

KEY RECENT EXPERIENCES IN THE APPLICATION OF SEA IN BRAZIL

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One of the requirements for a good Strategic Environmental Assessment (SEA) is its capacity to adjust itself to the planned decision-making process. This paper presents recent experiences involving the application of SEA in Brazil in three different contexts. In the first case, an SEA was conducted to meet a request of the Ministry of Tourism for information to prepare the *Development Plan for Sustainable Tourism in the North Coast*. The second case is an initiative undertaken by the Secretary of Environment of the State of Bahia for the construction of a seaport-industrial complex in the region of Ilhéus (Bahia). Finally, an SEA commissioned by a group of environmental NGOs to assess options for the development of a mining-metal and chemical-gas complex in the Pantanal Region near the Bolivian and Paraguayan border is presented. The paper highlights the differences in the contexts of the three studies (responsibilities in the decision-making process, stages of the planning process, etc.) as well as in their methodological approaches. Difficulties, gaps, advances and findings in each case are also analysed to assess the effectiveness of each SEA.

Keywords: Strategic Environmental Assessment; methodology; SEA experiences; SEA effectiveness; public participation.

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Introduction

The past decade has witnessed the growing use of Strategic Environmental Assessment (SEA) in Latin American countries (Rojas *et al.*, 2013). Several countries — Bolivia, Chile, Costa Rica, El Salvador, Guatemala, Honduras, Peru and Uruguay — have enacted regulations to make their use mandatory, mostly in plans and programmes related to land-use planning. Nevertheless, in most Latin American countries the use of SEA has been voluntary or has often carried out to meet the requirements of multilateral development agencies, which condition disbursement of funds to its application: World Bank (IBRD), Inter-American Development Bank (IDB), Development Bank of Latin America (CAF) (CED, 2011).

Not many analyses of the results and effectiveness of applying SEA in Latin American countries are presented in the professional literature (Fischer and Onyango, 2012). On examining SEA effectiveness, required by the IDB for Integration of Regional Infrastructure in South America (IIRSA) projects, Madrid *et al.* (2011) observe that “countries in the region need to embrace it as a strategic planning tool and not as a requirement to obtain financial resources”. They further stress that to obtain the benefits expected from the use of SEA, the process must be carried out before decisions on the analysed plan/programme are made, which has not usually been the case. They also recommend that participating countries should strengthen and develop basic conditions such as political will and commitment to applying the instrument and also their legal, institutional, operative, coordinating and monitoring capacities.

In Brazil, the first SEA initiatives date to the mid-nineties and they were also initially fostered and funded by international agencies (Dalal-Clayton and Sadler, 2005). SEA evolved through applications mostly funded by the government, but in some cases also by the private sector, in several areas — oil and gas, tourism, transports, power sector, industrial complexes, mining, water resources (Oberling *et al.*, 2013). Brazilian universities and research centers have contributed with critical analyses and proposals for improving SEA performance in Brazil and also by taking part in the development of several SEAs, seeking more appropriate methodologies and procedures.

On the eve of completing 20 years of SEA application in Brazil, its practice has been the subject of studies that mostly point to the shortcomings of the adopted procedures and discuss their effectiveness (Teixeira, 2008; Sánchez, 2007, 2008; Malvestio and Montaña, 2013). Many items highlighted in this paper are in line with those evidenced by the experiences of other Latin American countries and elsewhere.

These issues continue to be discussed in international studies and, given the significant increase in literature, we could infer that this instrument is being widely used and continues to evolve (Tetlow and Hanusch, 2012). Research related to SEA is growing, although most efforts are concentrated in the European Union, where the practice of SEA is far more widespread (Fischer and Onyango, 2012).

With a view to contributing to this debate, this article presents some of the experiences of developing SEAs at the Environmental Sciences Laboratory (LIMA), associated to the Alberto Luís Coimbra Institute for Research and Graduate Studies in Engineering (COPPE), of the Federal University of Rio de Janeiro (UFRJ), in order to meet demands of federal and state governments, as well as those of the private sector and civil society. These studies represent the diversity of SEA applications in Brazil, that is, they show different contexts of SEA application with regard to responsibility and motivation as well as to integration to planning processes and participatory practices. The discussion and analysis of these experiences is expected to contribute to improving the performance of the use of SEAs in Brazil and Latin America.

This introductory section also includes a brief overview of the Brazilian SEA experience and the SEA approaches used internationally. The following section reports on the contributions of the Environmental Sciences Laboratory (LIMA) towards SEA development in Brazil in terms of methodology with a view to affording the flexibility required for analyses in various contexts. Afterwards, a brief overview of the selected case studies is provided, highlighting their main features, difficulties, gaps, advances and projected benefits. Finally, some issues of the effectiveness of each SEA is examined, taking into account its contribution to decision making and also other positive aspects of its application. The article ends with suggestions and recommendations to improve the performance of SEA application in Brazil.

Brazilian SEA experience

Brazil's experience and progress in the environmental assessment of projects (EIA) led to awareness of the need to address the challenge of expanding the insertion of environmental concerns in strategic decision making and formulation of public policies to meet development goals (Teixeira, 2008).

Although the first SEA initiatives in Brazil were initially fostered and funded by international agencies (Dalal-Clayton and Sadler, 2005), Brazilian SEA experiences were not restricted to the approaches and objectives of initiatives linked to compliance with the guidelines and standards of these international agencies.

Most of the national initiatives were driven by demands emerging from the environmental licensing of projects,¹ from the need to discuss the environmental feasibility of "structuring projects",² as well as from a mature society desiring a more sustainable development process. (Teixeira, 2008). On the other hand, in the private sector, entrepreneurs interested in gathering more information for their investment planning have also asked for SEAs, to reduce risks and uncertainties related to the environment, which often result in greater costs and longer time frames associated to the EIAs of individual projects, similarly to what has been happening elsewhere (see e.g. Marshall and Fischer, 2006).

The Ministry of the Environment (MMA), in recent years, has sought to encourage the use of SEA as means for integrating the environmental dimension into the decision-making process of sectoral initiatives, to promote the cross-cutting nature of environmental policies and to change the pattern of relationships among the various areas of government. An initial version of the "*Guidelines for Strategic Environmental Assessment (SEA) in Federal Government Decisions*" was published in 2010, which then underwent public consultations (MMA, 2010). These guidelines are based on the strategic approach and methodology for SEA developed by Partidário, MR (2007). The Ministry also sought to promote capacity building in SEA for the public administration, organising training courses and seminars to disseminate and discuss existing initiatives.

The use of SEA, however, has not yet been regulated. That is, initiatives continue to be voluntary, with the exception of offshore activities in the oil industry, which will have to carry out an assessment compatible with SEAs, as provided for in an Interministerial Directive, published in April 2012, by the Ministries of the Environment and of Mines and Energy: "Environmental Assessment of Sedimentary Areas". In recent years, some states, such Minas Gerais, Bahia and São Paulo, included the mandatory use of SEAs in their jurisdiction in their legal framework. There are currently bills in the Brazilian Congress aiming to regulate SEAs in conditions similar to project EIAs (Oberling et al., 2013; Malvestio and Montaña, 2013; Sánchez, 2007) indicates that SEA still ranks low in government priorities.

¹Environmental licensing is an administrative procedure through which the environmental agency authorises the location, installation, expansion and operation of undertakings and activities considered effectively or potentially polluting or those that can degrade the environment in any way. It is an important management instrument of the National Environment Policy, associated to the projects EIA. (Oberling et al., 2013).

²Structuring projects — name given to major infrastructure projects that are deemed essential for the development of a country and that have a particularly strategic nature or have a high potential for inducing/stimulating new actions to develop and use the land (Teixeira, 2008).

Recently, there have been studies that analyse the application and effectiveness of SEAs developed in the last twenty years in tune with the debate observed in the global context. One of the difficulties singled out in applying SEAs is that most policies, plans and programmes (PPPs) are still developed with hardly any consideration of the environment, although they may mention it or even refer to sustainable development as a goal, without actually taking environmental sustainability into account (Sánchez, 2008). It is important to note that planning processes are neither structured nor consolidated in several economic sectors, hindering integration of SEAs to PPPs.

In the case of “structuring projects”, in most cases the decision regarding their location and best economic alternative had already been taken prior to the SEA, a situation also observed by Madrid *et al.* (2012) in other Latin American countries, or even before the project EIA was carried out. Often the implementation of SEA aims to complement the gaps inherent to EIAs and provide guidance for granting or withholding of environmental licenses for the planned undertakings (Teixeira, 2008; Sánchez, 2007).

The approach based on “EIA rationality” is still predominant in SEA practice in Brazil: that is, the process starts with a proposed initiative (PPP) and its consequences are evaluated, resulting in recommendations for mitigation and compensation or improvements in the PPPs. But they have little influence on the decision regarding its implementation (Teixeira, 2008; Sánchez, 2007; Malvestio and Montaña, 2013).

Malvestio and Montaña (2013) note that there are different kinds of environmental assessment in Brazil, with different goals and methodological approaches, under the title of SEA, emerging as “new approaches”. Sánchez (2007) adds that “there is a feeling, among environmental NGOs, that what is being labeled SEA in Brazil is a broad set of environmentally focused studies that show few common characteristics other than featuring a wider and shallower scope than project EIA”.

The main shortcomings found by the aforementioned studies on SEA procedures are:

- lack of clear goals for using SEA;
- inexistent strategic alternatives in many of the studies;
- no room for public participation;
- insufficient follow-up mechanisms or even monitoring indicators.

SEA in the international context

Tetlow and Hanusch (2012) identified shortcomings that are similar in Brazil. With respect to the effectiveness of SEAs, according to Sadler (2004) “the litmus

test for the effectiveness of EIA and SEA is whether and how these processes make a difference to decision making”. The first definitions of effectiveness stated that SEAs should lead to changes in PPPs. As it evolved, the definition of effectiveness went from “changes in PPPs” to the importance of an “SEA process” that provides a strategic and proactive interaction of the environmental aspects with the decision-making process (Jiliberto, 2011).

In this approach for evaluating the effectiveness, the dissemination of knowledge provided by SEA should also be considered. This includes a greater understanding of environmental and sustainability issues by decision makers; capacity building for environmental governance due to broader environmental awareness; and its contribution towards a more collaborative dialog (Stoeglehner, 2010; Therivel, 2009; van Buuren and Nootboom, 2009; West et al., 2011).

In an overview of SEA application in major sectors in the UK, Poland and Portugal, West et al. (2011) claim that whereas SEA in most cases only leads to minor changes to plan contents, it has contributed to raising the awareness of the environmental implications of decisions and leads to more transparent processes (Tetlow and Hanusch, 2012). According to Jha-Thakur et al. (2009), “SEA exercises may present one of those ‘crucial institutional spaces for challenges to the status quo’ (Cowell & Owens, 2006), potentially leading to more sustainable and environmentally conscious patterns of development to emerge. This means that SEA is a distinct decision support instrument that has the potential to do this, both directly, by making changes to the PPPs concerned, but also in subtler, longer-term, unintended and less instrumental ways. Therefore, SEA can be said to be closely related to individual as well as institutional/ organisational learning and the hypothesis may be formulated that SEA makes decisions more sustainable particularly through this learning effect”.

Several authors stress that the effectiveness of each SEA will invariably differ according to the context in which it is applied, and thus, there is no single response to this analysis. Decision-making processes vary according to the structure of power and its rules, to the institutional structure and its priorities, to the planning tradition and, furthermore, to the specific PPPs, influenced by environmental, social, cultural and political issues (Jiliberto, 2011).

Tetlow and Hanusch (2012) suggest that perhaps the time has come to give due recognition to the various approaches and to the value they can add to different contexts. They acknowledge that there is consensus on the fact that integration to planning and decision-making processes makes SEAs more effective. They recommend that SEAs should become more flexible and explain and inform how to adjust to the projected goal, in order to add value in any context, bearing in mind that benefits will often only be appreciated in the long term.

They also draw attention to the fact that there appears to be a consensus that increased integration into planning and decision-making leads to more effective SEAs. However, there are still questions about this integration that must be examined by the SEA community: Must SEA be developed by the same persons who develop the PPPs? Must SEA remain a distinct process in order to ensure transparency and accountability regarding the way environmental and sustainability considerations are taken into account? (Tetlow and Hanusch, 2012).

As to flexibility, suggested in literature as one of the criteria of SEA effectiveness, Fischer and Gazzola (2006) recommend a cautious approach, because if the existing institutional context is highly politicised, with low levels of commitment and public participation, flexibility may well lead to very reserved processes with little transparency, geared only to the interests of proponents.

In the SEA analyses below, in addition to the shortcomings that have already been pointed out in the aforementioned studies in Brazil, we sought to identify evidence of this new perspective, although some of the items mentioned above are difficult to perceive in the short term.

Experiences in the Application of SEA in Brazil

Methodological Approach

The Environmental Sciences Laboratory (LIMA), associated to the Graduate School of Engineering (COPPE) of the Federal University of Rio de Janeiro (UFRJ), has been at the forefront of the methodological adaptation of SEA to initiatives in various sectors of the Brazilian economy: oil, mining, tourism, transportation, hydropower, port and industrial complexes. LIMA has experience in SEA application in the public and private sectors, as well as in capacity building, methodology development and independent evaluation of SEAs carried out by companies that specialise in the environmental assessment of projects. (www.lima.coppe.ufrj.br).

Although the methodology developed by LIMA follows the same framework set out in the “Guide to Support Guidelines for Strategic Environmental Assessment (SEA) in Federal Government Decisions” (MMA, 2010), it underwent constant improvement as knowledge was acquired by the LIMA team during research activities and from previously conducted SEAs.

The adopted methodological structure sought to reduce the limitations of carrying out SEAs in Brazil, mentioned above, from the perspective of methodological elements. Nevertheless, the aspects related to the decision-making context are also known to be very relevant for SEA effectiveness (Fischer and Gazzola,

2006). Therefore, given the absence of national regulations, when LIMA conducted SEAs, it sought to widen public participation and institutional articulation in order to ensure commitment to the sustainability objectives established during the studies.

Another important aspect is that the methodology is flexible enough to be applied to policies, plans, programs and, also, to the “structuring projects”, always seeking to highlight the strategic aspects at each level.

The methodology is based on the following features (Partidário, 2007; LIMA/COPPE/UFRJ, 2004):

- identification of the social and environmental aspects that are critical factors for decision and that will provide structure, focus and content to integration and to the environmental assessment;
- inclusion of public participation in order to identify values and perceptions for a sustainable future of the particular region and to assess risks and opportunities in the various scenarios;
- proposal of alternative strategies for a more sustainable development of the plan or programme that is the subject of SEA.

The methodology is developed in six stages, as shown in Fig. 1: Basic Framework; Strategic Reference Context; Strategic Diagnosis; Environmental

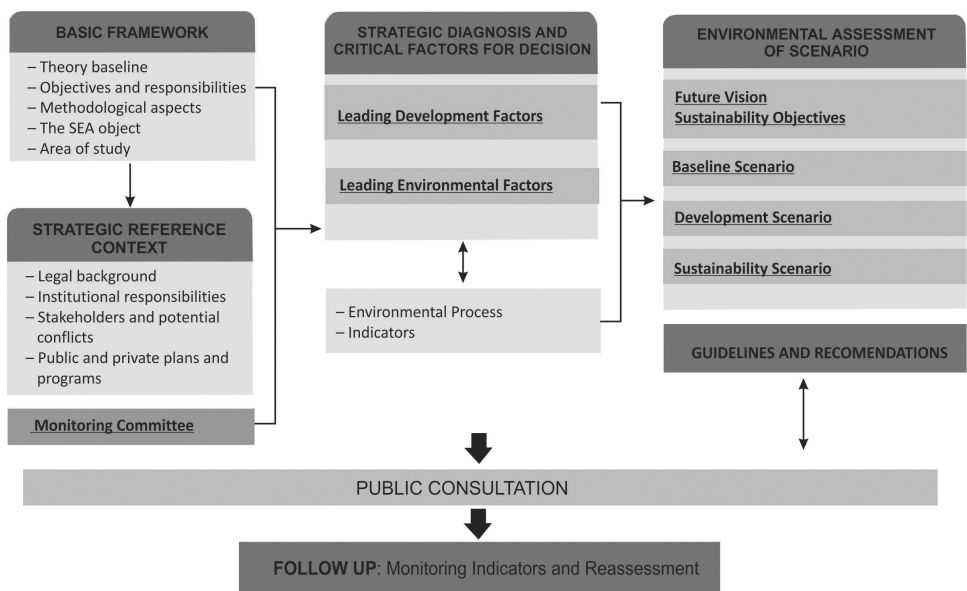


Fig. 1. Methodological framework, LIMA/COPPE/UFRJ.

Assessment of Scenarios; Guidelines and Recommendations; and Follow up (monitoring indicators and reassessment).

Public participation has warranted special attention during the development of the Strategic Reference Context. Relevant actors and participatory processes have been identified in order to establish an "SEA Monitoring Committee". Since this participation takes place during the SEA, it is hoped that there will be more room for discussing the proposals and transmitting information. The establishment of a Monitoring Committee is expected to contribute to reducing the obstacles to stakeholder participation and to make access to information more democratic.

The critical factors for decision are identified during the Strategic Diagnosis. These are aspects that structure the assessment and should be included in strategy design and in the actions to implement it (Partidário, 2007), encompassing environmental factors and those that condition and determine the development in the region. Environmental processes and their interactions with the environment are analysed through indicators that depict the current situation of the region and will create a foundation for establishing scenarios, SEA proposals and monitoring procedures.

Definitions of the Vision for the Future and the Sustainability Goals are based on the expectations of the social actors, government and experts working on the SEA and they are supported by the Monitoring Committee. They act like a "desired parameter", which can be compared to each of the strategies represented in the scenarios.

The use of scenarios to build possible futures is a methodological option for working with different development alternatives, according to the planning level of the study. The Baseline Scenario represents the history of the future, following the diagnosed trends for evolution without taking into account the PPP that is the subject of the SEA. The Development Scenario(s) take(s) into account future developments involving the effects of implementing the PPP or its alternatives. The Sustainability Scenario incorporates the options and alternatives for meeting the proposed sustainability goals and identifies public and private actions that must be planned for a more environment-friendly scenario, involving fewer environmental losses and minimising potential conflicts.

Guidelines and recommendations for meeting sustainability goals have proposals to minimise the possible impacts of the PPP and seek to coordinate them with other initiatives for the region or to propose new paths for its development. Recommendations for implementation and monitoring of actions are also included, establishing priorities and assigning responsibilities for future input to decision making.

Three SEAs were selected as case studies for this paper. They encompass three different contexts and also three different sectors (tourism, mining-metallurgy and chemical-gas complexes, and a seaport-industrial complex).

- (1) Costa Norte SEA (CN SEA), carried out to meet a request of the Ministry of Tourism, aimed to collect information for the preparation of the Program for Tourism Development in the North Coast;
- (2) Porto Sul Complex SEA (Porto Sul SEA), undertaken by the Environment Secretariat of the State of Bahia, for the construction of a seaport-industrial complex in the region of Ilhéus (Bahia);
- (3) Pantanal SEA, commissioned by a group of environmental NGOs to assess options for the development of a mining-metallurgy and chemical-gas complex in the Pantanal Region near the Bolivian and Paraguayan border.

The brief overview below seeks to highlight the context and the motivation for carrying out the SEAs, as well as who was responsible for this decision; integration to planning process; public participation; and the findings and

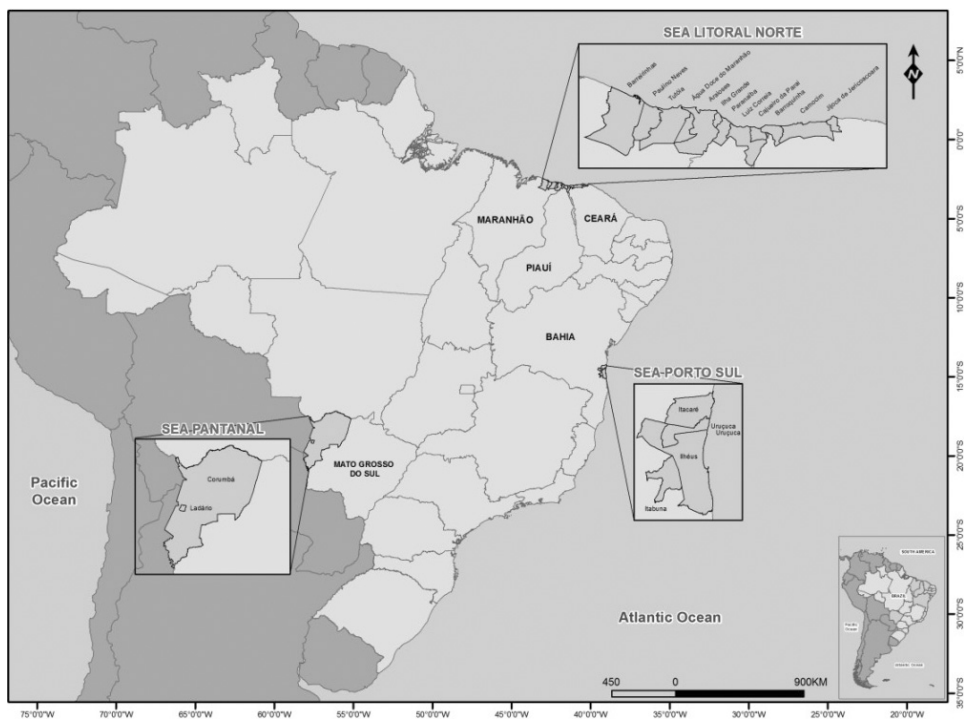


Fig. 2. Schematic location of SEAs.

contributions to provide inputs for the concluding analysis. The schematic location of the SEAs presented in the case studies is shown in Fig. 2.

Experiences in the Application of SEA in Brazil

Strategic Environmental Assessment of the Program for Tourism Development in the North Coast (CN SEA) (LIMA/COPPE/UFRJ, 2007)

Background

The North Coast (CN) comprises a set of twelve municipalities, in three Brazilian states, occupying approximately 11,400 km² and including several environmental protection areas. It also includes three Tourism Centers for which the government was seeking to promote an environment favourable to new investments that could generate jobs and income, under the National Tourism Development Program (PRODETUR NE II).

The prospect of integrating these centers and the political motivation of local stakeholders, particularly from government and the private sector, led the Ministry of Tourism (MT) to define a "Strategy for Tourism Development in the North Coast", aiming to provide guidelines for the preparation of the "Integrated Plan for Sustainable Tourism Development in the North Coast". The Ministry was also seeking to establish a methodological framework to introduce a systematic process for environmental assessment of tourism plans and programmes in Brazil.

Responsibility for the decision

Although there was no legal requirement, the Ministry of Tourism decided to use SEA as an instrument for enabling sectoral planning and decision making, in order to meet commitments undertaken in the contracts between the Brazilian Government and the Inter-American Development Bank, with the mediation of the Banco do Nordeste (BNB).

Integration to the planning process

Adoption of the SEA occurred throughout the entire process of planning the integration of the tourism centers in the region and generated guidelines for their development. It met the following demands: assess social and environmental issues associated with possible options for tourism development; incorporate the vision of sustainability desired by the stakeholders; identify trends and contradictions from the perspective of sustainability, with a critical view of projected risks and opportunities.

Public participation

The expectation of increased tourism activities in the CN would entail significant changes in a dense area full of small organisations, widespread poverty and growing inequalities. In this context, stakeholders were identified and mobilised by mapping government, private and non-governmental institutions active in the environmental, economic, social and political issues that are most relevant to local and regional development.

Although a Monitoring Committee of the SEA was planned, it was never established. Instead, the decision was made to enhance knowledge of participatory processes at various levels and to involve the largest possible number of parties interested in the analysis and validation of findings by examining reports available online and an ensuing discussion during the public consultation. Regular meetings were held at the Ministry to present interim SEA results. These meetings always included representatives of IDB, BNB and the participating states.

This means of participation in SEA monitoring and validation resonated positively in the region, but it was particularly important for the government, with the Ministry's full commitment and involvement.

SEA contributions

Although the region depends on tourism as a driver of economic development, the integration and convergence of tourism and environmental protection policy goals was particularly important for resolving the conflicts identified in the SEA. Furthermore, with respect to the institutional issue, the need for actions that ensure the adoption of governance principles and corporate participation became very clear.

These findings emerged from critical factors considered in the SEA — tourism business, public tourism administration, land-use planning, environmental management and social inclusion — which highlighted the restricted participation of the population and the lack of coordination and synergy among federal and state actions. Generic activities, not geared to tourism development, are proposed without any consideration for enabling sustainable tourism in the region.

This initiative was carried out according to the process established by the Federal Government to introduce SEAs in planning of sectoral and development policies. However, problems related to conflicting political interests in the three involved states prevented development of the Ministry of Tourism proposal for integration. In the meantime, the results obtained provided information for formulating a methodological procedure for the SEA that is being adopted in other regions under the PRODETUR, in accordance with the commitments undertaken

with the IDB. The Ministry's full commitment and involvement in the participation process provided an opportunity to enhance institutional learning.

Strategic Environmental Assessment of the Program for Multimodal Transport and the Industrial-Mining Development of the Cocoa Region — Porto Sul SEA (LIMA/COPPE/UFRJ, 2011)

Background

Over the past decades Brazil has become a major exporter of commodities, mostly ore and grains. Growing international demand has led to new business opportunities and strengthened existing ones. In line with this strategy and to adapt the currently insufficient domestic infrastructure, a proposal for the development of the Porto Sul Complex, in the state of Bahia, was put forward. Its main goal was the distribution of the mineral and agricultural output, but it also included ventures linked to steel production.

It is a logistical centre composed of a seaport and additional associated areas operating in synergy with other transport modes (new railroad and existing highways) and other equipment, connecting Bahia to the central region of Brazil.

From a tourism point of view, the region has a natural mega diverse landscape that is being used for nature tourism and sports. The coast is made up of a succession of beaches and hills covered by preserved forests within the Central Corridor of the Atlantic Forest. The region also has a very rich cultural and historical heritage, from its golden cocoa-producing years.

The projected Porto Sul Complex in this region fueled the existing conflicts between biodiversity conservation and tourism activities. Nevertheless, these segments came together to protest the undertakings announced by the government.

The SEA sought to harmonise the industrial-mining-port development with the other activities of the region; to identify the means of reinforcing the development benefits and opportunities in the region; to provide information and experience for future environmental management programmes and licensing of transport logistics and industrial-mining activities; and to provide elements for decisions compatible with the environmental sustainability of the region.

Responsibility for the decision

The Porto Sul SEA was an initiative of the Environment Secretariat of the State of Bahia, in accordance with state legislation that provides for the environmental assessment of government policies, plans and programmes. Although this Secretariat was responsible for overseeing the process, it was not responsible

for the decision of whether to establish the Complex. This decision was made at higher levels of the State Government.

Integration to the planning process

The Government of the State of Bahia considers a new port structure to be strategic. To implement it, the Government indicated the potential projects and pre-identified three alternative locations for the port facilities.

Prior to carrying out the SEA, an environmental analysis was conducted to decide on the best alternative for the location. However, the recommendations of this analysis were not endorsed by the Government, which chose the most favorable option from a logistical point of view.

In addition to the undertakings planned for the Porto Sul Complex, the SEA also included the assessment of alternatives that took into account local initiatives — new airport, tourism demand, and an Export Processing Zone, under the responsibility of the municipality.

Public participation

The perception of society was captured in interviews with governmental and non-governmental organisations, trade associations and social representations, universities and the population itself in an expeditious survey carried out during the initial phase of the SEA.

The processes for follow-up, participation in discussions and approval of actions and expected results took place in two different groups: a Government Working Group, with representatives of government institutions; and the Monitoring Committee, with a balanced and representative regional stakeholder membership and able to contribute regional knowledge and information for the analyses.

As a result of the existing conflicts, separate meetings were held with representatives of the State Attorney's Office, to present project progress. A Municipal Commission to Monitor the Intermodal Porto Sul Complex was established by the municipality where the port was located, with representatives from the municipal government, State Attorney's Office, private sector, trade associations and universities, civil society and environmental NGOs.

A specific website (<http://www.acaoilheus.org/>) was set up to disseminate all the reports of the assessments, demands and Monitoring Committee meetings, creating a discussion forum. This site became an instrument of stakeholder pressure and control of actions related to the Complex.

During the last stage, SEA proposals were analysed by the Monitoring Committee. Public consultations were held and all contributions put forward by the population of the region were consolidated.

SEA contributions

SEA provided guidelines for the public sector and recommendations for the private sector that will inform the decisions to be taken on the planning of the Porto Sul Complex. A broad Program for Regional Sustainable Development was proposed, to be defined as a Social Responsibility Pact, so that the region will undergo the new development cycle in a sustainable manner, regardless of the continuity of government mandates.

To strengthen institutional interaction and governance, a Special Forum to Promote Regional Sustainability was proposed to modernise public administration, fostering partnerships and shared management, in addition to the establishment of a Regional Sustainability Observatory, linked to an information and communications system.

An Environmental Management Plan was also put forward for the region of influence of the Porto Sul Complex, with particular emphasis on the creation of a Mosaic of Protected Areas,³ including new and existing areas, together with a set of goals to be met by the proponents.

To determine the location of the mining-steel ventures a minimum distance from the coast was specified, as a way of minimizing conflicts with tourism activities and environmental conservation.

The ventures included in this SEA, which have a high polluting potential, had to undergo environmental licensing, a mandatory procedure in Brazil, and in this case, under the responsibility of the Federal Government. SEA guidelines and recommendations were taken into account during this process. The location of the port structure was considered environmentally unfeasible and the alternative site proposed in the prior environmental analysis was recommended.

Strategic Environmental Assessment of the Corumbá Mining-Industrial Complex and influences on the Pantanal Plains (SEA Pantanal) (LIMA/COPPE/UFRJ, 2008)

Background

The region of the Pantanal ecosystem is an officially designated National Heritage site and an UNESCO Biosphere Reserve, in recognition of its high importance and priority for biodiversity conservation.

³A mosaic of protected areas is a management model that seeks participation, integration and involvement of managers and the population, so as to reconcile the presence of biodiversity, enhanced value of sociodiversity and sustainable development in the regional context. The recognition of a mosaic occurs when there is a group of neighboring, juxtaposed or superimposed protected areas, whether under the administration of different levels or not (<http://www.mma.gov.br/areas-protegidas/acoes-e-iniciativas/gestao-territorial-para-a-conservacao/mosaicos>).

Development in this region is centered on the municipality of Corumbá, with an area of 62,962.72 km², corresponding to 60% of the Pantanal region. The so-called “West Border of the Pantanal”, in this municipality, is the third largest manganese and iron ore reserve of Brazil and large mining companies operate there, but their production is limited by the precarious river and rail infrastructure to distribute the production.

The steel industry in this region is fairly recent and was established to add value to the traditional mining products. Growth in international demand and the prospect for growth in the local economy resulted in government incentives to establish a mining-steel complex, with new extraction and industrialisation activities and also a chemical-gas complex, using the natural gas available from the Brazil-Bolivia pipeline.

Conflicts already exist in the Pantanal Plains, an ecosystem endangered by economic activities and the absence of local governance to address land-use planning. The political decision to opt for an industrial area instead of less polluting activities, such as ecotourism, could lead to the expansion of environmental risks, given the polluting potential of the new undertakings and the expected population increase given the absence of social inclusion policies.

The motives for applying an SEA included: assessing the social and environmental implications of the activities planned by the private sector; generating information for the formulation of an Integrated Development Plan for the Mining-Industrial Complex, to guide actions in the region, preventing possible damage and proposing actions to protect the Pantanal’s natural ecosystems; the possibility of society participation in the debate on the development and definition of a vision for the future of the region.

Responsibility for the decision

Civil society organisations (NGOs) that operate in the Pantanal region got together with the private sector and established a “Platform for Dialogue”⁴ and decided to carry out an SEA, to analyse a development strategy that would take the environmental fragility of the region into account.

⁴The Platform for Dialogue is a means of interaction between normally opposing sectors, in this case the environmental NGOs active in the Pantanal area — CI Brasil, Ecoa, IHP, Fundação Avina, Fundação Pantanal Com Ciência, Fundação Neotrópica, Fundação Ecotrópica, Fundação O Boticário, OCCA and WWF Brasil — and the companies that intended to invest in the region — MMX, Petrobras, MPP, MSGás, Vetorial Siderurgia —, who came together to search for solutions to reconcile development needs with the conservation of the Pantanal.

The unusual feature of the Pantanal SEA in the Platform for Dialogue structure was that although there was complete lack of government participation, the initiative was geared to support government decisions given the frailty of the existing governance. Also in this case, the decision did not lie with those who oversaw the process.

Integration to the planning process

The SEA was held when the proposals for government and private sector expansion were under discussion, that is, at the beginning of the planning of the expansion of mining and steel activities. The SEA findings should provide support for future sectoral and government decisions.

Public participation

The development of the SEA was followed by representatives from the NGOs and the companies participating in the Platform for Dialogue. Several meetings were held, followed by comments and suggestions for the multidisciplinary team responsible for the technical work.

Several interviews were also carried out in the municipalities, state and federal government to identify the environmental, social, economic, political and academic actors that were active in the region and had jurisdiction over the region or interests therein.

These actors took part in public consultations at the beginning of the process, when the methodology and the prospects for developing the Pantanal SEA were presented and also at the conclusion, when the findings were presented, for consultation and suggestions.

SEA contributions

As a result of the regional political situation and the global economic situation, planned investments were postponed. Nevertheless, the contribution of the SEA findings was not discarded, particularly the conclusions regarding the unavailability of charcoal for the steel mills, the high investments required to adapt the rail network, the energy restrictions — mostly natural gas for the chemical-gas complex, which would require the construction of a new pipeline.

The guidelines for the government and the recommendations for the private sector included in the SEA continue to be a reference source for the sustainable development of the region, providing information for future sectoral and government decisions, in the context of a dialogue and construction of a new level of governance in the region.

Thus a set of sustainability indicators were chosen to monitor the evolution of the establishment of the steel and chemical-gas complexes, to verify the incidence and intensity of the strategic impacts, should this development scenario ever become a reality.

However, since the situation and direction of both domestic and international economies are uncertain, regular reviews of the SEA were recommended whenever significant and unexpected changes in the behaviour of indicators were observed or when changes in the companies' activities and investment programmes occur. The results of this monitoring will provide input and feedback for SEA reviews.

Given the challenge of the Platform for Dialogue of maintaining the environmental quality of the Pantanal region, conclusion of the SEA saw the publication of a document called "Sustainability strategies for the Mining-Industrial Complex in the Pantanal". The SEA provided information and mechanisms to facilitate conflict management, taking advantage of opportunities and minimising environmental and social impacts, also providing input to the dialogues which resulted in collective agreements and support for the actions and decisions that ensure economic development with the protection of the Pantanal.

A summary of each SEA, highlighting main features and outcomes, is shown in Table 1.

Analysis of SEA Application

Analysis of these case studies pays particular attention to the main weaknesses of the SEA process in Latin America and Brazil and also those observed in the review of other international experiences. We also sought to highlight evidence of the indirect gains that are being prized in the most recent analyses of SEA effectiveness.

As to "the absence of clarity in the expected objectives of SEA application", the methodology adopted in the case studies establishes, since its basic framework, expected objectives and seeks to clearly define the object of the SEA. Furthermore, design of the Environmental Assessment of the Scenario includes the development of a Vision of the Future and Sustainability Goals to be achieved for the area under study, providing guidance for the proposals. Although this is one of the shortcomings of the SEA process in Brazil, the three studies have established their expected objectives very clearly.

An assessment of strategic alternatives was not carried out as the decision had been taken prior to SEA application, in other words, the SEA was not properly integrated to the planning process. The Costa Norte (CN) and Pantanal SEAs,

Table 1. Summary of SEA case studies.

Considered elements	Costa Norte SEA (CN SEA)	Porto Sul SEA	Pantanal SEA
Responsibility for the decision	The Ministry of Tourism decided to use SEA for sectoral planning and decision making and to meet commitments undertaken with the Inter-American Development Bank.	Initiative of the Environment Secretariat, in accordance with legislation, but the responsibility for the decision rested with the highest levels of the State Government.	The decision to carry out the SEA was made by the Pantanal NGOs together with the private sector. They established a "Platform for Dialogue" to follow the development of the SEA. However, the Government was responsible for implementing the Complex.
Integration to the planning process	SEA took place throughout the process of planning the integration of the tourism centers in the region and generated guidelines for their development and also for the entire PRODETUR.	Before the SEA process, the Government indicated three alternative locations for the seaport facilities and chose the most favourable option from a logistical point of view and not the one recommended by the environmental analysis.	The SEA was held when the proposals for government and private sector expansion were under discussion. The SEA findings should provide support for future sectoral and government decisions.
Public participation	The stakeholders were identified and mobilised in several meetings in the region, although the Monitoring Committee was not created. Analysis and validation of findings were based on online reports and discussions during the public consultation.	The perception of society was captured in interviews with the stakeholders. The follow-up took place in two groups: a Government Working Group and the Monitoring Committee. A specific website was set up to disseminate the information. Public consultations were held and all contributions were consolidated.	Interviews were carried out. The actors took part in public consultations at the beginning and also at the conclusion of the SEA. The development of the SEA was followed by Platform for Dialogue.

Table 1. (Continued)

Considered elements	Costa Norte SEA (CN SEA)	Porto Sul SEA	Pantanal SEA
SEA contributions	The integration of tourism and environmental protection policy goals was important for resolving the conflicts identified. Actions were identified that ensure the adoption of governance principles and corporate participation. The same SEA methodology has been applied in several tourism centres in Brazil.	SEA provided guidelines for the public sector and recommendations for the private sector. A minimum distance from the coast to the location of the mining-steel ventures was specified as a way of minimising conflicts with tourism activities and environmental conservation. SEA provided information for environmental licensing.	The SEA provided information and mechanisms to facilitate conflict management, which resulted in collective agreements and support for the actions and decisions that ensure economic development with the protection of the Pantanal.
Follow-up and monitoring	The information about the follow-up and the monitoring is not available to the public.	Environmental licensing, undergone by Federal Government, considered the location of the seaport environmentally unfeasible.	Although the planned investments were postponed, the contribution of the SEA findings was not discarded, and the guidelines are still considered a reference for the future actions of the Platform for Dialogue.

designed to provide input to the planning process, considered alternatives to the proposed development.

In the case of the Porto Sul Complex, although the SEA was carried out to comply with state legislation, the Government had already pre-identified 3 alternative locations and selected one based on its logistical advantage, rejecting the more environment-friendly alternative suggested by prior assessments. The environmental sector was responsible for carrying out this SEA, but the decision on the Program should have been taken by other spheres of government. The SEA, following LIMA methodology, incorporated options to the sustainability scenario for meeting the established sustainability goals, identifying public and private actions to achieve a more environmentally sound scenario.

Usually, in these situations, decision makers only consider alternatives if there is strong public outcry against their proposal or if there is some legal impediment (Therivel, 2010). This actually happened in this case since, in addition to broad local society participation during the entire SEA process, the intense pressure of some groups against the Complex during project assessment in the environmental licensing process led to the location of the port — decided by the government — being deemed environmentally unsound. As previously mentioned, the alternative compatible with the prior environmental assessment was then adopted.

Public participation is one of the good practice requirements and one of the essential SEA principles, aiming to increase not only the transparency during planning of strategic actions but also the level of involvement of interest groups in the debate on these issues (Costa *et al.*, 2009). LIMA's methodological framework emphasises this participation throughout the process. In the case studies included in this paper, the Pantanal SEA stands out in this respect because of the very nature of those responsible for the initiative, who came together in a Platform for Dialogue, demonstrating their option for transparency along the entire process. The role of the Platform, a permanent governance structure to assess and discuss priorities related to the production activities in the region and at the same time to collaborate with and monitor the performance of public agencies, is an example of enabling public participation during the planning.

In the Porto Sul SEA, the level of pre-existing conflict mobilised stakeholders, who organised themselves into various participatory groups in addition to the Monitoring Committee. The CN SEA engendered insignificant local mobilisation, resulting in greater susceptibility to dominant political interests. The Monitoring Committee was not established due to time constraints. Even so, participation of interested parties in the analysis and validation of results, made possible by examining reports available on-line and by joining the discussion in public consultations, had positive repercussions on the region.

The availability of information generated by the SEA on specific on-line sites, with ample access to stakeholders, turned out to be an instrument for democratic access to the data produced throughout the SEA, although there are social segments in Brazil who still lack digital inclusion. Another problem was the volume of technical data requiring time and knowledge to analyse.

In the three SEAs, there is a clear evidence of the importance of follow-up, using indicators representative of the interactions considered to be determining factors, such as the expected/planned behaviour of environmental processes related to the critical factors. However, actually achieving follow-up is one of the major shortcomings identified in the case studies, where the Pantanal SEA is an exception.

Although some positive results were seen in the SEAs developed by LIMA, the process and, most especially, the follow-up of the implementation of proposed actions depend on the power structure and the existing political situation (Jiliberto, 2011). This process suffers because of the change in personnel in government structures. This occurs at all levels of government and has been, as a rule, one of the reasons for the limited effectiveness of SEAs in Brazil, since the discontinuity of the process results in significant losses.

The dissemination of knowledge provided by SEAs, recognised as an important advantage in the first section of this paper, can be observed in the three case studies. In the CN SEA, active involvement of government technical personnel in the study was observed, which contributed to increasing the capacity of environmental governance and raising the awareness of decision makers as to the importance of the cross-cutting nature of environmental issues in the tourism sector. In the Porto Sul SEA, the environmental sector responsible for carrying it out observed increased understanding for this type of environmental assessments at more strategic levels. The entrepreneurs present at the Platform overseeing the Pantanal SEA also increased their knowledge of environmental and sustainability matters as they participated in the collaborative dialogue.

It must be stressed, however, that knowledge dissemination in the public sector is hindered by discontinuities in the various government structures, since the capacity acquired during the studies is prevented from permeating to the public planning structures.

The multidisciplinary expertise needed for each SEA requires an initial leveling of the team and close interaction throughout the assessment, given the particular features of SEAs and, as a rule, the familiarity of specialists with EIAs. Visits to the area under study, regular in-person meetings, working in networks, as well as discussions with the LIMA team responsible for developing the SEA have all been essential to address the diversity of issues and reconcile the contributions of

participating specialists, thereby contributing to their capacity building in SEA and, also, to disseminating knowledge.

Another obstacle encountered in the SEAs developed by LIMA is the time required to complete them (about 15 months) and the lack of objectivity of the diagnosis, which still contains a large number of details on the identified critical factors. This happens mostly because of the scarcity of organised information made available by the public sector, although there are significant contributions to be found in studies and research by NGOs and universities.

Conclusions

Questions are being raised about the application of SEA in Brazil, almost 20 years old, as to its effective contribution to the sustainability of national development initiatives. This paper portrays and analyses three SEAs, from different contexts, implemented according to the methodological structure developed by LIMA/COPPE/UFRJ.

The methodology used in the case studies is being continuously improved by feedback from progress achieved and difficulties faced. Together with the experience acquired by the team in conducting several SEA processes, greater consistency has been achieved in the application of procedures. Nevertheless, although this is important, it does not, in itself, ensure the effectiveness of SEAs.

Analyses revealed challenges and weaknesses that must be addressed to strengthen SEA, in order to make it a truly strategic, integrating, participatory instrument that promotes sustainable development. There are also several indirect benefits, which, it seems, have helped to enhance environmental awareness and the strategic planning culture at several levels (decision makers, stakeholders, public administration), as well as to build the capacity of technical staff working on the assessments.

One of the main challenges is the exercise of political will and commitment to integrate environmental and sustainability issues into decision making. This observation was also raised by *Kis Madrid et al. (2011)* with respect to other Latin American countries. As shown by the Porto Sul SEA, the existence of a legal requirement to use SEAs did not prevent the process from starting only after strategic decisions had already been taken, due to a lack of political commitment.

Although decision makers who took part in these SEAs now have a deeper understanding of sustainability issues, the lack of timing to SEAs in some cases has contributed for the low influence in final decisions. We believe that a more

effective commitment of higher levels of government is still necessary to define basic legal procedures to integrate SEA processes to land-use or sectoral planning, in the manner established for offshore oil activities.

Among the weaknesses seen are those related to the political-institutional framework, leading to discontinuities in SEA processes. This could be minimised by the definition of legal procedures. Furthermore, a number of technical procedures are also required, such as: availability and ease of access to information, quality control, review and monitoring of the SEA process.

On the other hand, the case studies have also allowed us to observe significant steps forward in the participatory process, in spite of the enormous difficulty of promoting effective public participation in Brazil in institutionalised processes, like the SEA. This is due, mostly, to apathy and reluctance, resulting from the broader phenomena of distrust of politicians and the disrepute of public institutions (Nascimento, 1997; Jacobi, 2003; Costa et al., 2009).

Although, ideally, SEA should be used during the process of designing and developing PPPs and not just on its results, in order to provide more information for decisions, the case studies also corroborate the perception of many authors⁵ about the dissemination of knowledge triggered by SEAs, even when they are applied at a late stage, when most of decisions have already been taken, as is the case of the Porto Sul SEA. This contribution proves to be decisive and far-reaching when we look at the stakeholders, regardless of whether they be Monitoring Committee members, participants in the public consultations or even interviewees in the initial assessment stages who provide information about the region and express their expectations, but also receive more precise information on SEA goals.

Given the high potential still existing for large scale initiatives in Brazil, because of the large unoccupied areas and the need to expand infrastructure to support national development, there are innumerable possibilities for SEA application in Brazil. Previous analyses point to shortcomings, but they also indicate significant progress in the SEA process. Nevertheless, we believe this instrument can bring relevant contributions and benefits to drive sustainability in the development process of Brazil and other Latin American countries, as it promotes the cross-cutting nature of environmental issues and raises them to higher decision-making levels while also enabling more effective and democratic public participation in government decisions.

⁵ See Stoeglehner (2010); Therivel (2010); van Buuren and Nooteboom (2009); West et al. (2011); Jha-Thakur et al. (2009).

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