the SEA Directive 2001/42/EC. The directive conceived SEA as an instrument with an endoprocedural nature (Tondelli, 2013) meaning that it should ensure the integration of environmental considerations in the preparation, adoption and approval of plans and programmes, in order to make a more informed and explicit selection of policies and actions in the plan that pursuit sustainability. Later, the Legislative Decree 152/2006, afterwards changed with Legislative Decree 4/2008, has assimilated the SEA process to that of the more consolidated Environmental Impact Assessment (EIA) and thus betraying the original role of the SEA, transforming it into an external and less integrated "plan assessment" (Tondelli, 2013).

This paradigm shift, which took place long after the issuance of the European directive, has made the national interpretation distant from practices already in place at the regional level and much more adherent to the spirit of the directive itself. The case of the Emilia-Romagna Region is emblematic. This Region was a forerunner of the European SEA: already with Regional Law 20/2000 it introduced the Environmental and Territorial Sustainability Assessment (ValSAT) in urban and territorial plans, conceived from the beginning as an assessment "within" the plan, integrated with the decision-making process, rather than as an external authorization act, thus placing itself quite distant form an impact-assessment based approach recalled by Noble and Nwanekezie (2017). ValSAT was conceived as an anticipation of the SEA described in the SEA directive, indeed it was formally recognized as adherent to SEA after its inclusion in the national legislation. Therefore, from now on, we will use the term SEA for indicating the specific instrument adopted in the Emilia Romagna region. The peculiarity of SEA in Emilia-Romagna lies in having been a pioneer and integrated into the planning process, with a strong orientation towards sustainability "within" the choices.

The regional experiences related to the first 15 years of application of Regional Law 20/2000 have often referred to consolidated models (e.g. ENPLAN Guidelines, 2004) based on an assessment process to accompany the plan, providing in particular:

1. selection of relevant sustainability goals.
2. definition of objectives and planning actions.
3. verification of external coherence (with sustainability objectives) and internal coherence (between planning choices), through matrices or checklists.
4. identification of measures: enabling conditions, performance, compensation and mitigations.
5. Monitoring of effects during implementation, which becomes the most innovative lever of the SEA, but which in practice has often been enunciated rather than implemented.

Regional planning then saw a further novelty thanks to the issuance of Regional Law 24/2017, still in force, which promotes urban regeneration and redevelopment as the ordinary ways of developing the urban contexts without further expanding the urban environments according to the "No net land take by 2050" principle (EC, 2021). This development model aims at operating a reorganization and densification of built-up areas in a sustainable and resilient way through the implementation of the general urban plan (PUG, Piano Urbanistico Generale) at municipal level. In fact, the law set a target of net land take of only 3% of the urbanized territory as of 1 January 2018 that may be used by 2050. Moreover, it sets a transitional period of 6 years (from 2018 till 2024) where development plans may be implemented according to the previous urban planning instruments. Since 2024, all the building rights related to urban expansion which were not undertaken were cancelled. Moreover, the PUG must not locate new development areas eroding 3% of the urbanized territory, thus land use rights are assigned later during the implementation phase.

Thanks to these measures, the law aims at concentrating the real estate interests upon regeneration and redevelopment processes. In order to shorten times between the planning and implementation of these interventions, the municipal urban plan was changed, assuming a more strategic nature and freeing it from all those conforming contents linked to large urban transformations, which are delegated to a new instrument called operational agreement (AO, Accordo Operativo). AOs are planning and design tools proposed by private developers, which transform significant areas of the city and the territory (e.g. redevelopment areas or expansion areas within the 3%) and have the important role to detail the planning framework, defined by the PUG and taking care of the implementation of the planning contents at the same time. However, to be accepted by the Municipality, they must prove to be consistent with the PUG by contributing to implementing its strategic framework. Besides the AO, another instrument, called public initiative implementation plan (PAIP, Piano Attuativo di Iniziativa Pubblica), was introduced. It is proposed by the Municipality and considers the implementation of public urban infrastructures, services and facilities and all the changes that need a clear public direction. Similarly to AO, it should be compliant with the PUG but is conceived by the law to have a less important role in implementing the PUG strategy than the AO.

In this context, evaluation processes capable of measuring the benefits and co-benefits related to (private) urban regeneration interventions (i.e. the public, collective benefit that must inspire any intervention in the existing city) take on a great importance. In this framework the law gives the SEA the role not only of assessing the environmental effects of the PUG, but also of guiding the definition of the AOs' contents.

The strategic nature of the PUG has influenced the way SEA is developed. Actually, it weakens the quantitative assessments which were originally based on certain urban planning forecasts, in which the quantities and functions in play were given. In particular, it is no longer possible to assess the effects due to expansions as the PUG can no longer decide on them in terms of location. In this case, SEA can only provide appropriate location criteria to guide the implementation of the 3% of new development.

The result is a breakdown of the traditional SEA into two main phases:

i) the SEA of the PUG, which focuses both on mainly strategic contents and planning decisions linked to smaller regeneration interventions within the existing city and in the rural territory subject to ordinary regulatory discipline.
ii) the SEA of the Operational Agreements, in which it is possible to verify the sustainability of the structural and quantitative component of the agreements resulting through public-private negotiation, as well as the coherence with the strategy of the PUG.

This implies that the SEA of the PUG is conceived as a continuous and coordinated process by:

1. specifying further checks and in-depth analysis to be carried out during the preparation of the operational agreement in the light of the critical issues already emerged and the actual nature and extent of the transformations proposed
2. giving specific indications concerning performance to be achieved, conditions to be respected in urban transformation interventions in compliance with the main goals set by the PUG;
3. defining a robust monitoring system to assess the implementation of the actions and interventions and related effects.

SEA is therefore required to take on a key role not only to assess the effects on the individual environmental components but also to guide the evaluation of the proposals made by private developers, assuming a strategic and proactive role, aimed at pursuing the environmental and territorial sustainability objectives of the plan itself in an integrated manner.

4 The Application of the SEA to a Real Case Study

The proposed case study concerns the SEA developed by the Inter Dept. Centre of Building and Constructions of the University of Bologna for the PUG of a Union of four municipalities - Carpi, Soliera, Novi di Modena and Campogalliano - in the province of Modena. The Union is located in the Po Valley and is characterized by a polycentric urban structure. The territory is attractive for production and logistical functions thanks to the presence of considerable infrastructures and its high accessibility to important freight and passenger transport corridors. The area is crossed by numerous artificial watercourses that determine the risk of significant flooding, from which the Union is called Terre d'Argine (TdA – "embarkment lands").

The logical process adopted in setting up the SEA of the PUG is illustrated in this paper, without going too far into the specificities of the plan and the SEA but recalling some fundamental steps relating to the case study to better understand the followed evaluation process.

The SEA adopted a methodology aligned with the different phases of the plan definition, in order to accompany the planning stages and transformation choices ensuring compliance with the conditions of sustainability. At the same time, it defined the criteria and conditions orienting the AOs and their respective SEAs (Fig. 2).

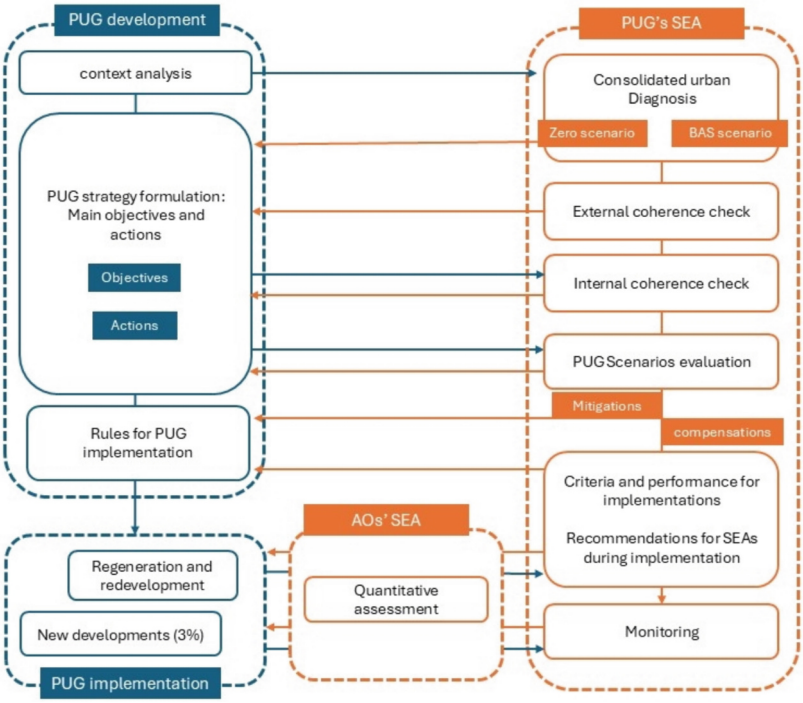

Fig. 2. Conceptualization of SEA process undertaken for the TdA PUG (source: Authors' elaboration)

The SEA of the PUG was therefore articulated in the following phases:

- Consolidated urban diagnosis: which synthesizes the context analysis highlighting vulnerability and resilience conditions in the different spatial domains.
- External coherence assessment: which evaluates if the goals of the PUG strategy are in line with overarching and sectoral planning and general sustainability objectives at national and international level.
- Internal coherence assessment: which assesses if the strategy objectives are consistent among themselves and if they respond well to the diagnosis.
- Scenarios of the PUG evaluation: it concerns the assessment of possible alternative planning scenarios highlighting effects on the environment and related measures to mitigate, compensate and reduce negative impacts.
- Criteria for implementation: concerns recommendations and performance to be considered when defining the masterplans for the AOs as well as their SEA contents and investigations.
- monitoring of the Plan: consisting of a set of indicators and targets necessary to monitor the implementation of the actions, including the AOs' implementation effects and the sustainability conditions.

These steps are briefly illustrated, highlighting the most significant elements that characterize the role of the SEA as a decision support system and guidance of planning decisions.

4.1 Consolidated Urban Diagnosis

This phase is aimed at diagnosing the socio-economic and environmental conditions of the territory, identifying problems, vulnerabilities to be addressed but also resources and opportunities to be leveraged in the territory. A SWOT analysis was conducted to highlight the strengths (S), weaknesses (W), opportunities (O) and threats (T) of the current and future state of the territory. This phase allowed us to build the baseline scenario, representing the current situation of the territorial context, and the business as usual (BAU) scenario, which reflects the expected future in the absence of interventions Notably, the SWOT framework made it possible to go beyond the traditional siloed approach based on environmental components, providing multidimensional and integrated synthesis of the most relevant phenomena affecting the entire territory. This analysis thus supported the formulation of a concrete and effective territorial diagnosis. The diagnosis is an essential step in the decision-making process, as it distills the information provided by the context analyses, highlights the most relevant territorial factors and trends, and identifies the elements that contribute to increasing vulnerability or strengthening resilience, providing a solid basis for guiding the definition of the strategy.

4.2 Coherence Check

Coherence check is an important step in the SEA process, because it allows the objectives of the PUG strategy, that have been defined in the meantime, to be examined with the aim of orienting decisions upon them towards solid sustainability principles. It is divided into external coherence check and internal coherence check.

The external coherence check ensured that the objectives of the new Plan's strategy are consistent with the sustainability objectives of the overarching and sectoral planning and with the SDGs. On an operational level, we initially proceeded with the analysis of international, national, regional and local policies and strategies, identifying the sustainability objectives against which the PUG should be compared. By then resorting to a matrix comparison between the overarching sustainability objectives and the objectives of the PUG being defined, the assessment supported the definition of a coherence judgment for each comparison. For instance, this phase supported effective integration with other sectoral municipal plans such as the Sustainable Energy and Climate Action Plan (SECAP), which was under approval, and the Sustainable Urban Mobility Plan (SUMP), which had already been approved. The coherence check made it possible to better align the policies and actions envisaged within these policy instruments and to select relevant indicators already identified by these plans for their periodic monitoring, thereby reducing the workload of the offices responsible for monitoring the PUG implementation.

The internal coherence check, on the other hand, was responsible for assessing the coherence between the strategies and objectives of the Plan itself as well as between the results of the diagnosis and the strategy of the PUG. Also in this case, two matrix

comparisons were used: the former was built to verify that critical issues and potential that emerged from the analysis had actually been intercepted by the strategy, while the latter support the check about the mutual coherence between the objectives of the Strategy.

This made it possible to adjust the objectives already drafted where coherence was not ensured, in order to better align them with the sustainability objectives considered and help to better define the strategy of the plan. This exercise proved to be very useful in identifying two actions that could lead to conflict situations: regeneration of already urbanized areas versus new developments. In this regard, during the PUG scenarios evaluation phase, we were able to work more precisely to define specific criteria aimed at addressing potential conflicts.

4.3 Scenarios of the PUG Evaluation

The evaluation of the scenarios of the PUG served to identify the reasonable alternatives suitable for achieving the established objectives by assessing the effects that these have on the territory and the environment. In this specific case, the scenarios were built starting from the 5 pillars of the strategy of the PUG and were compared to the BAU scenarios and zero scenarios.

A qualitative-quantitative assessment was carried out according to the available data from the context analysis in order to highlight the positive (or not worsening) trend of the plan and the various alternative actions and approaches that the plan proposes on some pillars, providing recommendations on the priority of certain alternatives or identifying sustainability conditions and measures.

A specific scenario that deserved particular attention is the one relating to new developments, even though they will be residual. The assessment of this scenario is particularly critical for highlighting the role of SEA, considering that the PUG cannot identify the areas in which to expand the city using 3% consumable land. The SEA played an important role, helping to provide correct guidance on this aspect. To this end, the SEA has defined a system of criteria and weights that identify the locations suitability to transformation, i.e. parts of the territory that are more favourable to the establishment of new urban functions as well as those locations where such transformations should be inhibited. For instance, favourable locations are those in which there is a limitation of urban sprawl, proximity to relevant services and connections to promote sustainable mobility, while unfavourable locations are those affecting areas that present environmental and landscape values or are affected by environmental risks. The evaluation system assigned scores to the different areas, thus providing information about their suitability for a sustainable development. Meanwhile, two alternative scenarios were compared, as identified in the previous phase: new developments and deep urban regeneration. In this case, the two scenarios could be in conflict. The SEA made it possible to better identify the priority conditions under which urban regeneration should be preferred over new developments, to reduce potential conflicts between the actions of the strategy.

4.4 Guidance for the Implementation

As already said, the PUG does not provide building rights in urban developments and redevelopments, to avoid generating urban rents. Consequently the regional law allows (and requires) that these urban changes are detailed (in terms of future urban layout and uses but also building rights and public spaces to be realized and given to the municipality) and proposed by the developers in a later stage, once economic and market related conditions are favourable for operationalize and implement these important urban changes, which take the form of an Operational Agreement. The SEA of the PUG has the role of keeping these two stages (planning and implementation) together under a sustainability framework. This task is addressed by establishing, within the SEA of the PUG, the analysis to be included in the SEA of AOs as well as by setting specific sustainability conditions in relation to specific transformations and/or contexts. Notably the SEA of PUG TdA required: i) a coherence check between the contents of the implementation tools with the strategy of the PUG, accounting how much the project proposal is in line with the objectives and actions of the PUG; ii) a sustainability assessment of the proposals, based on specific in-depth analysis recommended by the SEA of the PUG.

To this end, a checklist has been built based on the dimensions of sustainability and the peculiarities of the territory highlighted by the diagnostic framework and the Plan objectives, which identifies criteria, indicators and aspects to be made explicit in the SEA of the AOs.

The topics identified in the checklist are the following:

- Facilities and public services
- Social housing
- Economic impact (strategic nature)
- Landscape
- Accessibility and mobility services and infrastructures
- Energy consumption
- Seismic risk
- Soil permeability
- Soil quality
- CO2 emissions and air pollution
- Noise
- Hydraulic risk
- Ecosystem performance
- Water resource management
- Waste management

For each of them, the required levels of in-depth analysis and the situations in which these studies are most relevant and decisive have been defined, based on the findings of the previous analyses. Therefore, the checklist was intended as a transparent and effective tool for both developers - to support their decisions regarding performance-based design choices characterizing the AO proposal and the issues influencing the acceptance or rejection of the proposal - and for municipal officials, who are responsible for determining whether the proposal is acceptable based on the most relevant aspects that it should address.

In addition to implementation through major urban interventions, the strategy of the PUG is also carried out through minor urban changes within already built-up areas that do not necessarily require high-impact interventions. In this case, the strategic objectives should be translated into specific planning rules aimed at maintaining or improving existing urban conditions, without altering the urban character of the built-up areas. These areas generally represent the majority of the urbanized territory and therefore need to be considered by the SEA, in terms of the cumulative effects that may be generated. In this context, the SEA plays an important role in supporting decision-making processes aimed at identifying appropriate performance requirements to address the issues emerging from the diagnosis.

4.5 Monitoring

Monitoring is the central tool of the PUG evaluation process, capable of effectively assessing the implementation of the Plan itself. It is based on sets of indicators and targets capable of controlling the significant effects on the environment due to the implementation of the plan and verifying the achievement of the sustainability objectives set, in order to identify unforeseen negative effects and consequently adopt corrective measures (Tondelli, 2003).

The monitoring system has been structured based on the objectives of the Plan, according to two main parts:

- Context monitoring, which describes the initial environmental conditions, the dynamics and trends in place and the contribution of the plan to the modification of these trends. Selected indicators and targets are in line with the sustainability objectives and strategies set at supralocal level. Basically, they verify the plan scenarios, recording the cumulative variations due to the implementation of the plan in the local context.
- Plan monitoring, which more properly concerns the Plan itself and therefore records the effects deriving from the implementation of the Plan through indicators that are strictly functional to verify the completion of the actions envisaged in the plan strategy and the degree of achievement of the specific objectives, including the ones deriving from the AOs implementation.

The monitoring system was therefore conceived as a useful working tool for municipal administrations to record the contributions due to the implementation of the plan and to provide for any corrective measures.

5 Discussion and Conclusions

This paper discussed how the SEA has been adopted in Emilia-Romagna, Italy, as a decision support tool for ensuring that planning decisions included in an urban or spatial plan are sustainable, clearly comprising not only the environmental domain but also all the other domains affected by urban and territorial decisions. This perspective has given the SEA a very important role, not reduced to the “mere” assessment of the presence of sustainable conditions but rather representing a new way of planning.

As a matter of fact, the SEA in Emilia-Romagna can be conceived as more like a Strategy based model (Noble and Nwanekezie, 2017) based on Strategic futures approach. The SEA of the PUG is designed to influence planning actions and/or other next-level decisions regarding development initiatives, including the EIA or the SEA of plan-projects such as the AOs. The SEA tends to shape the plan rather than adjust the plan, becoming the planning process itself.

Indeed, in the proposed case study, the SEA has demonstrated its potential to support the decision-making process particularly in defining the strategic contents of the plan. In that phase, the SEA was able to easily steer the transition from the diagnosis to the definition of the PUG strategy by anchoring more firmly the strategic lines already drafted by policy makers to the territorial needs and sectoral or supralocal policies.

However, SEA is also responsible of verifying consistency with sustainability principles, adopting an approach closer to compliance-based SEAs, especially when it is carried out to accompany the design of AOs. Important points of concern emerge in this regard. They are linked to the delicate transition to the implementation phase, which occurs outside the framework of a complete and preventive control of the plan, but is instead entrusted to negotiation and assessment of sustainability on a case-by-case basis. On this aspect, the SEA of the PUG is inevitably weak, as it tends to orient rather than constrain decisions, lacking the possibility to define stringent sustainability conditions which are based on clearly identified transformations already envisaged by the plan and quantifiable effects. In this context, monitoring assumes fundamental importance to capture real effects on the territory and enabling corrective actions to be implemented. Monitoring is the real challenge in the transition from the strategic dimension of the plan to its implementation, to ensure the implementation itself is sustainable and consistent with the initial objectives. This critical point is exacerbated by a sort of cross-eyed approach affecting the administrative sphere, given the fact that, by National law, requires the SEA to follow a procedure that is very similar to that of the EIA. This makes the adoption of a strategy-based model still experimental and interpreted differently across regional experiences; on this topic, indeed, there is not yet a shared approach or common set of techniques. However, we believe that the approach presented in this paper can be easily transferred to planning contexts similar to those of the Emilia-Romagna, where the plan is strategic and based on negotiation for the definition of major urban transformations. At the same time, this evaluation scheme can be easily adapted to be applied to more conformative and regulatory plans. It means including the SEA of the AO within the SEA of the PUG, prefiguring assessments and scenarios based on new urban uses and maximum building volumes already envisaged by the plan, in areas where deep urban transformations are envisaged.

This multiplicity of approaches and variations denotes a good versatility of the tool, which is able to adapt to different planning stages, but at the same time it risks overlapping with instruments such as the EIA that, according to the law, is still due as well to assess the sustainability of certain urban projects, such as urban redevelopments involving areas greater than 10 hectares.

There is also another aspect concerning the role of the SEA that is highly topical in the regional scientific and cultural debate: whether it is appropriate to assign to the SEA the task of setting mechanisms for assessing the admissibility of AO proposals

thus inevitably considering multiple aspects, not only the environmental ones. This is due to a concern that the discretion of the plan will be reduced in favour of the SEA, which appears to take on a prominent role in the decision-making process, while this task should be primarily taken on by the planning discipline in dialogue with the political decision-making sphere. Understanding the role of the SEA as subordinate to the role of the plan is the result of a traditional approach to planning that does not yet interpret the SEA as a different way of constructing the plan itself, not as an external process.

In conclusion, experimentations and research on this topic are still needed, in particular on the two main topics. First, it is important to investigate the possible contradictions between the strategic and impact-related dimensions of the SEA that may generate confusion and overwhelm the scoping phases. Applying the SEA to different planning processes (i.e. at different scales other than the municipal level, or for sectorial plans) that combine strategic and structural dimensions would be interesting and useful for assessing the potential and limitations of the SEA itself and try to clarify which are the boundaries between strategic based and impact-assessment based approaches. Second, further studies should aim to overcome the difficulties in interpreting the exact role of the SEA in the planning process, which should be considered more as a different planning approach, rather than an external assessment of the plan.

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