***Environmental acceptability of economic activities*: a conceptual framework to guide land-use decisions in Brazil**

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Abstract
This paper argues about how decisions related to land use planning and management could put in first place the environmental acceptability of the projects, considering a framework that guide planning authorities and society towards well-balanced decisions. In order to illustrate the arguments there are presented the cases for two Brazilian municipalities. The suggested approach can help to enhance the results of territorial planning and management, stimulating the locational aspect of projects to be assessed previously and therefore guiding land-use decisions.

Introduction

One of the concerns about land-use planning and management is related to how decisions were taken, and how much relevance is given to environmental issues at the decision-making process before economic and social themes. Despite the efforts to address this question, developing countries like Brazil have not yet reached an adequate equilibrium between these three elements, what leads to biased decisions in which prevails the economic aspect and, not unusual, resulting in environmental impacts that should be addressed in a satisfactory way.

To the purposes of the arguments defended at this paper, land-use decisions will be aggregated in two large groups – formal decisions related to project building, and strategic decisions involved with land-use planning. In both cases, environmental aspects have to be considered as a major issue to be integrated to the planning process. Obviously, the effectiveness of this integration is dependent on the conditions presented to decision-makers, in technical and political terms.

Considering the projected scenario of a "Global Green New Deal" (UNEP, 2009), the question raised above must be adequately addressed in order to guide decisions about what become to be called as a "green investment" and to minimize the risk of negative environmental effects following these decisions.

Environmental acceptability and decision-making in Brazil

Richardson (2005) states that the conflicts verified in environmental assessments (EA) constitute a critical issue for this debate, which in his opinion should be focused on "*where and how value conflicts and differences are being or could be dealt with*" (p. 348). To this respect Wilkins (2003) argues that the conflicts in EA are inevitable because of the different sense of value and the unavoidable subjectivity that are intrinsic to the role of prediction in EIA. According to this author, there is "*considerable subjective decision making upon which EIA is based, from screening to final decision making*" (p. 401).

Based on these premises, this section focus on the different types of decision that are usually taken in Brazil within land-use decision making, also considering the two

groups mentioned before – formal decisions about project building and strategic decisions within land-use planning.

Formal decisions and the project-EIA approach

Considering the strategies for environmental management generally applied in developing countries, especially those which have a “command and control” tradition, it seems that there is a preference by controlling environmental quality from standards (or thresholds) that establish the limits for the impacts acceptability and must be assessed by environmental authorities. In practice, the set of environmental standards are quite similar as the environmental baselines applied in impact assessments (as the standards set the *basic* environmental quality to be maintained over the time).

In Brazil, guidance for the implementation of development projects brings to the first place the assessment of the project’s *environmental acceptability*, a concept that aggregates – in an impact assessment context – the verification of the objective conditions that must be guaranteed to the accomplishment of environmental standards, mainly in terms of mitigation measures and monitoring. Hence, the entrepreneurs must obtain a formal authorization that approves at the same time the *conception* and the *site* of their projects.

In order to obtain this authorization, in case of activities considered “*potentially responsible for significant environmental degradation*”, it is legally required that an EIA process come to assess the impacts to be caused – delivering governmental authorities and society sufficient information about the conditions that must be observed to assure environmental acceptability for projects.

EIA in Brazil suffers from several deficiencies, which involves a combination of insufficient human (technical and administrative) resources to conduct the processes, lack of institutional capabilities, and misunderstandings about the role to be played by different actors (including society). Gallardo and Sanchez (2004) put follow-up schemes as a major question to be solved, Sanchez and Silva-Sanchez (2008) discuss the absence of a tiered decision-making process and Salvador and Glasson (2000) consider resource constraints, economical and political pressure, and the lack of influence from local authorities as the main deficiencies of EIA in Brazil.

As a consequence, EIA is now felt as an *expensive, slow and questionable* process, and it is not unusual that decisions were taken under pressure, after judicial processes or something, with prejudice to the whole process, on its technical and political aspects.

Despite the singularities of each topic mentioned above it is correct to say that these deficiencies become even worse due to the incipient discussions about locational aspects – what is also valid to justify the high level of conflicts verified in a number of EIAs that have run in Brazil since it was implemented.

Strategic decisions and the SEA approach

As Souza (2004) state, the planning process is criticized by those who want to "denaturalize" the analysis of space, treating its production as a socially-oriented process with problems caused by the dynamics of wealth production and the structures of power observed in modern societies, and also by those who recognize the limitations

of governments to avoid critical situations in terms of quality of life (easily recognized nowadays even in the countries which have implemented consistent policies of social services). These critics can also involve the reductionism in land use planning, and its deficiency in dealing with complex situations.

Apart of these questions, Jones et al (2005, p. 4) remember that land use planning must be aligned to a *policy* with respect to the use and development of land, securing "*consistency and continuity in the framing and execution*" of this policy. Also, "*the function of the plan-making process is to ensure that the wide variety of interests is taken into account when planning decisions are made*", considering the general public interest. As a result, conflict lies at the core of land use planning and plan-makers must be prepared to deal with complex situations, preferably supported by clear and consistent information.

This is exactly the case in Brazil. According to Deák and Schiffer (2004) the occupation of the territory in Brazil is dissociated of an integrated planning, mainly guided for economic and speculative interests. Considering the objectives established at the Brazilian national policy of linking development and environmental protection, there is a need for consistent information in terms of the environment's fragilities and potentialities in order to assess the impacts of land use and development. Otherwise the environment will kept away from plan making.

The achievements of this 'unilateral planning', according to Stren (1992) are verified in different ways and stay at the opposite side of the sustainability's principles, with political and social costs beside environmental ones.

The impossibility of setting legal standards to the whole set of environmental quality parameters highlights the relevance of the environmental variable in land use planning. Despite successive Brazilian's government reluctance in adopt SEA as a reference to evaluate the environmental effects of plans and programs, the same approach described before to assess the environmental acceptability of individual projects could be applied to design a framework to guide land use planning and to ensure that the environmental aspects were taken into account by decision- and plan-makers.

Case discussions

In order to illustrate the arguments discussed here there are briefly presented the cases for two Brazilian municipalities. The first one is concerning to a mid-sized municipality and the environmental licensing process for a domestic waste landfill and the second is applied to a small municipality and the land-use planning process. What is intended to be presented is how early the environmental variable can be integrated to decision-making processes, compounding the frame of intervenient variables that will influence relevant decisions.

Case 1: Environmental acceptability and decision-making process

The necessity of a new area to solid waste disposal leaded local government (Sao Carlos city, 230 000 inhabitants) to make arrangements for obtaining a formal authorization to operate a new landfill. In this case, the legal framework imposes an EIA process to be

run in order to assess the project's environmental acceptability and approve the requirements to guarantee the accomplishment of environmental thresholds.

The choice of locational alternatives followed a "successive approximations" method, where each level of approximation applies more detailed information than the previous. The first approximation considered the whole territory of the municipality. A baseline to the municipality at a compatible scale was set for choosing locational alternatives, based on environmental criteria that reflect the capacity of the environment in assimilate the impacts to be caused.

The environmental acceptability was then the main reference to find adequate sites to install and operate the landfill, considering simultaneously the project (and specifically the *pressure* to be made on the environment) and the environment (i. e., the *answer* to be given). For example, the possibility of percolation of pollutant liquid (*pressure*) means that the *answer* might be contamination of groundwater. In order to minimize the risk of negative effects the soil permeability as an 'acceptability criterion'.

The first level of approximation (Figure 1), which had combined factors such as geological (presence/absence of underground water or fractures), soil (as explained above), risk of erosion (considering the slope as a main factor) and other environmental characteristics, had classified 21 sites to the second level of investigation.

A new set of criteria was then established, considering technical analysis and validated through public consultation. This stage showed to be particularly interesting because of public concerns proved to be quite similar of the team that was conducting the assessment, now focused on social impacts.

The last level resulted in five alternatives that were assessed after detailed surveys (which included primary data) and the preferred site was finally pointed. The landfill project was then detailed, with each level of approximation bringing a different contribution to be assimilated by project's team.

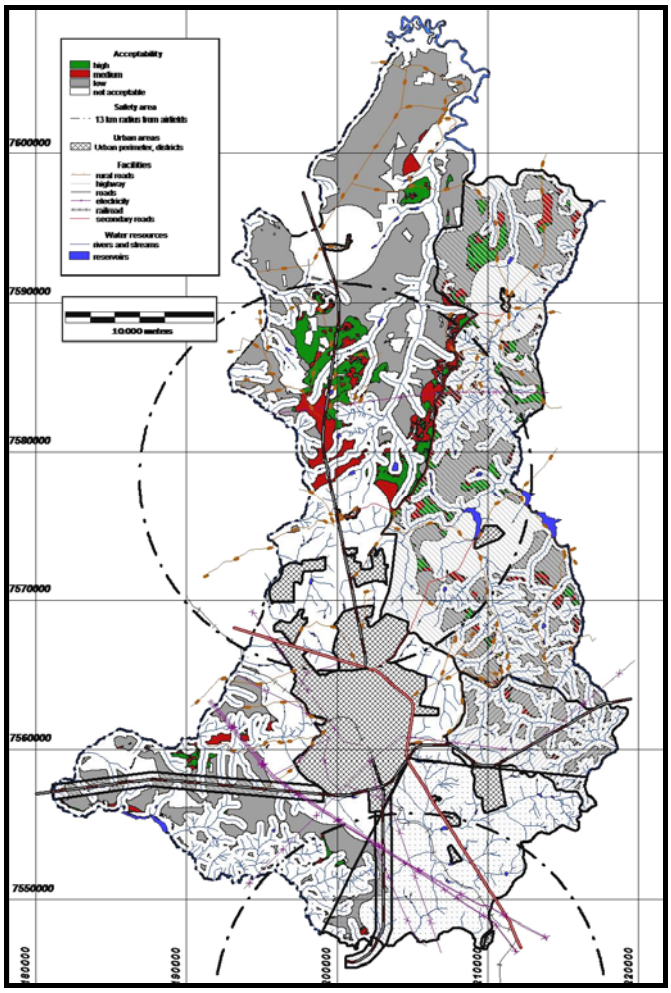

Figure 1 – environmental acceptability for sitting domestic waste landfills

Case 2: Environmental acceptability and planning process

The same approach was applied to establish guidelines to land use at a small-sized municipality (near 20 000 inhabitants). Specifically, the methods applied were concerned with both technical and political aspects of planning, with special attention to public involvement to define the criteria to be used in land use plan (considering the environmental consequences of the urbanization, once again in terms of the biophysical environment).

Considering hypothetical sources of *pressure* related to the urbanization the objective of the approach was to identify the *answers* given by the territory, in terms of environmental effects to be caused, allowing plan makers to find the best alternatives to reach their development objectives taken into account environmental aspects. Figure 2 shows the result for this case, methodologically similar to the 'first approximation' as presented in Case 1.

A set of public meetings took place, in order to guarantee public's commitment and government's accountability after land use criteria's definition. At these meetings, the main objective was to reach a satisfactory level of comprehension by involved public

about the potential environmental effects following urbanization, thus leading to more consistent (and clear) decisions.

As a result it was delivered to plan-makers a description about the environmental conditionings to the urbanization of the territory, already validated at public meetings.

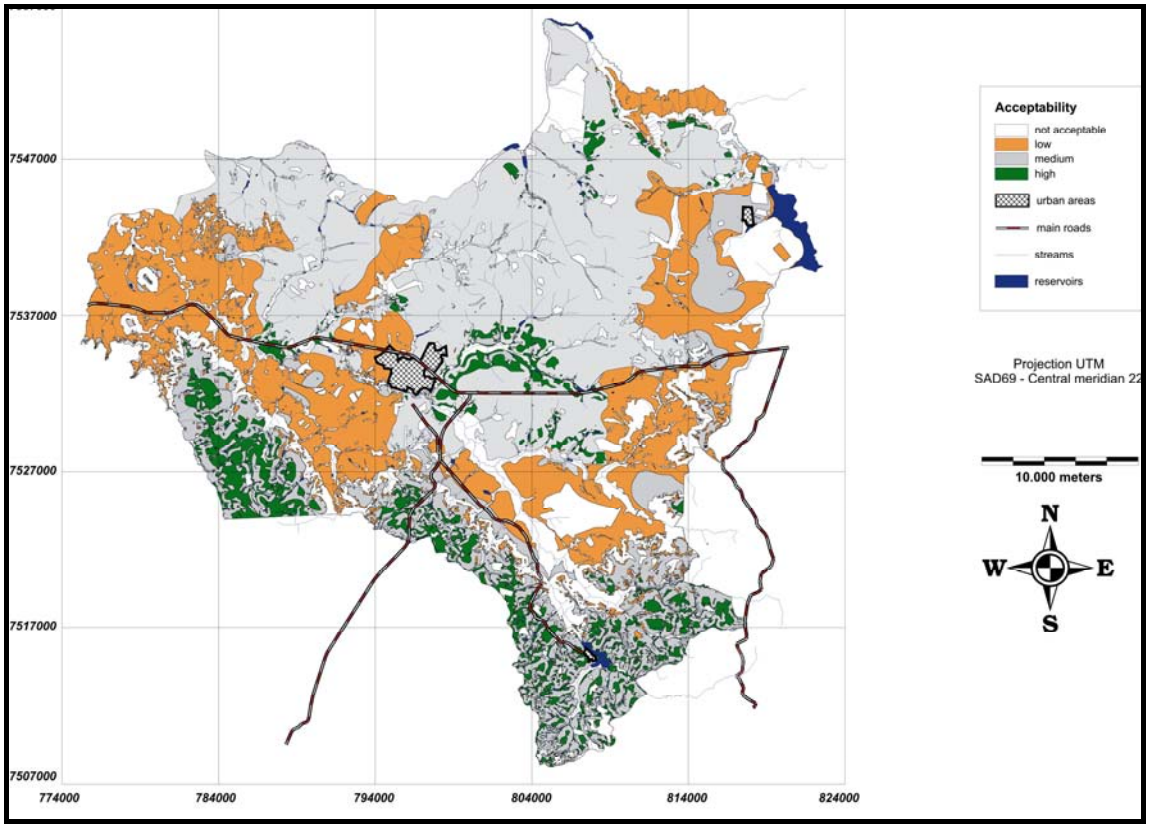

Figure 2 – environmental acceptability for urban expansion

Discussion

One of the main advantages of this approach is that the whole set of environmental criteria was considered at the same level of relevance as any other 'classical' engineering or planning criteria. Thus, trade-offs between economical and environmental requirements must be evaluated at the conception stage considering the environmental references as something to be necessarily achieved.

This implies in a totally different environment to decision making process – starting with EIA or planning scoping (that finds much more objectivity because of preliminary assessments), public consultations (timely responsible, and able to previously integrate public concerns, minimizing the risk of significant conflicts), and leading to a higher level of commitment and accountability at all levels.

Definitely, the locational aspect contributes significantly to the variability of values that stakeholders bring to decision-making and, as mentioned in this paper, to the conflicts verified in EIA and land use planning. However, this contribution could be minimized by establishing environmental criteria to find alternatives to sitting potentially harmful

activities and guidelines to be observed at all stages of EIA and plan-making processes. Considering the critics to EIA and land use planning in Brazil, it could be a nice start if a common framework was established so that environmental assessment actors (entrepreneurs, society, authorities) can deal adequately with locational alternatives.

Greening economy, although actually is a broad concept, could benefit from a framework that guarantee the insertion of environmental issues at decision-making processes. This is specifically true in countries like Brazil, which have legal requirements to the assessment of projects but there is a lack in wider processes as land-use planning.

A green investment starts with finding an adequate site to install an economic activity, which means the identification of locational alternatives guided by a previous assessment of the environment and its capacity to assimilate the impacts that will be caused (what can be referred as environmental acceptability, or feasibility). Otherwise, without discussions about the locational variable decisions keep restricted to choices between one or another mitigation measure, and the decision-making process is therefore reduced to a traditional cost-benefit analysis.

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