

Environmental Management

A synthesis of a comparative analysis of the effectiveness of strategic environmental assessment between Ireland and Scotland applied to Brazil

Uma síntese da análise comparativa e efetividade da avaliação ambiental estratégica entre Irlanda e Escócia aplicada ao Brasil

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ABSTRACT

Strategic Environmental Assessment (SEA) aims to facilitate both integration and assessment of opportunities and threats for action strategies within the framework of sustainable development. Its stages comprise Screening, which analyzes its need, Scoping, which establishes the range of environmental issues to be covered, Analysis, in which the Environmental Report is prepared, Decision-Making, Follow-up, in which both Monitoring and Follow-up of the assessment are conducted, and finally Consultation. Three types of effectiveness approaches, namely procedural effectiveness, substantive effectiveness, and transactional effectiveness can be identified. This article addresses the effectiveness of SEA in Brazil, Ireland, and Scotland through a comparative analysis, since it enables rich discussions on the subject.

Keywords: Environmental protection policies; Climate Changes; SEA; Brasil

RESUMO

A Avaliação Ambiental Estratégica (AAE) tem como objetivo facilitar a integração e a avaliação de oportunidades e ameaças para estratégias de ação no quadro do desenvolvimento sustentável. Sua primeira etapa é a de triagem (*Tiering*) onde vê-se a sua necessidade, depois, a etapa de escopo (*Scoping*) onde determina-se a gama de questões ambientais a serem cobertas pela AAE, em sequência a etapa de Análise, na qual há a preparação do Relatório Ambiental, em seguida, a etapa de Tomada de decisão, depois o Acompanhamento (*Follow-up*), em que acontece o monitoramento e a supervisão da avaliação e posteriormente a etapa de Consulta. É possível identificar três tipos de abordagens da efetividade: a

efetividade processual, a efetividade substantiva e a efetividade transativa. Este artigo objetiva analisar por meio de uma análise comparativa, a efetividade da AAE no Brasil e dos países citados tendo em vista que essa análise concede uma rica discussão para o tema.

Palavras-chave: Políticas de proteção ambiental; Mudanças Climáticas; SEA; Brasil

1 INTRODUCTION

Since 1980, term Strategic Environmental Assessment (SEA) has drawn the attention of several government planners, politicians, and academics (Fischer; Seaton, 2002). For some time, it was considered an extension of a project's Environmental Impact Assessment (EIA) (Wood; Djeddour, 1992; Fischer; Seaton, 2002), and only after 1990, its role was consolidated as an articulating element in the elaboration of Plans, Policies, and Programs (PPPs) (Oliveira, Montaño; Souza, 2009; Oppermann, 2012).

Since SEA emerged for addressing the deficiencies of the EIA, Partidário (2007) claimed it aims to facilitate both integration and assessment of opportunities and threats for action strategies within the framework of sustainable development.

Countries such as Scotland and Ireland, where SEA has been consolidated, transparent, and effective, stand out in the international scenario. Such effectiveness can be reflected in the clarity and fulfilment of the SEA objectives and adequacy of related procedures. Therefore, the analysis of the actual fulfilment of the objectives and other elements listed in SEA reports is intended as an important factor.

A comparison of two structured systems with a Brazilian SEA system under development can reveal its main weaknesses and strengths regarding effectiveness, thus contributing to its better development.

This study evaluates the procedural effectiveness of SEA in Brazil, Scotland, and Ireland by means of overviews and a comparative analysis, considering the latter two countries can provide a rich basis for discussions on SEA in Brazil.

2 THE STRATEGIC ENVIRONMENTAL ASSESSMENT PROCESS

Strategic Environmental Assessment (SEA) aims to ensure significant environmental effects from plans and programmes will be identified, assessed, and subject to public participation to be considered by decision makers (ILLARI, 2020). It can promote a proactive approach so environmental and sustainability considerations are taken into account during the early stages of strategic decision-making processes (Tetlow; Hanusch, 2012); in some cases, it replaces the planning process itself (Nijhum, 2021).

The European Directive (2001) set a minimum requirement for a high level of environmental protection through the integration of environmental considerations in both preparation and adoption of Policies, Plans, and Programs (PPPs) for a sustainable development. In practice, SEA is a multi-objective assessment tool that optimizes decision-making and promotes sustainable development.

SEA is structured in some sequential steps towards influencing strategic actions. Screening, the first step, analyzes the necessity (or not) of SEA; Scoping establishes the range of environmental issues to be covered; Analysis refers to the preparation of an Environmental Report and precedes Decision Making; during Follow-up, both Monitoring and Follow-up of the assessment are conducted; Consultation is the last stage. (Fisher, 2007).

The application of SEA is justified by its assistance in the creation of a better environment through informed and sustainable decision making, guaranteeing several environmental issues of global importance in policies, plans, and programs at different administrative, national, regional, and local levels (Fisher, 2003) which, associated with the concept of Tiering, are one of the most important aspects in the chaining of different strategic decision levels (Oliveira; Montaña; Souza, 2009).

The importance of SEA is often related to its ability to influence decision-making and include environmental issues in the planning of those actions. However, it must be associated with impacts, which are usually subtle, indirect, and unfold

in the long term. A requirement is often imposed (e.g., certain principles are pondered in SEA, including public participation and environmental concerns related to a proposed PPP); however, such considerations are frequently not required in the shaping of PPP decisions (Acharibasam; Noble 2014).

3 EFFECTIVENESS OF SEA

Sadler (1996) was one of the first authors to raise the importance of using SEA in the context of climate change, thus inspiring other studies. He defined its effectiveness and how well the assessment works. However, it can also be defined in terms of the extent to which it influences and adds value to decisions made, (PARTIDÁRIO, 2000), or in relation to its contribution to the selection of the most sustainable and environmentally friendly planning option (Van Buuren; Nooteboom; 2009). Moreover, its affectivity can be defined in various perspectives that cover the understanding of the term (CHANCHITPRICHA; BOND; 2013).

Sadler and Verheem (1996) highlighted SEA effectiveness requires adequate procedures and methodologies, competent professionals, and above all, a reasonably supportive political culture. The International Association for Impact Assessment (IAIA) (2002) established some criteria for the evaluation of SEA, which are related to what is included in its process and to whether the process is Integrated, Sustainability-oriented, Focused, Responsible, Participatory, and Interactive.

Saddler (1996) claimed three types of effectiveness approaches, namely procedural effectiveness, substantive effectiveness, and transactive effectiveness can be identified.

According to Therivel (2019), an important aspect for an effective evaluation is the presence of SEA legislation, since, in its absence, either few SEA are conducted, or, if carried out, they tend to be bad. Moreover, the existent public participation is likely to be limited.

4 METHODS

This article presents qualitative research of descriptive nature, elaborated by a comparative method that analysed the procedural effectiveness of national and international SEA in Ireland, Scotland, and Brazil through relevant bibliographic surveys and SEA reports on those countries for further comparisons.

Six national reports were selected due to their accessibility and details; three of them were produced in partnership with the Federal University of Rio de Janeiro (UFRJ) and the Interdisciplinary Laboratory of Environment (LIMA) - the first is related to tourism in the North Coast of the Northeast in 2007, the second refers to the Multimodal Program of Transport and Mini-Industrial Development of Cocoa zone in Bahia, in 2010, and the third addresses a Strategic Environmental Assessment of the Comprehensive Area of Guanabara Bay and the Surrounding Region of COMPERJ in 2008.

The other three reports chosen were Tourism Development Program - Strategic Environmental Assessment of the national PRODETUR in the State of Mato Grosso do Sul, in 2014, one produced by Neri *et al.* (2019), in which the AAE of off-road Recreational and Motorized Activities is conducted in the southern portion of Serra do Espinhaço, Minas Gerais, and finally, an AAE for the planning and development of the tourist sector in the Municipality of Belo Horizonte (Minas Gerais State).

4.1 Comparative Analysis

The study methodology considered a structuring composed of three important factors for the comparative analysis, according to the method designed by Shneider and Schmitt (1998): Selection of effectively comparable phenomena, Definition of elements to be compared, and their identification in view of the general approach to the topic. The former refers to the procedural effectiveness of SEA in the countries of interest, the second is related to the set of criteria that lead

to the procedural effectiveness of SEA, and the latter is devoted to analyses of the way those countries treat the issue towards contributing to the SEA effectiveness in Brazil.

4.2 Comparison Factors

The SEA Directive (European Directive 2001/42/EC) has guided the European countries; their process is more strongly consolidated and facilitates a simultaneous analysis of the environmental report and the plan or programme, contributing to the understanding of the process by both consultants and the public.

The present study used relevant scientific documents and articles and followed the effectiveness evaluation criteria for comparative analysis recommended in the literature, namely screening, scope, impacts and monitoring, consultation, and transparency.

Discussions were encouraged by metrics of publications at the national level, since those on proposed themes reveal whether the contribution of science related to the topics is disseminated in the country and identify institutions that are advancing in research on the SEA effectiveness or the SEA process.

The documents and publications were found in consolidated journals such as Scopus Elsevier and International Association for Impact Assessment, as well as on European government websites, where annual reports on the SEA effectiveness in the countries of interest are available. A comparative analysis of the evaluation criteria of the SEA procedural effectiveness in the three countries was then conducted.

5 OVERVIEW REMARKS

Below are the remarks denoted as international overview Ireland, Scotland, and national overview of the effectiveness of SEA.

5.1 International Overview Ireland

The Environmental Protection Agency (EPA) is responsible for protecting and improving the environment as a valuable asset for the people of Ireland, does not approve or enforce SEAs or plans, and operates independently under the Department of the Environment, Climate and Communications. It must be consulted in all cases in the country and, as the environmental authority of the SEA, must promote the full integration of SEA findings into the plan and advocate those key environmental challenges for Ireland are addressed.

The first SEA Effectiveness Review in Ireland was conducted in 2012. Although highly positive, it identified challenges and barriers for an effective SEA implementation in the country similar to those found in other EU Member States. It also examined several selected case studies performed in procedural terms, pointing not only to deficiencies in the consideration of alternatives, monitoring and SEA statements, but also to their ability to drive more informed and sustainable decisions (Ireland Environmental Protection Agency, 2012).

EPA performed updates on the effectiveness of SEA and, in 2017, released the SEA Effectiveness Assessment actions in the 2012-2016 Ireland Action Plan and also published a SEA Action Plan for the 2018 - 2020 period for unfinished actions. Only in 2020, it published a second Review of SEA Effectiveness in Ireland and announced the preparation of a SEA Action Plan for the 2021-2025 period. The report presented the findings of the second review and examined the SEA performance based on seven dimensions of effectiveness identified in the international literature, namely context, procedural, pluralistic, normative, substantive, knowledge, and learning and conduct.

The authors have agreed SEA is effective in bringing environmental issues to the forefront and improving plan-making. Current and future generations must protect those resources, which is facilitated by SEA. However, such good performance is mostly demonstrated through the integration of SEA recommendations into a plan.

Six years after the first review, a SEA monitoring was poorly implemented, which might have led to less sustainable results for the environment. Stronger measures are required for an efficient implementation of monitoring so that the ultimate impact of SEA on the achievement of high-level environmental protection can be determined. According to the review results, in general terms, SEA in Ireland appears to be more procedurally effective than what was reported for the case studies in the 2012 review.

Government planners should commit to the implementation of monitoring programmes so that future plan/program cycles can benefit from a proper understanding of environmental pressures.

Two of the main pathways that have proved difficult to study and record are education and awareness raising. They are an intangible point that can be highly effective in planning environmental considerations. While Environmental Reports generally fail to capture the way a policy context shapes a plan or programme, case studies illustrate the generally positive and proactive approach to environmental integration in Ireland, often resulting in good procedural performance and substantive outcomes (Ireland Environmental Protection Agency, op cit).

5.2 International Overview Scotland

Directive 2001/42/EC (Strategic Environmental Assessment Directive) of both the European Parliament and the Council came into effect on July 21, 2001, for the first time imposing a legal requirement so that certain plans and programmes would be subject to a formal environmental assessment as part of their preparation. European member states should transpose the directive into a national law up to July 21, 2004. (Scottish Government, 2005).

Scottish ministers wanted Scotland to become a world reference in SEA; therefore, they consulted a proposal towards extending the scope of SEA in Scotland beyond that required by the directive.

Approximately 10 years after the European Directive 2001/42/EC and nearly six years after the Environmental Assessment (Scotland) Act 2005 (SEA Act), which extended the scope of the SEA requirement in Scotland, the Strategic Environmental Assessment (SEA) Directive came into force. The review was conducted between October 2010 and July 2011 and was the first full consideration of SEA effectiveness both in the process and in practice.

Coordinated by the Scottish Environmental Protection Agency (SEPA) in association with Scottish Natural Heritage and Historic Scotland, it was the first comprehensive assessment of the effectiveness of SEA practice in integrating environmental considerations into plans, programmes, and strategies in the country, also taking into account its application towards a better proportionality (SEPA, 2011).

Scottish public bodies and private companies operating on a public basis, such as utilities, are required to assess, consult, and monitor the likely impacts of their plans, programmes, and strategies on the environment.

However, the Scottish government claims there are still considerable opportunities for changes towards making SEA more effective in protecting and improving the environment and more flexible to accommodate new and resource-efficient approaches.

5.3 Overview Brazil

Some issues on the SEA process in Brazil must be elucidated, since the context in which it is applied can influence its effectiveness. Moreover, SEA must be flexible towards adapting to different contexts across the globe. According to Montano et al. (2014), experiences with SEA in Brazil have been little applied and emerged in early 2014 - only approximately 40 AAEs have been reported.

Malvestio and Montaña (2013) apud Montañó et al (2014) claimed SEA exerted no significant influence on strategic decision making. [...] and was prepared with no

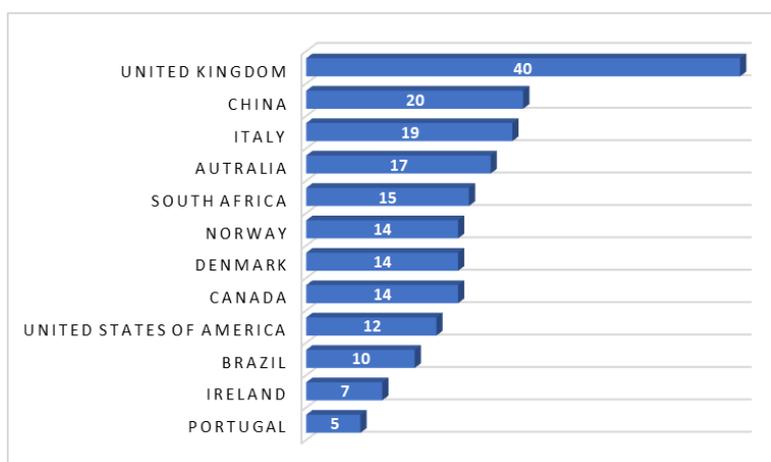
definition of procedural guidelines, methodological aspects, or screening/scoping criteria.

Still regarding SEA in Brazil, Sánchez (2008) highlighted its first initiative was undertaken in 1994, during the EIA updating process in the state of São Paulo. Montaña *et al* (2014) reported four Brazilian states had included the instrument in their legislation, namely São Paulo (SP), Minas Gerais (MG), Bahia (BA), and Rio de Janeiro (RJ), of which two decided it should be applied in plans and programs. However, researchers have shown growing interest in contributing to both improvements and dissemination of the instrument through publications (Malvestio and Montaña 2013; 2019; Margato and Sánchez 2014; Montaña *et al*; 2014).

Such a scenario shows the effectiveness of SEA in Brazil is still walking in short steps; the approach is precarious, thus directly affecting effectiveness.

Scopus Elsevier, a platform with large numbers of consolidated publications at international level, was used in this study for finding the metrics of keywords “Effectiveness”, “Strategic Environment Assessment” and “Effectiveness”, “Strategic Environment Assessment” and “Brazil”, as shown in Figures 1 and 2, respectively.

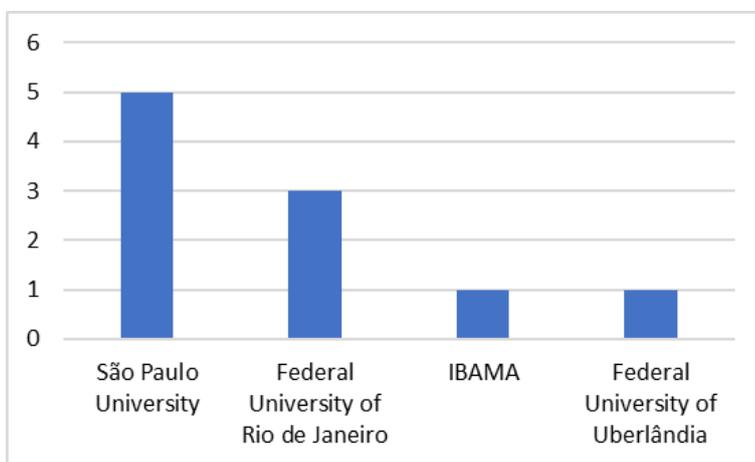
Figure 1 – Brazil's position in number of international publications on SEA effectiveness



Source: Adapted from Scopus Elsevier

Brazil ranks 9th regarding publications, which is considered an intermediate position. Although SEA has not been consolidated and disseminated to decision makers, the efforts for such, made by the scientific-academic community, have been gaining prominence, featuring institutions such as the University of São Paulo and the Federal University of Rio de Janeiro at an international level of publications in the area.

Figure 2 – Number of publications per institution in Brazil that reached national level in SEA effectiveness



Source: Adapted from de Scopus Elsevier

According to the Brazilian panorama presented by the literature and metrics of publications, the framework of SEA effectiveness has been poorly consolidated due to the SEA implementation process and its level of conviction in decision-making. As stated by Margato and Sánchez (2014), the low level of decision-making advocates procedural effectiveness cannot guarantee substantive effectiveness and the good quality of the reports does not assure real results.

6 COMPARATIVE STUDY AMONG COUNTRIES

Therivel (1993), Shaker et al. (2006), and Gazzola (2008) reported a growing interest in comparative studies focused on the development and performance of Brazilian SEA systems, with perspectives of strengths and weaknesses, and

Malvestio and Montaña (2019) claimed the Brazilian SEA system suffers from an excess flexibility.

Table 1 was built from the criteria for the analysis of effectiveness presented by European Directive n°42 (2004) and adapted by Malvestio and Montaña (2013).

Based on Ireland's SEA reports, criteria n°10 and n°14 were considered unattended, mainly due to gaps in terms of monitoring and consideration of alternatives suggested. The results corroborate those from the second review of SEA effectiveness in Ireland prepared by EPA (2012) and were also similar to those from the first review, leading to the conclusion the most significant failures in the SEA process refer to alternatives and implementation of effective monitoring.

Despite challenges, Ireland has fulfilled its role in relation to SEA. More government agencies and sectors have been engaged in the SEA process, which still shows a greater opening, partly motivated by increasing legal contestations on the consent and refusals of projects through Irish courts and European Union, thus particularly focusing on the early stages of decision making (EPA, 2012).

Unlike Ireland, Scotland's effectiveness assessment illustrates a scenario where all items were very satisfactorily analyzed (Table 1). Such good SEA performance in Scotland may be a consequence of the services offered by the Scottish government, where SEA is well used and highly regarded.

SEA has been incorporated into the culture of Scotland and considered an integral and beneficial part of policy formulation, thus tending to operate more efficiently and proportionately.

It has enabled public authorities to consider their PPSs contribute comprehensively and consistently to national policy objectives such as sustainable development, climate change mitigation and adaptation, and transition to a low-carbon economy (SEPA, 2011).

Table 1- Results from the comparative analysis of SEA effectiveness reports in Brazil and those of Ireland and Scotland.

(To be continued)

Procedural Criteria for Effectiveness	SEA-Tourism in BH	SEA Tourism CN - Northeast Region	SEA - Guanabara Bay and COMPERJ Surrounding Region
Tiering			
(1) The Reports justify the use of an SEA	VS	S	PS
(2) The Reports justify the use of an SEA	VS	S	PS
Scope and level of detail			
(3) Identification of relevant policies, plans, and programs and analyses of their links to the SEA theme	VS	S	VS
(4) Description of the baseline environment	PS	VS	PS
(5) Identification of key environmental issues of relevance to SEA	NM	S	VS
(6) Definition of purposes and objectives of SEA	S	S	PS
(7) Definition of sustainability objectives	VS	VS	VS
Evaluation and Monitoring			
(8) Definition of environmental indicators that support impact assessments	S	PS	S
(9) Presentation of the likely environmental evolution without plan/programme implementation	S	NM	S
(10) Identification of strategic alternatives	PS	NM	VS

Table 1- Results from the comparative analysis of SEA effectiveness reports in Brazil and those of Ireland and Scotland

(To be continued)

Procedural Criteria for Effectiveness	SEA-Tourism in BH	SEA Tourism CN - Northeast Region		SEA - Guanabara Bay and COMPERJ Surrounding Region	
Evaluation and Monitoring					
(11) Consideration of the likely environmental consequences of strategic alternatives	PS	NM		VS	
(12) Suggestion of mitigation measures	S	PS		NM	
(13) Proposal of monitoring of environmental effects	S	NM		VS	
Consultation and Transparency of Decision Making					
(14) Consultation with interested authorities	PS	VS		NM	
(15) Public consultation/participation	PS	S		NM	
(16) Availability of the SEA report	PS	S		VS	
Procedural Criteria for Effectiveness	SEA - Transport and Mining-industrial Development of Cacao Region	SEA - Recreational Activities Serra Dos Pinhaços	SEA - Sustainable Tourism - VS	Ireland	Scotland
Tiering					
(1) The Reports justify the use of an SEA	VS	VS	VS	VS	VS
(2) The Reports justify the use of an SEA	VS	VS	S	VS	VS

Table 1- Results from the comparative analysis of SEA effectiveness reports in Brazil and those of Ireland and Scotland

(To be continued)

Procedural Criteria for Effectiveness	SEA - Transport and Mining-industrial Development of Cacao Region	SEA - Recreational Activities Serra Dos Pinhaços	SEA - Sustainable Tourism - VS	Ireland	Scotland
Scope and level of detail					
(3) Identification of relevant policies, plans, and programs and analyses of their links to the SEA theme	VS	VS	VS	VS	VS
(4) Description of the baseline environment	OS	VS	VS	VS	VS
(5) Identification of key environmental issues of relevance to SEA	PS	VS	VS	VS	VS
(6) Definition of purposes and objectives of SEA	S	VS	VS	VS	VS
(7) Definition of sustainability objectives	VS	VS	VS	VS	VS
Evaluation and Monitoring					
(8) Definition of environmental indicators that support impact assessments	S	S	S	VS	VS
(9) Presentation of the likely environmental evolution without plan/programme implementation	S	VS	S	VS	VS
(10) Identification of strategic alternatives	PS	S	S	PS	VS
(11) Consideration of the likely environmental consequences of strategic alternatives	PS	VS	S	S	VS
(12) Suggestion of mitigation measures	PS	S	S	S	VS

Table 1- Results from the comparative analysis of SEA effectiveness reports in Brazil and those of Ireland and Scotland

(conclusion)

Procedural Criteria for Effectiveness	SEA - Transport and Mining-industrial Development of Cacao Region	SEA - Recreational Activities Serra Dos Pinhaços	SEA - Sustainable Tourism - VS	Ireland	Scotland
(13) Proposal of monitoring of environmental effects	PS	S	PS	PS	VS
Consultation and Transparency of Decision Making					
(14) Consultation with interested authorities	NM	S	PS	VS	VS
(15) Public consultation/participation	NM	S	PS	S	VS
(16) Availability of the SEA report	S	S	S	S	VS

Source: Adapted from Malvestio and Montañó (2013)

VS - Very Satisfactory - The information provided extrapolates what is considered sufficient for SEA effectiveness.

S - Satisfactory - The information provided is sufficient for SEA effectiveness.

PS - Partially Satisfactory - The information provided has some omissions or lacks clarity, but is generally considered sufficient for SEA effectiveness.

NM - Not Met - The information provided is insufficient for SEA effectiveness.

A well-conducted SEA and a good integration between the evaluator and the policy maker enable key environmental issues to be identified and addressed at an earlier stage. All information provided in this article combined with strong and guidance structures will corroborate to a broader domain of SEA legislation and a rapid contribution to the SEA learning in Scotland.

The Brazilian SEA system occupies an intermediate position, with some advanced components in terms of coordination structure, responsibility for the preparation of SEA reports, and strategic level of application, although it has been predominantly used for large projects.

Brazilian universities and research centers have contributed to improving the performance of AAEs with critical analyses and proposals and participated in

the development of several SEAs towards more appropriate methodologies and procedures (HELIANA et al. 2014). In this sense, several SEA processes have been conducted at Interdisciplinary Laboratory for the Environment (LIMA) at Alberto Luiz Coimbra Institute of Graduate Studies and Engineering Research (COPPE) of the Federal University of Rio de Janeiro (UFRJ).

The reports for assessments of the SEA procedural effectiveness were selected according to their accessibility and consolidation of SEA in Brazilian states. Table 1 shows the major gaps are possibly related to Evaluation and Monitoring and Consultation and Transparency.

7 FINAL REMARKS

None of the two UK countries have faced problems related to Screening and Stage of Scope Definition, despite the significant number of AAEs. A specific government page on the Internet provides the respective reports in detail.

Scotland showed a very satisfactory performance in all evaluation stages; on the other hand, Ireland presented small gaps in the final SEA stages. When compared to countries where the use of SEA is mandatory and the systems are fully established, the Brazilian experience is insignificant. Since the use of the instrument is not compulsory, the number of SEA reports is therefore significant.

Despite the first formal study initiatives on environmental assessment applied to strategic planning instances having been identified in the 1990s, SEA reports are rarely found in Brazil. Moreover, they often do not present elements for the SEA or those to be considered a SEA report, and some show difficulties in the initial stages of the SEA process and especially in the Evaluation and Monitoring and Consultation and Transparency.

Reports from Brazil have pointed out its good performance for the sustainable development objectives, which may be due to the studies conducted at universities or related to government projects or undertakings. The evidences

raised have shown much can be explored, since SEA has been little applied in national projects, and its both Brazilian practice and procedural effectiveness require attention.

Although SEA can be potentially developed in the country, it depends on regulation, or even SEA legislation. The latter can lead to a guide for evaluations and improvements in sensitization, as well as commitment to the practical benefits of SEA towards robust policies, plans and programs, contributing to the sustainable development of the country.

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