

Bridging the divide between theory and guidance in Strategic Environmental Assessment: A path for Italian Regions

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Abstract: Clear and effective legislation is a prerequisite to move sustainable development from theory into practice. This paper develops a methodology to investigate how Italian regions use Strategic Environmental Assessment (SEA) and the procedures used in the European Union (EU) to pursue sustainable development of policies, plans, and programs (PPPs). This case study is at the Italian regional level, examined to identify flaws and areas for improvement for each regional legislative framework. For this purpose, we used criteria from international debates on sustainability assessments. Through statistical multi-dimensional analysis, we classified Italian regions with similar SEA legislation. We developed four taxonomies, based on: i) legislation and guidelines; ii) integration between SEA and PPPs; iii) sustainability goals; iv) technical organization; v) participatory organization; and vi) monitoring. Our findings suggest that Italian administrators should cooperate to improve legislation at the regional level. Acknowledging the institution-centered nature of SEA, this methodology could support SEA development in European countries with diversified traditions.

Keywords: Strategic Environmental Assessment; regional legislation; cluster analysis; taxonomies; policy-making; sustainable planning

1. Introduction

Clear and effective legislation is an essential requirement for successful Strategic Environmental Assessment (SEA). SEA is a ‘family of tools’ (Partidário, 2000, p. 655) widely used to translate sustainable development goals into a broad range of policies, plans and programs (e.g. art.3, paragraph 2, (a) letter of Directive 42/2001/EC), including urban and regional planning practices (Fischer 2003; Pope et al. 2004).

At present SEA presents a double and antithetic scenario, identifiable as ‘the paradox of progress and performance’ (Sadler & Dusík, 2016). This lack of connection between advancement in methodologies and the persistent implementation struggles depends on two issues. First, SEA needs to be designed for a variety of contexts and applications (Partidário, 2000), since it is used to assess the sustainability of diversified policies, plans and programs (PPP). As a consequence, SEA proliferates in many forms thus increasing the difficulties for users (Bina, 2007). Second, the awareness and sensitivities of institutional frameworks are crucial because regional policy-making differs in terms of structure and competences. This affects decision-makers and the organization of assessment procedures which in turn influences SEA design and implementation (Hilding-Rydevik & Bjarnadóttir, 2007; Kørnø & Thissen, 2000). These conditions suggest that blueprint solutions should be avoided, and that the development of legislation and guidelines should be based on regional and local contexts and the definition of the required tasks (Brown & Thérivel, 2000; Partidário, 2000). The struggle to provide tailor-made SEA legislation and guidelines directly affects its implementation. Paradoxically, SEA is performing as a non-strategic tool, failing “on its inherent promise” (Bidstrup & Hansen, 2014, p. 34). Though SEA is at risk of sharing the destiny of other impact assessments as “marginalisation and or even extinction [...] in the name of efficiency”, its efficacy could be improved with radical changes in legislation (Morrison-Saunders, Pope, Gunn, Bond, & Retief, 2014, p. 7). This scenario seems unlikely, since International organizations repeatedly issue reports and guidelines to foster SEA development and implementation especially in developing countries (Dusík, 2001; World Bank, 2005; World Bank et al., 2011). However, the context-related nature of SEA suggests that bridging the gap between theory and practice requires not only international initiatives (Lobos & Partidário, 2014), but also analytical reviews of the existing national and regional legislation (Ahmed & Fiadjoe, 2006; Dalal-Clayton & Sadler, 2014). This paper investigates how legislation connects the theoretical goals of SEA with its practical application to urban and regional plans.

Assuming that laws and guidelines connect sustainability assessment theorists and practitioners (Pope, Bond, Morrison-Saunders, & Retief, 2013), the EU and Italy in particular represent an excellent case study for how national legislation complies with the SEA Directive n.42/2001 of the European Commission (Dalal-Clayton & Sadler, 2005). This claim is based on the following three factors. First, the gap between supranational goals and Italian local practice is amplified by the existence of regional SEA legislation, which multiplies the number and type of procedures. Second, Italy deserves attention as it has been marginalized in the scholarly debate and excluded by most of the international comparative studies on how SEA is performing (e.g. Dalal-Clayton & Sadler, 2014; C. Jones et al., 2005). Third, focusing on Italy offers a chance to investigate the gap between the southern European countries, with poor sustainability assessment traditions, and the northern ones

with better procedures (Gazzola, 2008). The fragmentation of Italian governance (Servillo & Lingua, 2014) has resulted in a variety of regional protocols (see Figure 1). Thus a comparative exploration of these protocols can benefit our understanding of how SEA has been transposed in regional legislation “under the influence of the EU territorial governance agenda” (Cotella & Janin Rivolin, 2011, p. 42).

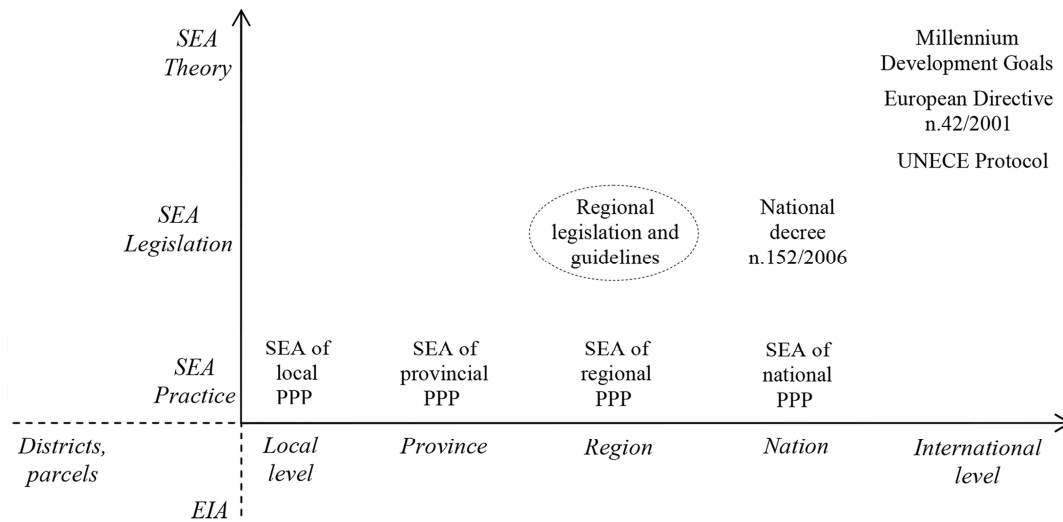


Figure 1. Regional SEA and its relationship to the Italian planning and sustainability assessment system.

Acknowledging the gaps between SEA theory and practice, we contribute by focusing on regional legislation for two reasons. First, the regional scale is the most relevant in the Italian framework because statutory plans are delivered by the same regional bodies that develop legislation on planning and SEA. Second, regional legislation is considered as an intermediate step between the theory proposed at European and national level, and the practice delivered by local councils. Because of this and acknowledging a lack of regional legislative benchmarking, this paper provides an analysis of the guidance, but not the implementation of SEA. We prioritize the investigation of the problems (what local councils are provided to deliver SEA) affecting Italy, not on the symptoms (the SEA reports delivered). This study advances our understanding of SEA protocols in the Italian context and enriches the methodologies used to assess regional legislative frameworks by using factor and cluster analysis.

The main purpose of the paper is to analyse regional SEA legislation in Italy to determine common issues undermining regional SEA guidance. In a scenario of limited resources allocated to SEA development (personnel, finance, management, skills), bringing together several regions to work collaboratively on common issues could facilitate ‘learning by doing’ processes based on joint efforts. At a time when Italian public administrations are lacking resources, more collaboration could be the key to moving the SEA capacity-building process forward. Furthermore, a process of joint collaboration could raise awareness on the need to improve existing SEA procedures, and hence overcome the current reliance on sporadic virtuous behavior by regional and local administrators.

Methodologically, the paper is structured in two parts. First, we develop a set of analytical criteria to examine and benchmark the legislation in each region. This task is based on the literature and

existing studies analyzing and comparing SEA legislation. Second, we categorize regions with similar characteristics, noting their differences and similarities using correlation analysis, factor analysis and cluster analysis. The results provide an insight of how Italian regions could improve their legislation and overcome common issues.

This paper has six sections, the first being the introduction. The second outlines a preliminary literature review of existing SEA studies within the Italian national framework. This part of the paper illustrates the thematic areas and analytical criteria used for our analysis. The third section presents the methodology of this study, explaining the methods and the criteria used for our analysis. The fourth section illustrates the multivariate process. The fifth section presents the results and the discussion of our findings, with the definition of four SEA categories. In the sixth part we conclude by discussing how this paper advances knowledge on SEA.

2. The Literature review

Numerous studies have analysed how SEA is performing in Italian regions. Many of these examinations found that local municipalities struggle to develop an SEA report, the document that provides the final results of the SEA procedure. These struggles include a range of issues affecting key areas of SEA, such as ‘sustainability, participation and innovative tools’ (Pira, 2012). Specifically, investigations have outlined issues in the alignment of local plans to overarching planning documents (De Montis, Ledda, Caschili, Ganciu, & Barra, 2014), the use of geographical information (Floris & Zoppi, 2015), and the correct organization of the participatory process within SEA (Isola & Pira, 2012). Similar issues emerge from studies undertaken in several Italian regions, at the municipal, provincial and regional scale. These studies outline: 1) the need for better indicators and mitigation measures to achieve effective integration of sustainability principles into SEA (Lamorgese & Geneletti, 2013); and 2) a fragmented scenario where each region relies on a specific legislative background (De Montis, 2014). Because of diversified laws and guidelines within the Italian regions, we suggest that further comparative studies on the implementation of SEA could provide more insight by acknowledging features characterizing each regional legislation. Our literature review reveals that few recent studies have analyzed the status of SEA legislation within Italian regions (Besio, Brunetta & Mangoni, 2013; MATTM, 2011a, 2011b, 2013). These existing studies appear to be more of a synthesis of the regional legislative scenarios than an organized comparative analysis outlining how regional legislation addresses the features that make SEA work.

The review of publications and reports released at national level is done in conjunction with an analysis of National Decree n. 152/2006, the document introducing the European Directive 42/2004 EC in the Italian legislation. Some of the issues currently affecting the development of regional SEA procedures can be traced back to the way the National Decree implemented the contents of the European Directive, as outlined in 2006 by a group of the Italian Institute of Urban planners (INU). This report clearly stated that the Italian model was moving away from the purpose and intent of the European directive, shifting SEA towards a model of external evaluation and away from an integrated evaluation of the PPP (Fidanza & Bertini, 2006). As forecast in this report, this led to the development of an external assessment procedure that increased the complexity of planning processes (Zoppi &

Pira, 2013). As the Decree lacks a clear identification of the stakeholders involved in SEA and their responsibilities, many issues arose with respect to the allocation of procedural, analytical and appraisal tasks. This problem represents a further reason to investigate how Italian regions have implemented the National Decree into laws and guidelines detailing how procedures and tasks are allocated to regional, provincial, or local institutions. Because of the specificities of the Italian context, a pilot study on this national framework could provide benefits to better deliver the contents of the European SEA Directive, through processes of “institutional progress” (Janin Rivolin, 2010, p. 2).

Moving from this troubled national scenario, our analysis has its theoretical foundations in existing literature on SEA theory and implementation, and in comparative studies of SEA processes and reports partially summarized by De Montis (2013, p.54). The main issue identified relates to improving SEA efficacy. A review of the literature (Figure 2, *Stage 1*) focuses on: 1) SEA legislation at the international and national scale (EC-DG-ENV, 2009; OECD, 2012; UNECE, 2012); and 2) performance criteria used to evaluate SEA efficacy at the regional and local level (Clark, 2000; Dalal-Clayton & Sadler, 2005; Fischer & Gazzola, 2006; Jones et al. 2005; Kjørnø & Thissen, 2000; Sadler et al. 2011). The resulting framework (Figure 2, *Stage 2a*) identifies context, procedural and methodological factors involved with SEA (Fischer, 2007). These factors drive the selection of thematic areas to explore when analyzing the regional SEA legislative frameworks. We choose six thematic areas based on several essays found in the literature (Dalal-Clayton & Sadler, 2005; Fischer 2007; EC-DG-ENV, 2009; Lobos & Partidário, 2014; OECD, 2012; Sadler et al. 2011; UNECE, 2012).

The features underlying positive SEA protocols are summarized in 39 analytical criteria (Figure 2, *Stage 2b*) detailing the six thematic areas previously identified. The choice of these criteria comes from *i*) an analysis of the Italian SEA legislative and administrative framework, and *ii*) international studies and reports outlining the features characterizing effective SEA experiences and protocols. These criteria represent the analytical variables (*Stage 3b*) used in our analysis to review how regional legislation addresses and fosters the development of effective and efficient SEA.

The first of the six areas is the legislative process (Theme A in Table 1). Considering that SEA needs to be institution-centred in order to work effectively (Slunge et al., 2009), legislators should resist the temptation of drafting blueprint laws and guidelines (Dusik & Sadler, 2004; Verheem & Tonk, 2000). Accordingly, guidance materials should be inspired by the social capital and the role of stakeholders characterising each context (Mathur et al., 2008). Consequently, the legislative framework should support local councils in developing “formal requirements and clear provisions to conduct and effectively consider SEA” (Fischer, 2007, p.81). Building on this premise, the thematic areas we explore are: 1) legislation on SEA at the regional level; 2) models to structure SEA related to specific PPPs; 3) PPPs requiring SEA; 4) ‘tiering’ within SEA tools (Lee & Wood, 1978); 5) availability of guidelines; 6) authorities and agencies involved; 7) distinction between scoping and SEA reporting; and 8) identification of environmentally skilled authorities.

Table 1. Thematic areas and analytical criteria.

A) Legislative process	D) Technical organization
1 Existent legislation about SEA	1 Database provided by specific agencies or authorities
2 Models to structure SEA related to specific PPPs	2 Thematic reports provided in the SEA procedure
3 PPPs requiring SEA	3 SEA and PPP required to use the same database
4 'Tiering' within SEA tools hierarchy	4 Use of modelling to assess PPP impacts
5 Availability of Guidelines	5 Quantitative assessment of PPP internal coherence
6 Authorities/agencies involved in the SEA process	6 Criteria and tools to structure alternative options
7 Distinction between the scoping and the SEA report	E) Participatory organization
8 Identification of environmentally skilled authorities	1 Joint consultative processes for socio/eco/environmental organizations
B) Integration between SEA and PPP	2 Feedbacks from socio/eco/environmental authorities and institutions
1 SEA possibility to stop unsustainable PPP	3 Involvement of transboundary and inter-scale authorities and institutions
2 SEA conceived as 'in itinere' assessment	4 Public consultation 'in-itinere'
3 Separation between SEA assessment authority and PPP customer	5 Joint consultative processes for public authorities
4 Separation between SEA drafting profile and PPP customer	6 Tools to use arranging public participation
5 SEA possibility to influence PPP contents	7 Report about the effective use of opinions/advice coming from health and environment authorities
6 SEA coherent with PPPs	F) Monitoring phase
C) Sustainability goals	1 Standardized monitoring methods for similar PPPs
1 Specific parameters to assess PPP impacts	2 PPP impacts compatible with higher level PPPs
2 Reference to human development limits	3 Compulsory mitigation actions by PPP customer
3 Need to assess cumulative impacts of PPP actions	4 Involvement of thematically competent bodies
4 Criteria to evaluate PPP alternatives sustainability	5 Draft of a non-technical summary
5 Temporal scenarios independent from PPP customer political mandate	
6 Transboundary/inter-scale PPP sustainability	

The second theme (B) deals with the integration between SEA and PPP. This implies an effective interaction between the two processes while keeping the SEA procedure as autonomous and impartial as possible (Acharibasam & Noble, 2014). To this extent, authorities involved with PPP and SEA should not overlap. The analytical criteria used for this thematic area include: 1) SEA chance to stop unsustainable PPP; 2) SEA 'in itinere'; 3) separation between the SEA assessment authority and the PPP customer; 4) separation between SEA drafting profile and PPP customer; 5) SEA chance to influence PPP; and 6) SEA external coherence.

The need to identify sustainability goals (Theme C) is connected with Theme B, because either the plan or the SEA process should consider parameters and indicators to measure PPP impacts against qualitative targets (e.g. Millennium Development Goals). The analytical criteria include: 1) detailed parameters to assess PPP impacts; 2) reference to human development limits; 3) methodology to assess

cumulative impacts of PPP actions; 4) criteria to evaluate PPP alternatives; 5) long term temporal scenarios; and 6) transboundary and inter-scale dimension.

The fourth theme (D) deals with the technical side of SEA organization. We address the struggles to implement in SEA practice the increasing hints coming from the SEA theoretical evolution (Brown, 2003; Lobos & Partidário, 2014). Since methods are not lacking in SEA practices, the main reason for this problem relates to ineffective operative guidelines (Noble, Gunn, & Martin, 2012) and ineffective information management among stakeholders (Brown, 2003). The analytical criteria for this theme include: 1) defined databases to use; 2) draft of thematic reports within SEA; 3) common database for PPP and SEA processes; 4) standard models to assess PPP impacts; 5) quantitative assessment of PPP internal coherence; and 6) criteria and tools to structure PPP alternatives.

The participatory component of SEA (Theme E) involves the right of the public, organizations and institutions to be informed and to be involved in the decision-making process (Kørnøv & Dalkmann, 2011). Although some literature debates the integration of the 'triple bottom line' or 'three-pillar' in the SEA process (Hacking & Guthrie, 2008; Morrison-Saunders & Thérivel, 2006; Pope et al., 2004; Thérivel, 2004), we consider not only environmental but also social and economic institutions. The criteria for this theme focus on: 1) consultation of thematic agencies; 2) use of thematic feedbacks; 3) involvement of transboundary authorities; 4) public consultation 'in itinere'; 5) continuous involvement of public authorities; 6) ways to arrange public participation; and 7) synthesis of health and environmental authority reports.

The sixth and final theme (F) deals with SEA monitoring, a stage debated in terms of a suitable methodology to link the monitoring of PPP outcomes with subsequent environmental assessments (Nilsson et al. 2009; UNECE 2012). The criteria used for this theme are: 1) standardized monitoring for similar PPPs; 2) compatibility between the PPP impacts and higher level PPPs; 3) control on the implementation of mitigation actions by PPP customers; 4) involvement of thematically competent bodies; and 5) draft of a non-technical summary.

3. The methodology

The main goal of the paper is to identify common issues undermining legislation on SEA. Assuming that detailed laws and guidelines provide better support to regional and local administrators developing and appraising SEA, we initially focused on defining how current legislative frameworks address key SEA principles. This was done by examining how regional legislation deals with each SEA criterion. Consequently, a method was selected that allows us to identify groups of regions with similar SEA legislation using criteria outlined in the literature. Among the many possible methods to do this, we choose the non-hierarchical cluster analysis based on factor analysis as the most suitable. This choice was based on the fact that our principal goal was not to rank Italian regions, but to group them based on the way each region's legislation addresses SEA principles. Further research will explore how planning tradition and socio-institutional framework influence the definition of SEA legislation. This investigation could move from the findings of this paper, considering how social, political and institutional conditions affect the broader planning and sustainability assessment framework.

In this paper, a factor analysis explores the many regional legislation factors. We treat them in an aggregate way, depending on the actual role that they play in characterizing the regions. This way of processing wide sets of criteria provides details on how each criterion influences the whole model, and how each criterion varies in relation to others. This also increases the level of information that can be used to interpret and understand how regional legislation is performing against the criteria. This method is better than a simple correlation analysis because it illustrates how the achievement of some criteria relates to others. Defining the underlying variables supports our study by facilitating the interpretation on how criteria are addressed in each region and in groups of regions. The definition of groups of regions is pursued through non-hierarchical cluster analysis (Benzécri, 1982). This method was selected because it was designed to define groups of analytical units with similar features. Acknowledging that multi-criteria decision analysis tools run similar routines, these were not used as our main aim was to define clusters in a non-hierarchical way, a basic task of non-hierarchical cluster analysis tools. AddaWin software (Griguolo, 2008) was used for the factor and cluster analysis. It is specifically designed for non-hierarchical clustering, being structured by three consequent and connected steps: correlation analysis, factor analysis and non-hierarchical analysis.

Operationally, the first analytical task was to measure how the regional legislative framework is performing on SEA. This operation assumes that all criteria contribute to the achievement of quality in SEA. This first step involves defining the analytical criteria and assessing whether and how they are addressed in each region's legislation. This is achieved by using the 39 criteria outlined by the literature review as they are assumed to be representative of the key issues that guidance on SEA might provide. Since these criteria cover all the key features of SEA, they do not take any component of SEA for granted. Furthermore, their use allows an analysis of all the topics that should be detailed in legislation to support regional and local administrators developing effective SEA.

To assess how each region's legislation addresses these criteria, the authors benchmarked it against laws and reports released at the regional and national level between 2011 and 2014. Each region's legislative framework was analysed to see if each criterion is: i) completely satisfied (meaning that the region's legislation provides detailed and unambiguous information about how that component needs to be achieved/considered in developing SEA); ii) partially satisfied (meaning that the region's legislation provides partial information about how that component needs to be achieved/considered in developing SEA, without providing detailed models or options); iii) not satisfied (meaning that the region's legislation does not provide information about how that component needs to be achieved/considered in developing SEA). For this analysis, the main publications considered were drafted by the Italian Ministry for the Environment (MATTM, 2011a, 2011b) to assess the compliance between regional SEA legislation and the National Decree on SEA (n.152/2006). However, we did not rely only on national reports dated 2011. Additionally, we double-checked each region to identify SEA legislation and guidelines introduced between 2011 and 2014. A detailed list of the numerous laws and operative guidelines considered can be retrieved in the publications released by the Italian Ministry for the Environment (MATTM) and on the official websites of the Italian regions and autonomous provinces. Table 2 provides a shortlist of the most recent acts analysed for each region.

Table 2. The most recent acts analysed for each region

	Region	Most act (laws and attachments, guidelines)
1	Lombardia	Law: n.12 (2005). Guideline: n.13071 (2010), DGR n.9/761 (2010), DGR n.IX/2789(2011)
2	Emilia-Romagna	Law: n.20 (2000), n.9 (2008), n.6 (2009). Guideline: Internal circular n.49760 (2009)
3	Piemonte	Law: n.40 (1998). Guideline: DGR n.211-34747 (2008), DGR n.20-13359 (2010)
4	Veneto	Law: n.11(2004), n.4 (2008). Guideline: DGR n.791 (2009), DGR n.3811 (2009)
5	P.A. Trento	Law: n.1 (2008). Guideline: DGP n.349 (2010), circular n.1812 (2010), circular n.20 (2011)
6	P.A. Bolzano	Law: n.2 (2007)
7	Friuli-Venezia Giulia	Law: n.11 (2004), n.4 (2008), n.13 (2009), n.22 (2009)
8	Valle d'Aosta	Law: n.12 (2009). Guideline: circular (2010)
9	Toscana	Laws: n.10 (2010), n.11 (2010), n.69 (2010), n.46 (2013). Guideline: DGR n.613 (2009)
10	Lazio	Law: n.14 (2008). Guideline: DGR n.363 (2009), DGR n.169 (2010)
11	Umbria	Law: n.12 (2010), n.8 (2011). Guideline: DGR n.383 (2008), DGR n.861 (2011)
12	Marche	Law: n.6 (2004), n.6 (2007). Guideline: DGR n.220 (2010), DGR n.1813 (2010)
13	Abruzzo	Law: n.1 (2009). Guideline: DGR n.842 (2007), circular n.14582 (2010) and n.528 (2011)
14	Campania	Law: n.16 (2004). Guideline: DGR n.294 (2011), circular n.765763 (2011)
15	Molise	Guideline: DGR n.886 (2006), DGR n.76 (2007), DGR n.26 (2009)
16	Basilicata	Law: n.23 (1999), n.48 (2000)
17	Calabria	Law: n.19 (2002), n.14 (2006). Guideline: n.17 (2010), DGR n.701 (2010), DGR n.624 (2011)
18	Sicilia	Law: n.6 (2009), n.13 (2009). Guideline: n.200 (2009)
19	Puglia	Law: n.44 (2012). Guideline: DGR n.981 (2008), DGR n.2614 (2009), DGR n.2013 (2009)
20	Sardegna	Law: n.9 (2006), n.3 (2009). Guideline: DGR n.56/52 (2009), DGR n.34/33 (2012)
21	Liguria	Law: n.154 (draft, 2009), n.10 (2011), n.32 (2012). Guideline: circular n.64513 (2008)

Consequently, we developed a multi-dimensional, non-hierarchical cluster analysis to investigate the nature of regional SEA legislation. This step involves the use of AddaWin (Griguolo, 2008) to perform a: 1) correlation analysis, to recognize the variables (criteria) highly correlated and therefore not useful to the development of the further steps; 2) principal component analysis showing how the variables are related to factorial axes, structuring an n dimensions model; and 3) non-hierarchical cluster analysis, to identify clusters of regions with similar behavior.

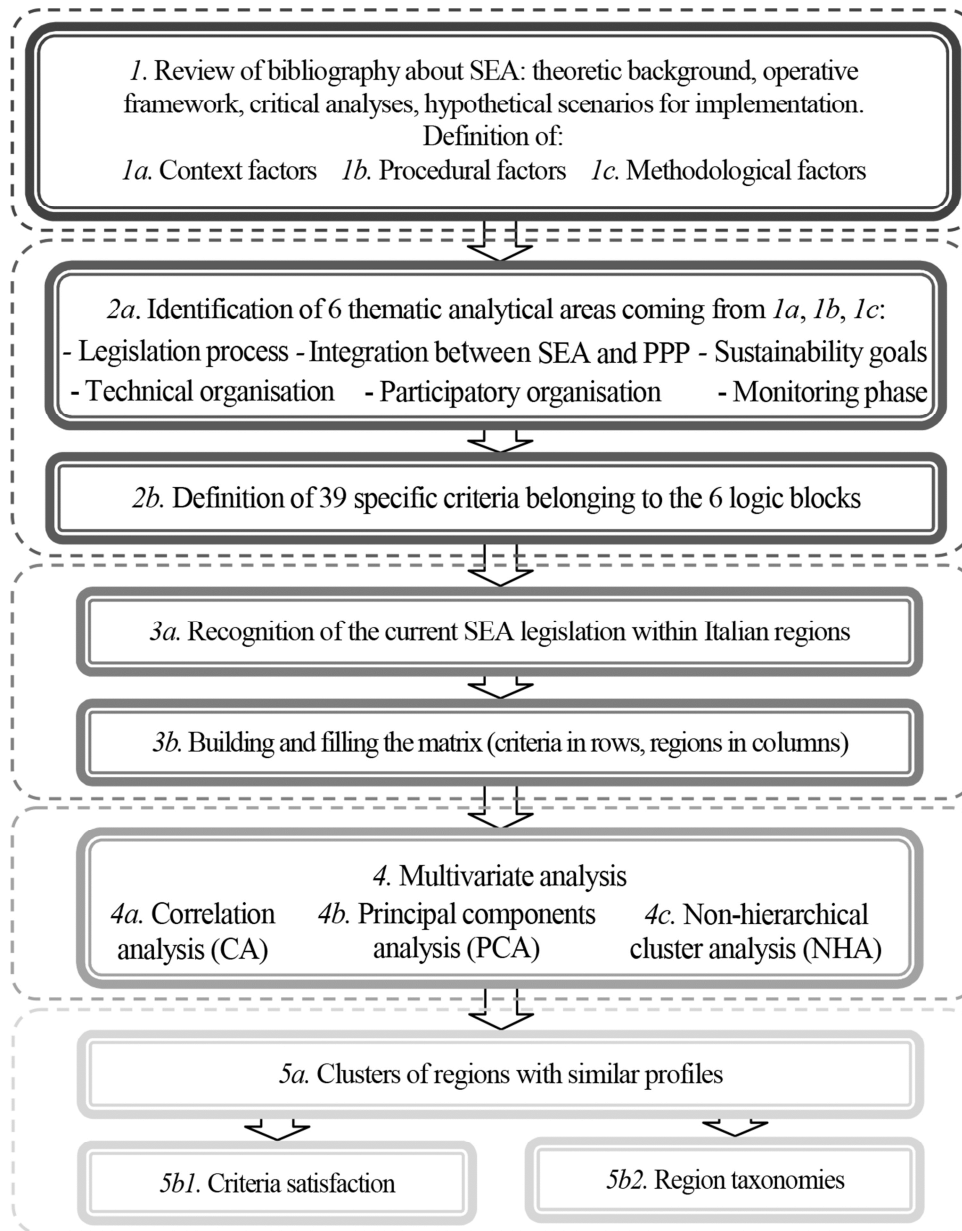


Figure 2. Methodology used to examine the regional Italian SEA legislative framework.

Initially, the information collected from regional legislation and national reports is synthesized in a matrix (Anderson, 1958; Griguolo, 2008). This matrix is filled out based on how each criterion is met in each region (complete satisfaction, partial or none). This output is then subjected to a correlation analysis to identify redundant variables, which are then excluded from further consideration. We used numerical values (ranging from 0 to 1) for the different levels of criteria satisfaction, with complete satisfaction assigned '1', partial satisfaction assigned '0.5', and null satisfaction assigned '0'. Based on the results of the correlation analysis, we excluded the variables (criteria) that have the same value in all regions, or in all but one region (threshold for correlation value: 1). This step is required to eliminate variables that do not add value to the factor and cluster analysis, as they characterize all regions in the same way. Second, the factorial analysis of principal components identifies factorial axes with relevant significance (high 'inertia'), depending on the way the axes are linked with the

variables. Last, the non-hierarchical cluster analysis identifies groups of regions with similar characteristics according to their distribution in the factorial plan (defined by the more relevant factorial axes). The resulting clusters are then analysed by outlining how each group performs against the criteria, and if the regions within each cluster have particular features. The cluster analysis is followed by one last methodological step: identification of taxonomies of regional SEA legislation. This provides the positive and negative sides of the entire sample showing how features of SEA legislation are still lacking in some Italian regions. This final interpretation adds value to the preliminary results, as it is focused on presenting SEA categories that could fit in other national contexts. Defining a clear taxonomy is a strong point to advance further collaboration between Italian regions, not only in a horizontal way among regions belonging to the same taxonomy, but also in a vertical one among regions in different taxonomies. The identification of these taxonomies is a step ahead of the definition of regional clusters, as this interpretation of previous findings outlines what has been done in each group and how groups relate in terms of potential improvement.

4. The multivariate analysis process

Considering how the 39 criteria perform in each region, a correlation analysis (CA) identifies criteria with similar behaviors, thus allowing the elimination of redundant variables. The result is the exclusion of criteria *a7, a9, b1, b2, b4, b5, b6, c5, d2, d6, e4, and f5*, as they present the same values in all the regions or in all but one region. The relevance of these criteria is explained in the following section. The remaining 27 criteria are used for the multidimensional non-hierarchical cluster analysis, to identify regional taxonomies. The data, organized in a matrix as shown in Table 3, were processed using AddaWin. The process of multidimensional cluster analysis involved three steps: correlation analysis, principal components analysis and non-hierarchical cluster analysis.

Table 3. Level of criteria satisfaction by Region in 2014
(full [+], partial [*], none [-]).

		Region																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
Criteria	a1	*	*	*	*	*	+	+	+	+	*	+	+	+	*	*	-	*	*	+	*	+	
	a2	+	+	*	*	+	*	*	+	*	*	*	+	*	*	-	-	+	*	*	*	*	
	a3	+	+	*	*	+	+	*	+	+	*	+	+	+	*	*	-	+	*	*	*	+	
	a4	+	+	+	*	+	+	*	+	+	+	+	+	+	+	*	*	+	*	+	+	+	
	a5	+	-	-	+	-	+	-	+	-	+	+	+	+	+	-	-	+	-	-	+	-	
	a6	+	*	*	*	*	*	*	*	*	*	*	+	+	*	*	*	+	*	*	+	*	
	a8	+	+	*	*	*	*	*	*	+	*	+	+	+	*	*	*	+	*	+	+	*	
	b3	-	+	-	*	-	+	-	+	-	+	-	+	-	-	+	+	+	+	+	+	+	
	c1	-	-	-	-	*	-	-	-	-	-	-	*	*	-	-	-	*	-	-	-	*	
	c2	*	*	-	-	*	*	*	-	*	*	-	*	*	*	*	-	-	*	-	*	*	*
	c3	*	*	-	-	*	-	-	-	-	-	-	*	*	-	-	-	*	-	-	*	-	
	c4	*	*	-	-	*	*	-	-	*	-	-	*	*	-	-	-	+	-	-	-	*	
	c6	+	+	*	*	*	+	+	+	+	+	*	+	+	+	*	-	+	-	+	*	+	
	d1	*	*	-	-	-	*	-	*	*	-	-	*	*	-	-	-	*	-	-	*	-	
	d3	-	*	-	-	-	+	*	-	-	-	-	-	*	*	-	-	-	-	-	*	-	
	d4	*	-	-	-	-	-	-	-	-	-	-	*	-	-	-	-	*	-	-	-	-	
	d5	*	*	-	-	-	-	-	-	-	-	-	*	-	-	-	-	-	-	-	-	-	
	e1	+	+	*	*	*	+	+	*	+	*	*	*	+	+	+	*	+	*	*	+	+	
	e2	+	+	*	*	*	+	+	*	+	+	*	+	+	+	*	*	+	*	+	+	+	
	e3	+	+	*	*	+	+	+	*	+	+	*	+	+	+	*	*	+	*	*	+	+	
	e5	+	+	+	*	*	+	*	+	+	+	+	*	+	+	*	*	+	*	+	+	+	
	e6	*	*	-	-	-	-	-	-	-	-	-	*	-	*	-	-	*	-	-	-	-	
	e7	+	+	+	+	*	+	*	*	+	+	*	+	+	*	*	*	+	*	+	+	*	
	f1	*	*	-	-	-	*	-	-	*	*	-	-	*	-	-	-	+	-	*	*	*	
f2	+	+	+	*	*	+	+	*	+	+	+	+	+	+	*	*	+	*	+	+	+		
f3	+	+	*	*	*	*	*	*	*	*	*	*	*	*	-	-	+	-	*	+	+		
f4	+	+	*	*	*	+	+	*	+	*	+	+	+	+	*	*	+	*	*	+	*		

1 = Lombardia; 2 = Emilia-Romagna; 3 = Piemonte; 4 = Veneto; 5 = Provincia Autonoma di Trento; 6 = Provincia Autonoma di Bolzano; 7 = Friuli-Venezia Giulia; 8 = Valle d' Aosta; 9 = Toscana; 10 = Lazio; 11 = Umbria; 12 = Marche; 13 = Abruzzo 14 = Campania; 15 = Molise; 16 = Basilicata; 17 = Calabria; 18 = Sicilia; 19 = Puglia; 20 = Sardegna; 21 = Liguria.

The role of the factorial analysis of principal components is to identify factorial axes with relevant significance (high 'inertia'), according to the way the axes are linked with the variables. This step is performed in AddaWin as preliminary evaluation of the criteria used for the analysis, facilitating the further step of our study: the non-hierarchical cluster analysis. This analysis defines groups of regions with similar characteristics according to their distribution in the factorial plan (defined by the more relevant factorial axes, as shown in Figure 3).

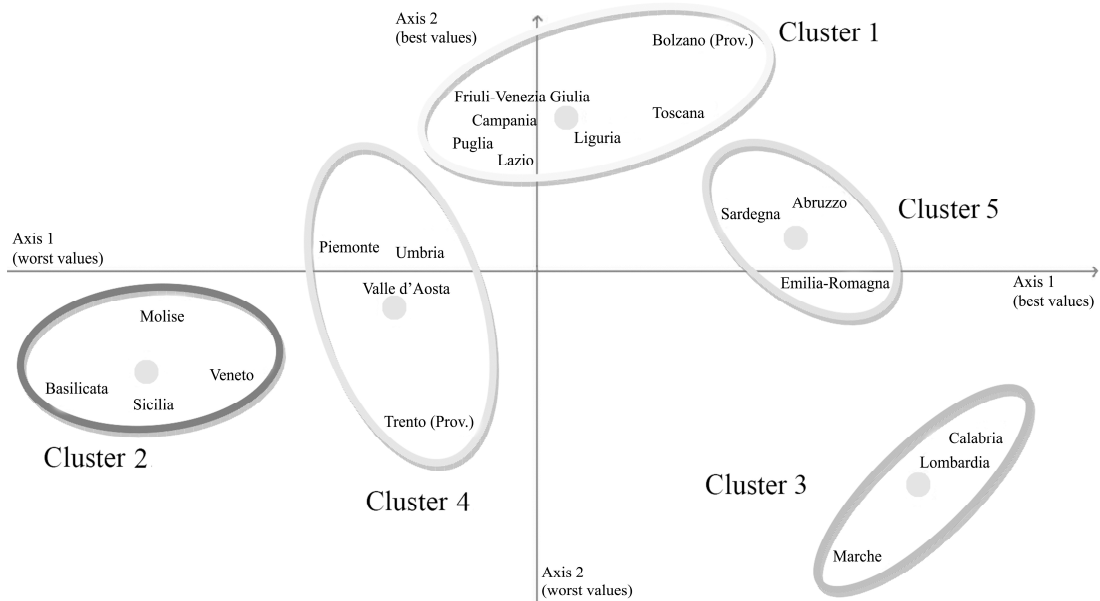


Figure 3. Factorial plan representation of the five identified clusters, with axis 1 related to criteria *a*, *c*, *d*, *e*, *f*, and axis 2 related to criterion *b4*.

In detail, five resulting clusters of regions, illustrated in Figure 3 with the method of the dynamic clouds by Diday (1971), are identified according to the ‘mean variables values’ featuring each cluster as shown in Table 4.

Table 4. Profiles of the Five Clusters, showing the ‘mean variable values’ assumed by the regions of each cluster.

Cl	R	W	a1	a2	a3	a4	a5	a6	a8	b3	c1	c2	c3	e4	e6
1	7	33.30	0.85	0.50	0.71	0.93	0.40	0.50	0.64	0.57	0.07	0.50	0	0.21	1.00
2	4	19.00	0.37	0.25	0.37	0.50	0.25	0.50	0.50	0.88	0	0	0	0	0.25
3	3	14.30	0.67	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.33	0.50	0.50	0.67	1.00
4	4	19.00	0.75	0.75	0.87	1.00	0.50	0.50	0.62	0.25	0.12	0.12	0.12	0.12	0.62
5	3	14.30	0.67	0.67	0.83	1.00	0.67	0.83	1.00	0.67	0.17	0.50	0.50	0.33	0.83
Tot	21	100.0	0.69	0.59	0.78	0.88	0.52	0.62	0.71	0.59	0.19	0.33	0.17	0.24	0.76
Cl	R	d1	d3	d4	d5	e1	e2	e3	e5	e6	e7	f1	f2	f3	f4
1	7	0.14	0.29	0	0	0.86	1.00	0.93	0.93	0.07	0.79	0.36	1.00	0.57	0.71
2	4	0	0	0	0	0.62	0.50	0.50	0.50	0	0.62	0	0.5	0.12	0.50
3	3	0.50	0	0.50	0.33	0.83	1.00	1.00	0.83	0.50	1.00	0.50	1.00	0.83	1.00
4	4	0.13	0	0	0	0.50	0.50	0.62	0.87	0	0.62	0	0.75	0.50	0.62
5	3	0.50	0.50	0	0.17	1.00	1.00	1.00	1.00	0.17	1.00	0.50	1.00	0.83	1.00
Tot	21	0.21	0.17	0.07	0.07	0.76	0.81	0.81	0.83	0.19	0.78	0.26	0.87	0.55	0.74

Cl: cluster ID. R: number of regions belonging in cluster; W: percent weight of each cluster; a1, a2, ..., f4: ‘mean variable values’.

5. Results and discussion

5.1. Regional characterization

Descriptions of the clusters take into account that some of the 39 criteria are met in all regional legislation. These criteria deal with the ‘core’ principles in the European Directive 2001/42 EC, and refer to the key elements that distinguish SEA from its predecessor, namely Environmental Impact Assessment (EIA). This includes: the draft of scoping and SEA reports (*a7*); the SEA conceived as ‘in itinere’ assessment (*b2*) whereas EIA was developed after the project development; the related SEA possibility to influence the PPP (*b5*); the compatibility among PPPs of different ranking (*b6*); the need of thematic reports to support the SEA process (*d2*); the role of public consultation ‘in itinere’ (*e4*); and the final draft of non-technical summary (*f5*). However, the compliance of regional legislation with these key elements is not sufficient for effective SEA, as further steps toward SEA improvement require initiatives beyond adequate regional legislation.

A first read of the five clusters resulting from the non-hierarchical cluster analysis focuses on the visual representation of Figure 3 and on the numerical description in Table 4. This provides a synthesis of how each group of criteria (*a, b, c, d, e* and *f*) performs in each cluster. The goal of this analysis is to show the common features and common issues characterizing each cluster and to provide the background for further analyses.

Cluster 2 has the lowest levels of criteria satisfaction and is constituted by regions with poor legislation and guidelines. The lack of proper guidance (A) undermines the whole SEA framework, affecting the way that other criteria (B to F) are met. Because of this, these regions rely primarily on the contents of the SEA European Directive, provided in Italian legislation through the Legislative Decree n.152/2006. As a result, criteria belonging to themes C and D are never met in the majority of regions while themes E and F are seldom fully satisfied. In terms of regional characterization, Molise and Basilicata have the worst conditions, while Sicilia is slightly better and Veneto constitutes a ‘bridge’ between clusters 2 and 4.

Although cluster 4 is the closest to the previous one, these regions (Trento, Piemonte, Valle d’Aosta, Umbria) made more organized legislative efforts to translate the European Directive and the national Decree to the regional scale. Regions have structured legislation and guidelines (Theme A), which places this cluster a step ahead of the previous one. However, values below the mean in the other thematic areas (B to F) suggest that these regions have legislation that lacks clear guidance for SEA capacity-building.

Cluster 1 contains regions (Friuli-Venezia Giulia, Toscana, Lazio, Campania, Puglia, Liguria, and the autonomous province of Bolzano) with legislation that lacks structured guidelines on sustainability indicators (C) and technical responsibilities of stakeholders (D). Despite this, these regions meet most of the criteria in thematic areas A and E, with structured legislation on how to manage stakeholder participation in the SEA process. This involves a clear identification of both the individuals to involve and the ways to organize their participation. Overall, these regions appear on the right path to develop the ‘know-how’ required to make SEA work.

Regions in cluster 5 (Emilia-Romagna, Abruzzo, Sardegna) meet the majority of the criteria in four of the six thematic areas, with the exception of technical organization (D) and sustainability goals (C).

Although their legislation illustrates how to organize the SEA procedure, the limited guidelines provided on technical issues could affect the delivery of effective assessments at the local level. Methods, indicators and databases are not clearly defined in legislation. This undermines SEA implementation at the local level, where administrations and professionals are called to agree on operative methodology. Generic guidelines on how stakeholders should interact within SEA leave local operators with the responsibility to select suitable assessment techniques.

Finally, cluster 3 includes regions (Lombardia, Marche, and Calabria) with the most complete legislative frameworks. The legislation in these regions performs well in thematic areas A, B, E and F, while providing guidance on methodology (D) and sustainability criteria (C). Although these regions have the most structured SEA legislation, there is room for improvement. Specifically, low values in thematic areas C and D suggest a lack of agreement on methods to use when delivering SEA, a condition shared by all the Italian regions (as shown in Figure 4).

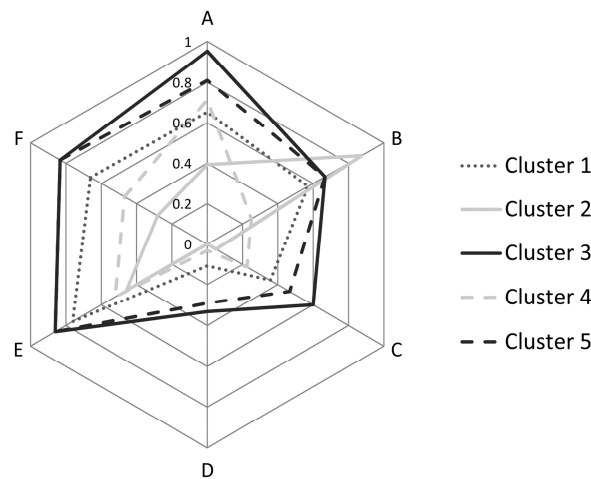


Figure 4. The mean values of the thematic areas for each cluster of regions.

5.2. Current framework: taxonomies, lacks and open issues

The five clusters are representative of the different levels that characterize Italian regional legislation. Positive and negative features for each cluster (see Table 5) suggest that two of them (5 and 3) have similar characteristics in terms of criteria satisfaction. Because of this, they can be considered as a unique advanced profile, which implies a shift from five clusters to four taxonomies of SEA legislative framework. Overall, the resulting four taxonomies represent regions with legislation: i) relying on the European Directive and the national decree -- cluster 2; ii) at an early development stage -- cluster 4; iii) highly structured in terms of participation management -- cluster 1; and iv) developed at an heterogeneous yet ameliorable level -- clusters 3 and 5.

The pros and cons of each taxonomy come from the profiles determined from the non-hierarchical cluster analysis (as in Table 5). These consider the way each cluster performs against the criteria representing the thematic areas introduced by the literature in section 2. In detail, the taxonomy labelled ‘Substantial reliance on directive and national decree’ mirrors cluster 2 by lacking of extended and structured legislation and guidelines expanding the contents of the European directive and the National decree on SEA. Collaboration among administrators representing these regions might

facilitate the resolution of common issues while requiring a limited amount of resources (due to economies of scale). These collaborations might be inspired by regions in cluster 5 and 3 to improve the allocation of SEA tasks to skilled stakeholders. Similar conditions feature the 'Early development stage' taxonomy, corresponding to the former cluster 4. However, the legislation benefits from regional models fitting the set of institutional bodies characterizing each planning and socio-political framework. Initiatives for improvement might focus on the participatory and the technical side of SEA, meaning respectively the coordination of moments for discussions among stakeholders and the definition of instruments and routines to appraise the impacts of PPP. The 'Participation focused' taxonomy represents cluster 1 and differs from the previous ones because of structured legislative contents supporting the organization of the participative components of SEA. This means that laws and guidelines identify the stakeholders to involve in the procedure, detailing in most of the regions when and how the stakeholders are called to give their contribution. Joint initiatives among regional bodies might improve the operative support to the development of SEA, defining suitable methodologies and for regional and local SEA. The most advanced taxonomy gathers cluster 5 and 3, including regions with 'Structured yet incomplete' protocols. These regions have satisfactory laws and guidelines, as most of the criteria investigated are fully or at least partially met. Despite this, regional legislation can improve by better defining the methods and tools to effectively measure the impacts of PPP. This especially refers to the definition of measurable sustainability goals and a unique database to collect the information to process.

Summarizing the results of this analysis, the four taxonomies can be merged in two groups of regions representative of different levels of SEA capacity building at the institutional level (Figure 5). The regions in the first group need significant improvements in legislation and guidelines, as their SEA protocols are not adequate for developing local level efficacious environmental assessments (clusters 2, 4 and 1). In these regions, the deficiencies in SEA legislation undermine the achievement of satisfactory SEA, thus requiring virtuous initiatives from regional stakeholders. The second group of regions belongs to clusters 3 and 5, constituting a taxonomy of legislations that improved the contents of European and national SEA guidance by adapting it to regional frameworks. Despite quite developed capacity building processes, major improvements are required in these regions as well, especially about SEA methodology and sustainability criteria.

Table 5. SEA taxonomies

SEA taxonomy	Contents	Cluster	Regions
Substantial reliance on directive and national decree	(+) Basic features on SEA, coming from European and national documents	(-) Improvable regional model of SEA, advancing the European and national framework (-) Improvable procedural support to organize SEA (-) Improvable operational support to develop SEA (-) Improvable technical support to measure PPP impacts through SEA	2 Basilicata, Molise, Sicilia, Veneto
Early development stage	(+) Basic features on SEA, coming from European and national documents (+) Regional model of SEA advancing the European and national framework	(-) Improvable procedural support to organize SEA (-) Improvable operational support to develop SEA (-) Improvable technical support to measure PPP impacts through SEA	4 Piemonte, Trento, Umbria, Valle d'Aosta,
Participation-focused	(+) Basic features on SEA, coming from European and national documents (+) Regional model of SEA advancing the European and national framework (+) Procedural support to organize SEA through stakeholders involvement	(-) Improvable operational support to develop SEA (-) Improvable technical support to measure PPP impacts through SEA	1 Bolzano, Campania, Friuli-Venezia Giulia, Lazio, Liguria, Puglia, Campania
Structured yet incomplete protocol	(+) Basic features on SEA, coming from European and national documents (+) Regional model of SEA advancing the European and national framework (+) Procedural support to organize SEA through stakeholders involvement (+) Operational support to develop SEA assigning stakeholders tasks	(-) Improvable technical support to measure PPP impacts through SEA	3, 5 Abruzzo, Calabria, Emilia-Romagna, Lombardia, Marche, Sardegna

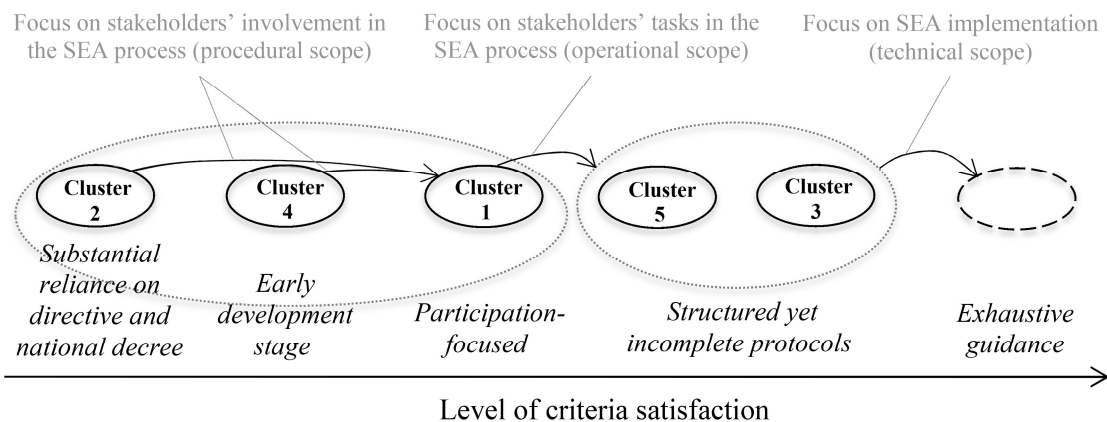


Figure 5. SEA taxonomies: the gap between theory and guidance.

A key factor bridging the two groups is the organization of the participatory process (theme E), since this is a prerequisite to allocating tasks to the stakeholders (themes C and D). Many regions have legislation detailing how the ‘participatory process’ should work (theme E). This involves the identification of: a) the institutions/organizations to involve in the procedure; and b) the participatory activities and conferences required to guarantee participation in the SEA process. Since SEA is linked to the planning framework for each region, it is worth considering the views of some scholars that environmental assessments are facing a post-classical rational planning phase, being influenced by interactive planning approaches (Gauthier et al., 2011). Again, in Gauthier (p. 49), “interactive (joint or communication-centred) planning relies on interactive dynamics involving dialogue, sharing opinions and arguments and emphasis on a holistic, constructivist approach focused on merging knowledge and action (reflective thinking in action)”. Our findings suggest that this approach is slowly developing within the Italian regional context, since ‘participation’ criteria have been satisfied in most regions with their own SEA legislation.

For decades, Italy has been characterized by a lack of participation in policy making. This condition has recently required opening a “consensus-building process within the decision-making arena” (Gelli, 2001, p. 190). Hence, it is somewhat comforting that regional SEA legislation has improved despite historical struggles in “co-operation and collaboration between the community (public, private and volunteers) and those institutional actors responsible for policy making in various sectors” (Fischer & Gazzola, 2006, p.403). As previously suggested, the definition and consolidation of a strong participatory background appears to be the key for further development of technical contents. Indeed, the availability of information and resources to efficaciously implement SEA depend on the behavior of institutions, agencies and other bodies involved with economic, social and environmental tasks. This means that no advancement in SEA can be achieved while deficiencies affect the participation of stakeholders.

The lack of guidance on SEA data, methodology and tools is another finding of our study. This reflects the absence of consolidated sustainability assessment and planning traditions. As a consequence, most regional administrations are more confident in reiterating national laws, which bring limited or no innovations, rather than drafting their own protocols. This impacts on sensitive issues such as the allocation of tasks among stakeholders and the definition of sustainability goals and techniques. While sustainability concepts are being progressively introduced in the SEA framework (Rega & Bonifazi, 2014), some successes can be achieved by local councils willing to overcome the limiting and incomplete regional legislation.

5.3. Towards more effective legislative frameworks

A further factor to consider when exploring the fragmented Italian case is the commitment of regional administrations in pursuing an effective SEA agenda. It is worth noting that from 2002 to 2004, six Italian regions participated to the ‘Enplan’ project. This experience focused on the cooperation between some Italian (Lombardia, Liguria, Piemonte, Valle d’Aosta, Emilia-Romagna, Toscana) and Spanish regions. Its goal was to reflect on SEA and experiment with its development before being formally introduced in national legislation. Of the Italian regions involved in Enplan, only Lombardia and Emilia-Romagna belong to the best taxonomy outlined by our analysis. However, the

Italian regions involved in the Enplan project showed mean values of criteria satisfaction above the average in at least four of the six categories (Figure 4) while none of the regions involved in Enplan were in the worst cluster (2).

Did the regions participating in Enplan have an advantage over non-participating regions in developing capacity on SEA? Research suggests that success in SEA and policy-making does not depend as much on timing, but on political will (Gazzola et al., 2004). Buckley (2000, p. 215) states that

Based on experience to date, the view within the environmental assessment profession seems to be that governments are generally averse to adopting comprehensive new approaches to policy SEA, and in fact have only carried out SEA when it fits smoothly into existing procedures with which politicians and bureaucrats are already comfortable.

This might be the case in some Italian regions that legislated sustainability assessments immediately after the Enplan experience, anticipating the national decree that made SEA compulsory. This is the case in: 1) Emilia-Romagna, where the regional law n.20/2000 already considered the evaluation and monitoring of plans sustainability (anticipating the European Directive); 2) Lombardia, with the regional law n.12/2005; and 3) Toscana, with the regional law n.1/2005.

In Lombardia, legislation evolved from a basic framework to one of the most advanced in Italy (see Figure 3). In this region, the first SEA law was introduced in 2005 for assessing the impacts of plans and programs on the environment. Referring to the taxonomies used in this paper, that legislative attempt is identifiable as “Directive or national decree-relying” since the European Directive 2001/42 was the main reference at that time. A first generation of SEA reports, the main outputs of an SEA procedure, was developed for regional, provincial and local planning schemes. In 2007, the Lombardia regional council updated and improved the 2005 legislation, introducing detailed models of SEA for each type of regional, provincial and local PPP. This comprehensive guidance enhanced the quality of SEA, with the upgrade of ‘first generation’ to a ‘second-generation’ SEA report featuring a broader use of data, geographic information systems, and quantitative appraisals (Baresi, 2008; Fabiano & Paolillo, 2008).

The 2007 update identified the main institutions involved in the procedure, detailing how to relate partial and final outputs of both the planning and SEA procedure. This also included the definition of a timeframe for connecting PPP and SEA design, implementation and monitoring. Other features of the second-generation update were the links between SEA and geographic information systems, which promoted more comprehensive analyses. This shift towards ‘heterogeneous, yet incomplete protocols’ was so successful that only minor adjustments have been made to the regional legislation since 2007. However, current legislation in Lombardia can still be improved to better address technical issues. From this perspective, a recent regional law (n.31/2014) limiting the urbanization of ‘free’ land might have signaled a step towards broader implementation of sustainability criteria.

Following the example of Lombardia, a way to bridge the gaps among Italian regions is the use of an incremental approach. In other words, regions could improve their legislative systems by looking at similar, but more advanced, regional legislation. For instance, Molise could initially develop SEA laws and guidance assuming region Toscana or Liguria as reference, thus shifting from the current framework to a ‘participation-focused’ one. This intermediate step could allow identifying the

characters to involve in the SEA process, leading to a better SEA. This would provide insights on the roles and tasks that each stakeholder could perform, supporting the development of legislative updates emulating the protocols identified in cluster 3 and 5. The adoption of an incremental upgrade could benefit from the feedback provided by the institutional, professional, and public characters involved in SEA. At the same time, this approach would outline the strengths and weaknesses to be addressed at each step, while proceeding towards regional tailor-made solutions. Since no Italian regional legislation completely satisfies all the criteria considered in our analysis, regions in clusters 3 and 5 could adopt a similar approach. Learning from foreign practices, these regions could improve their own legislative systems to fill the existing gaps affecting the practical implementation of effective SEA.

6. Conclusions

This study examines how Italian regions are providing legislation on SEA by transposing in guidance the many features that the literature and International organizations identify as basic conditions for effective SEA. Summarizing our findings:

- our non-hierarchical cluster analysis finds that four main taxonomies of SEA legislation have evolved in Italian regions;
- the taxonomies are based on how legislation incorporates the key principles of SEA, and are ranked on their adherence to these principles;
- basic conditions required by the National decree and the European directive are satisfied in all regions;
- participation is a key component that diversifies SEA taxonomies as it is crucial to identifying stakeholders to involve at different stages of the process;
- mapping stakeholders and their tasks in the SEA process benefits the selection of analytical methods and the organization of data management and processing;
- the use of methodologies and data management could be better addressed in legislation and guidelines, so that coherent evaluations could be performed at different scales;
- because the regions are diversified on the way ‘participation’ is addressed, cooperation among regional administrations might foster improvements in regions where this component is not clearly defined; and
- the process of cooperation among regions with similar conditions would be useful in overcoming common issues.

Wondering ‘what is next?’, we move from these findings to outline paths for further research and institutional efforts towards better SEA. This paper illustrates how the Italian regional administrations are currently delivering SEA guidance to implement sustainability assessments in regional and local planning. The results report a heterogeneous scenario, outlining how key deficiencies are affecting regional SEA legislation. We suggest that regional councils could deliver more exhaustive SEA if they cooperated in mutual learning (e.g. Enplan project).

The taxonomies we identified present a multiplicity of potential uses. First, this is a clear statement of how Italian regions are currently producing legislation on SEA effectively bridging the gap between

theory and practice. Second, the gaps among regions suggest a closer look on how regional strategies succeed in engaging stakeholders. Third, these results might foster further studies investigating how the SEA legislation is affected by regional differences in the planning systems as well as levels of social and institutional capital. Fourth, this might foster cooperation among regional administrations, from a bottom-up perspective (whereas regional administrators will take the initiative) or from a top-down one (in case national authorities will coordinate joint activities among regions). Fifth, labelling and defining different stages of SEA legislative development will help raise the interest to develop similar studies in other contexts, at different institutional levels.

Overall, the four taxonomies represent uneven attempts by regional administrations to deliver on national expectations. Legislation emerges as a crucial component whose current efficacy should not be taken for granted. Although our study focused on Italy, this problem may be affecting other countries as well. Benchmarking studies on SEA should be identified as a priority, as SEA implementation is thwarted when relevant guidance is lacking.

The methodology that we defined and applied could be adopted to analyse the level of SEA legislation achieved in different nations. The promotion of joint initiatives to raise SEA quality could target the gaps among regions, as well as the skepticism of public administrators toward this procedure.

This paper focused on understanding how regional legislation in the Italian context includes key principles for effective SEA. Our findings provide recommendations for improving regional legislation and SEA practice in the Italian context. Deficiencies in legislation suggest that many regions have only complied with the minimum requirements of the European directive and the Italian national decree. This raises doubts about the quality of SEA currently undertaken. The analysis of SEA legislation is one of the components to investigate in order to understand how SEA is being designed and implemented to support urban and regional planning. The taxonomies that we have identified represent a starting point for a broader reflection that should encompass regional planning traditions and culture, thus defining an exhaustive scenario on how sustainability can be better addressed in the Italian regions. Initiatives for the improvement of current SEA legislation could explore the gaps outlined by the four taxonomies while considering the planning background featuring each region. Inspiration for these initiatives come from the Enplan experience, when inter-regional and international cooperation fostered the improvement of SEA legislation anticipating national initiatives. This might be once again the best way to proceed for Italian regions, collecting willing regional administrations to pave the road for a broader reflection on SEA structure at national level.

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