

Climate change and the Brazilian Strategic Environmental Assessment practice

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Abstract

Avoiding effects from climate change associated with greenhouse gas emissions (GHG) is a challenge in the international environmental agenda. In 2009 Brazil established the National Climate Change Policy, forecasting a reduction from 36.1 to 38.9% in GHG emissions for 2020. Strategic Environmental Assessment (SEA) is a means to integrate climate change issues into planning. In Brazil, SEA is not mandatory and experience is scarce, once only about 40 SEA reports are known. This study aims at evaluating climate change issues in the context of Brazilian SEA reports regarding the identification of climate change effects and the provision of measures for climate change mitigation and adaptation. Following the international good practice to include climate change in SEA, we selected the framework proposed by Wende et al. (2011). The results of our study show that SEA reports for energy and transport planning presented the best results for climate change considerations when compared to the reports of tourism and regional development planning. However, our results also show that in Brazil climate change issues have been poorly addressed in planning supported by SEA.

Introduction

Avoiding effects from climate change associated with greenhouse gas emissions (GHG) is a challenge in the international environmental agenda. In 2013, the Brazilian GHG inventory announced an increase of 7.8% compared to 2012, due to the levels of emissions generated by five main sectors: land use (34.6%), industry (5.5%), energy (30.2%), agriculture, and livestock (26.6%); residues (3.1%).

Brazil has encouraged initiatives in the public and private sectors to address climate change since the launching of the National Policy on Climate Change in 2009. This National Policy forecasts a reduction from 36.1 to 38.9% in GHG emissions for 2020 and also aims at reducing and stabilizing the concentration of GHG emissions through a series of actions and targets to achieve mitigation and adaptation to climate change.

SEA has been considered the appropriate instrument for considering environmental issues and promoting sustainability in decision taking at planning level (Lobos and Partidário, 2014) and also for allowing proper inclusion of climate change issues (Kornov and Wejs, 2013). In Brazil SEA is not mandatory and experience is scarce. SEA is still an instrument of restricted use in Brazil

(Sánchez and Croal, 2012). According to Malvestio and Montaña (2013), about 40 SEA technical reports have been prepared in the last 15 years.

This study aims at evaluating climate change issues in the context of Brazilian SEA reports regarding the identification of climate change effects and the provision of measures for climate change mitigation and adaptation. Thus, the question that this study proposes to answer is: How has climate change been addressed in planning supported by Strategic Environmental Assessment in Brazil? This study is aligned with the introduction of SEA in Brazil. It is expected to illustrate how the Brazilian SEA practice has supported climate change issues in planning.

Methodology

Data set and information used in this study refer to Brazilian SEA reports. Due to the lack of a Brazilian regulatory framework for SEA and of responsibility for the analysis of SEA reports, there is no official repository for SEA reports in Brazil. Some authors estimate the number of SEA reports that have been already taken place: Margato and Sánchez (2014) – 24; Malvestio and Montaña (2013) – 35; da Silva et al. (2014) – 32; and Montaña et al. (2014) – 40 reports.

In order to qualify a national reference on climate change in planning supported by SEA, the database on Brazilian SEA reports published in electronic media by Malvestio and Montaña (2013) was used in this study. Thus, the data set comprise 35 SEA reports carried out between 1997 and 2014. They were categorized into: energy planning – 11; regional development planning – 8; transport planning – 10, and tourism planning – 6 reports.

As the discussion on SEA methodological framework is limited in Brazil (Malvestio and Montaña, 2013; Montaña et al. 2013), this study is based on best available international practices in assessment of the CC in SEA (*e.g.*, Posas, 2012).

The framework proposed by Wende et al. (2011) is selected for this study. According to these authors, this procedure is a simple review checklist that allows determining the extent to which SEA has directed planning towards climate change issues. The evaluation procedure proposed by Wende et al. (2011) comprises 15 main issues related to climate change. Some of these 15 main climate change issues are further divided. There are a total of 29 categories. Each category is evaluated by applying the Wende et al. (2011) framework. There are three levels of hierarchy in the Wende et al. (2011) framework from highest to lowest: “+” – climate change issues considered; “0” – slightly or indirectly considered; “-” – not considered, no information/specifications. These criteria were applied to the 35 Brazilian SEA reports selected as the data set in this study.

Results

The Wende et al. (2001) framework was applied to the 35 Brazilian SEA reports and the results are presented in Table 1. These data related to climate change issues in the SEA reports

contents were analyzed from four approaches: a) individual analysis of the Brazilian SEA reports; b) climate change issues approach in the Brazilian SEA reports; c) temporal analysis of the Brazilian SEA reports regarding the 2009 National Policy on Climate Change; d) comparative analysis of the Brazilian SEA reports in different categories of planning. According to Table 1, the results of this analysis are:

- a) The SEA reports were compared regarding the consideration and qualification of climate change – **individual analysis of Brazilian SEA reports:**
- 13 Brazilian SEA reports were considered to be the worst, that is, there is no mention of any climate change issues;
 - 2 Brazilian SEA reports were considered to be the best, that is, regardless of their classification ("0" or "+"), these two reports obtained the highest score in more than nine Wende et al. (2011) criteria;
 - the remaining 20 Brazilian SEA reports were placed between these two extremes; regardless of their classification ("0" or "+"), some of them reached 7 categories as the maximum score (29) in some Wende et al. (2011) criteria.
- b) A compliance review of climate change approach with the Wende et al. (2011) framework was done of all the 35 Brazilian SEA reports – **climate change issues approach in the Brazilian SEA reports:**
- climate change issues are presented in 22 Brazilian SEA reports;
 - from the total of 29 climate change issues listed by Wende et al. (2011), the best Brazilian SEA study (on energy planning) scored only 11 issues, which means less than half of the total score. Moreover, nine of these 11 issues were evaluated as "0" – climate change issues were slightly or indirectly considered;
 - if considering the category "+" ("+" – climate change issues considered), only one Brazilian SEA report reached a maximum of 5 climate change issues.
- c) This analysis intends to show if the legal framework of climate change has had some influence on the inclusion of climate change in the contents of these SEA reports. Out of the 35 Brazilian SEA reports, 22 came before and 13 came after the 2009 National Policy on Climate Change: **temporal analysis of the Brazilian SEA reports regarding the 2009 National Policy on Climate Change:**
- the two best reports, according to the item a), were prepared after the 2009 National Policy;
 - two out of the 13 worst – one on tourism planning and another on energy planning – , according to the item a), also came after the publication of this Policy.

d) This analysis aims at identifying whether there are differences in addressing climate change on different types of planning: **comparative analysis of the Brazilian SEA reports in different categories of planning:**

- transport planning: climate change issues were considered in 8 of 10 reports (80%).
These reports yielded the best results among the four categories of planning analyzed;
- regional development planning: climate change issues were considered in 5 of 8 reports (62%);
- energy planning: climate change issues were considered in 6 of 11 reports (54%);
- tourism planning: climate change issues were considered in 3 of 6 reports (50%).
These reports yielded the worst results, when compared to the other three planning categories.

Discussion

The results of this study reinforce the conclusions in Larsen et al. (2013), that is, the current SEA practice has not been able to recognize, consider and communicate problems arising from uncertainties in climate change.

Larsen et al. (2012) conclusions about the limited mitigation and still less attention to adaptation and evaluation of synergies between adaptation and other environmental policies are also evident in the Brazilian SEA universe. The importance of distinguishing the procedures of mitigation and adaptation to climate change procedures in SEA reports was also emphasized by Tetlow and Hanusch (2012).

Malvestio and Montaña (2013) and Montaña et al. (2014) evaluated the effectiveness of SEA in Brazil and concluded that the problems of SEA practice arise from the lack of consistency and institutionalization of procedures to undertake SEA. The results of our study, though focused only on climate change, can also be associated with this general framework identified by these authors.

Conclusions

Our study shows that climate change issues are poorly addressed in planning for energy, regional development, transport and tourism in Brazil, when it comes to Strategic Environmental Assessment (SEA). The transport sector is more aware of climate change in planning, when compared to other sectors.

The outcomes presented in this study show that 37% (13 reports) of Brazilian SEA reports do not even mention climate change. If we consider the reports in which some of the climate change issues are appropriately considered, this percentage falls to 22% (8 reports). Moreover, the best

Brazilian SEA study only fulfilled 11 of the 29 climate change criteria established by Wende et al. (2011), and the majority of them slightly or indirectly approached these criteria. Only one SEA report includes five climate change issues in total accordance to these criteria.

If we consider the criterion related to climate change effects and the criterion related to provision of measures for mitigation and adaptation to climate change, it is possible to conclude that there is a trend or predominance of mitigation measures, even if classified as "0" – slightly or indirectly considered, in detriment to adaptation measures. Furthermore, no Brazilian SEA study presents any provision for alternatives related to climate change and for assessing long-term impacts. This result supports the thesis that climate change addressing is limited in Brazilian planning subsidized by SEA.

Apparently, the 2009 National Policy on Climate Change has not had any direct effect on better ways to address climate change issues in the Brazilian SEA practice.

Although the use of SEA in Brazil is restricted and the regulatory framework on climate change is recent, this study highlights the need to widespread SEA practice for decision taking in planning. The agenda must be guided by international good practices, in order to increase the quantity and quality of ways to address climate change in planning in Brazil.

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