ENVIRONMENTAL IMPACT ASSESSMENT: MYTH OR REALITY? LESSONS FROM SPAIN

Mercedes Pardo
Department of Sociology, Universidad Pública de Navarra

This paper analyzes the situation of Environmental Impact Assessment (EIA) in Spain since its inception in 1988. The analysis covers the general framework (the national and the autonomous communities' laws, the official guidebooks, the agencies' procedure), the Environmental Impact Statements (EIS) issued by the environmental national agency, and a sample of Environmental Impact Studies of different type of projects. The results of this research show that (1) EIAs have been very general in their content, lacking a concrete analysis and without providing substantial solutions to the problems; (2) the socioeconomic analyses are frequently reduced to emphasizing the project's economic benefits while overlooking their potential harm; (3) especially serious is the acceptance of irregular EIA procedure by environmental agencies; and (4) public participation consists mainly in a bureaucratic process exhibiting the document for 30 days at the city hall. This paper concludes with a set of recommendations.

Introduction

Environmental Impact Assessment (EIA) went into effect in Spain in 1988[1] as a result of the European Directive 85/337/EEC. Since then, autonomous legislation, guidebooks, and a fair amount of EIA have been completed in Spain.

In spite of there having been no comprehensive research on the results of these years[2], there is a *de facto* negative diagnosis within the community

Address requests for reprints to: Mercedes Pardo, Associate Professor of Sociology, Universidad Pública de Navarra, Department of Sociology, Campus Arrosadia, 31006-Pamplona, Spain. E-mail: Mpardo@upna.es.

[1] Law R.D. 1302/86.

[2] EC has issued a report "Informe de la Comisíon sobre la aplicacíon de la Directiva 85/337" (1993) covering the most important issues, but a more detailed analysis is needed.

participating in the field (professionals, environmental agencies, environmental organizations).

The reasons for that situation are various. EIA needs to improve important aspects such as analyses quality (Buckley 1989; Lawrence 1993; Lee and Colley 1990; van der Staal and van Vught 1989) enforcement (Clark 1988; Kaplan-Widlmann and McBride 1992; Lambert and Wood 1990), post-development monitoring (Bailey and Hobbs 1990; Bisset 1984; Culhane 1987; Duinker 1985; Krawetz and Mac Donald 1986) and public participation (Kunreuther, Aarts, and Fitzgerald 1992; Schneidler and Sandman 1988); but even so, it is considered one of the most interesting tools for environmental management worldwide (Buxton 1990; Murdock et al. 1982; Wood and McDonic 1989). Its usefulness depends in a great deal of the social, economic, and political context (Bartlett 1989; Caldwell 1989; Concepcion 1993). Consequently, the analysis of the concrete experiences dealing with EIA and of its evolution in different context is important.

The sociopolitical situation has not been favorable to a sound development of EIA in Spain.

The environmental review process was established due to the EC requirement[3] for all member states, without Spain having any environmental policy.[4] Indeed, the Spanish administration has given absolute priority to development over any other consideration. Most of the public infrastructures that have been built during these years did not complete the environmental evaluation required by law.[5]

Since Spain became a member of EC,[6] the attempt to lessen our economic gap with the Northern countries and the economic restructuring for both the recession and the EC agreements have been major driving forces. EC environmental regulation came along, but, in the case of EIA, not much is been done by EC to enforce it. In fact, the European administration turned a blind eye when it was informed that the controversial High Speed Train project tried to skip EIA.[7] More recently, in 1993, EC has denied to Spain funds for highways and roads for not having done the environmental impact review.

On the other hand, environmental administration in Spain lacks resources (money and experts) to carry out their responsibilities. These administrations and in particular the national administration, which is in charge of the EIS analyzed in this research, have suffered an accumulation of projects to review, producing a delay of years in the process.

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[3] Directive EC 85/337.

[4] For years, the diverse governments—center and social democratic-oriented ones—prepaired more than 20 crafts for a General Law of the Environment but it never proceeded.

[5] Until the summer of 1993, only 90 out of the 304 public works built have completed EIA (*El Mundo,* 12 July 1993).

[6] In 1982, then EEC.

[7] The High Speed Train was developed to serve for the Universal Exhibition in 1992, and was very controversial for economic, social, and environmental reasons.

At the same time, very few programs in the academia address EIA. As a result, EIA teams are based mainly on specialists in the different disciplines with no training in EIA.

The short budgets for EIA have resulted often in the reduction of the interdisciplinary team to only one professional to carry out the study. In fact, there has been a decrease in EIA budgets[8] as the developers—in charge of doing the environmental study 1 have noticed the lack of enforcement by the administration.

All the above situations strengthen each other as the environmental administration does not control the quality of the studies, or a follow-up of the actual completion of the environmental conditions in the EIS.

Another relevant reason for explaining this situation is the low interest in EIA by the environmental and other social organizations. Spanish environmental organizations are comparatively small and rely mainly on voluntary work. Another explanation might be the lack of tradition and social interest in the judicial system to litigate, tending more to use other ways of working. They have been involved in some controversial projects, but, for most of the cases, opposition has come mainly from the local population affected by the development.

In such a social framework, this paper analyzes the laws, the governmental guidebooks, the agencies' procedure of EIA in Spain, and specifically the EIS issued by the environmental national agencies, comparing them with a sample of Environmental Impact Studies of different types of projects, concluding with a set of recommendations to improve EIA in our country.

The Legal and Procedural Conceptual Framework

The Spanish National Legislation in the European Community (EC) Context

The Spanish law (1302/86) commands that assessment be made of the potential direct and indirect effects of a given project on human beings, flora and fauna, soil, air, water, climate and the landscape, and material assets, including the cultural heritage. In light of this, it calls for specifying measures to reduce, eliminate, or compensate negative environmental effects, including potential feasible alternatives to the project's conditions, and it requires compensation to pay for harm and damages caused by the project. The law also requires a summary of the study in nontechnical language for the public information process.

This law was welcome but also triggered a public debate[9]—for the first time in Spain—about this issue, pointing out that it set forth only the minimum requirements. The EC Directive, logically, established the minimum for the member states, leaving amplifications to the countries. Spain

[8] A reduction of 75% for road studies.

[9] Pardo, M. "El R.D.L. sobre EIA," El Pais, August 1988.

not only stayed with the minimum, but there are aspects of the EC "philosophy" that were not taken into account at all.

The Spanish national law includes all the projects in Annex I of the Directive (which are obligatory for the members), and it only adds 3 out of the 80 from Annex II (which are to be considered by the national laws).

Regarding the procedure, there are several aspects of the law that might undermine EIA effectiveness:

- The procedure is the same—in terms of timing, phases, and public participation, among others—whether the project is a large one (e.g., power plants) or a small one (e.g., a small quarry). This leads to a discrediting of the process and a distortion of the original objectives. Other European legislation takes into account those differences and resolves them (e.g., the *Notes d'impacte* of the French legislation).
- The evaluation is based on the environmental impact study made by the project's developer. Such a model is applied in other countries as well, and undoubtedly, other models are more complex and might have problems in praxis for the current Spanish situation. Even so, it seems necessary to start this debate for the adoption of more objective approaches in the future.
- The effectiveness of Monitoring Programs, Mitigation Measures, and Environmental Conditions for the project, all of them included in the official Environmental Impact Statement, are not guaranteed at all, due to the fact that environmental assessment is not carried out all through the project design process, but usually only at one point of that process. The regulation issued two years later to implement the law develops this aspect, but it does not articulate monitoring procedures of the above conditions, and the practice indicates little effectiveness of the monitoring, as there is no tool to impose fines or other control methods.
- Another ambiguity in the law is with regard to the conditions for halting a project for reasons of suppression, falsification, or manipulation of data in the evaluation process. Demonstrating these assertions is very difficult.
- Public participation in EIA is conducted simultaneously with disclosure as to the project intent, and by doing so, the first is very much conditioned upon the acceptance of the project. The national legislation only requires that the documents be available at the city halls, which is an insufficient and narrow approach. Legislation must guaranty a more open and active public participation, adapted to the kind of project under consideration.

Two years later, the regulation (1131/88) to implement the law was approved, adding more content to environmental impact assessment.

Thus, this regulation requires study not only of the elements indicated above, but the ecosystem's structure and its function in the area; social relationships of the population; conditions for public quietness, such as noise, vibrations, odors, and light emissions; and any other environmental effect caused by the project. It also determines an elaborate environmental inventory and description of the ecology and environmental interactions, including a comparative diagnosis of the current and the future environmental situation for every project alternative to be considered. Regarding public opinion, the regulation adds the requirement of making explicit the procedures utilized to analyze the project's social acceptance-rejection level, and the economic implications.

As such, the regulation makes an effort to turn environmental assessment into a diagnosis of the processes in the environment, and specifically in the social environment, while the law, on the contrary, is more descriptive, selecting elements but not relations among them.

Nonetheless, impact assessment is focused on determining a negative impact range (compatible, moderate, severe, and critical), displacing for that the consideration of positive effects. Such an approach leads to the lack of evaluation of social impact in its complexity. Ironically, in many of the particular environmental impact studies, the socioeconomic advantages from the projects are used as a "flip side of the coin."

Total impact of the various effects with different signs, magnitudes, durability, and so forth, on the affected population, on the economy, or on the cultural or social organization, and the overall final impact on the biophysical and social environmental interrelation, cannot be evaluated in terms of compatibility or range of negativity, as the regulation requires. Sometimes, it cannot be stated whether it is positive or negative *a priori*. The issue is more complex.

The Directive 85/337/EEC commands EIA exclusively for projects, and the same applies to the Spanish national legislation.

Despite its limited effectiveness of leaving the environmental assessment to the last point in the planning process (the project implementation), EC has not yet been able to approve a directive for plans and programs. The British opposition to such a directive is well known.

Moreover, even doing the analyses at the project development stage, the concept of project in the Spanish legislation is not well-defined and varies according to the activity considered.

Thus, for instance, in the case of roads, several phases can be distinguished—statement, preliminary study, informative study, preliminary design, location design, construction design—which implies that alternative selection can be affected by environmental assessment if made in the early project phases, and that if made after the location design, EIA can only influence mitigation measures.

In the case of reservoir projects, the phases are organized in economic feasibility studies, location feasibility studies, preliminary design, and con-

struction design. Applying environmental assessment to the early stages, it will be able to evaluate location and socioeconomic feasibility; EIA in the next phases will only apply to concrete aspects.

Thus, in practice, environmental assessment is made at a particular moment of the project and not throughout the process, with its scope very much affected by the moment when it is conducted.

EIA in the Regional Legislation

Spain has 17 autonomous governments, some of which have approved legislation on EIA[10] after to the national law—the Balearic legislation is remarkable as it was issued before the national one. Examining this legislation, some relevant conclusions can be made:

- Some of this regional legislation enlarges the list of projects or activities to assess under EIA. By doing so, it attempts to correct and adjust to its jurisdiction the type of projects included in the national legislation. This is a logical process, considering that most of these pieces of legislation have been elaborated afterwards, and thus have been able to rely on the experience of the European and National laws.
- Some of this legislation defines several evaluation levels (environmental report, preliminary EIA, detailed EIA, etc.), and also, as we will see later on, several types and dimensions for the projects. Clearly, these types of evaluation provide more flexibility, realism and agility for environmental control.
- Nevertheless, some of the autonomous communities do not even contemplate the minimum number of projects in the national legislation.

In addition, they make interesting contributions to the definition of the field. So, the Community of Madrid develops the concept of "Environmental Qualification," which is a more simple assessment for small projects, and the Canary Community develops the "Basic Evaluation of Ecological Impact." Asturias includes EIA as a tool for land planning. Valencia anticipates bail requirement to warranty the Mitigation Measures and Monitoring Program. Some of the autonomous legislation requires EIA for projects to be located in "natural areas," even those projects by themselves are not commanded for impact assessment. The Balearic Islands requires the environmental assessment team to express the complexity and multiplicity of the elements in EIA, and thus the team must include experts in the different sciences (biophysical, biological, social).

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[10] Autonomic legislations by chronological order are the following: The Balearic Islands: Decree 4/86, 23 January; Asturias: Law 1/87, 30 March; Valencia: Law 2/89, 3 March and Decree 162/90, 15 October; Castile-Leon: Decree 269/89, 16 November; The Canary Islands: Law 11/90, 13 July; Galicia: 442/90, 13 September; Aragon: Decree 198/88, 118/89, 148/90, 9 November; Madrid: Law 10/91, 4 April; Extremadura: Decree 45/91, 16 April; Cantabria: Decree 50/91, 29 April; Catalunya: national legislation and Decree 328/92, 14 December; Andalusia, Castile–La Mancha, Murcia, Navarra, the Basque Country, and the Rioja do not have autonomous legislation and applied the national one.

On the other hand, this legislation has important shortcomings. Most of it limits itself to the guidelines of the national legislation, without making any effort to analyze and adapt it to their specific territorial characteristics. There continues being a lack of mandatory EIA on policies, plans, and programs—some few require it for urban planning. They have not developed more active models for public participation, nor new formulations for the main questions in EIA in Spain: the model of project developer-EIA responsibility, and the ineffectiveness of Environmental Conditions and Monitoring Program, as it is been explained above. Andalusia is making an interesting effort on monitoring. Nor do they resolve the problem of who should be in charge of evaluating EIA when the designated environmental authority is the same as the project competent authority (as is the case for some public projects), even though the interdepartmental commissions considered in some of the autonomous legislation go in that direction.

The Administrative Organization

The environmental administration has the responsibility to evaluate the environmental impact study, the information reliability, the evaluation criteria's validity, and the mitigation measures proposed, but the project's competent administration holds the power on the final decision about the project.

The national environmental Administration in Spain has little power, and it is characterized by a serious lack of resources and tools to guarantee the success in the observance of the law. So far, there is little effectiveness in the enforcement of mitigation measures, monitoring program, and environmental conditions for the projects.

Some of the autonomous communities have a specific environmental department—Catalonia, the Rioja, and Valencia. In other cases, environmental management is within the departments of Economy and Land Planning (this is the case for the Canary Islands, Cantabria, Castille-Leon, Navarra and the Basque, Country). A third situation is that the issues concerning the environment are associated with public infrastructures or urban planning, as in Asturias, the Balearic Islands, Extremadura, and Murcia. The exception is Andalusia, where there is a department of Culture and the Environment and also an Agency of the Environment, as it is the case in Madrid.

The rest of the communities do not develop their environmental competencies to the level of General Directorate (the highest), as it is the case in Aragon and Galicia.

EIA Procedure

The Procedure

The procedure is established in the law, but the research results indicate that there are large differences among projects, in terms of both not being

conducted in the same way and not being explained in the Environmental Impact Statement.

The procedure includes the following steps:

- Presenting the project documentation to the environmental Administration.
- Initiating the consultation for EIA scoping.
- Environmental Impact Study.
- Public participation.
- Environmental Impact Statement and conditions to the project, and Environmental Monitoring Plan.

The analysis of the procedure has been organized for research in three periods, representative of differences in orientation by the national environmental administration. During the first one (June 1989–February 1990) there is no indication of the procedure in the EIS. The second period (until June 1991) includes some information about the environmental monitoring program. Finally, in the third (until August 1995), an effort to describe the procedure in its different phases and its content can be noticed.

The Project's Summary

In the first period, few EIS were issued. The national environmental administration (General Directorate for the Environment) receives simultaneously, in most of the cases, the project's construction design and the EIA, and by doing so, no previous consultation to institutions or people for the scoping is made. The project characteristics are not indicated.

The second period was more abundant in EIS: eight highways, two sections of the high-speed train, a harbor, four dams, and two quarries. Some information about the project is made explicit in the EIS.

For the roads, some have EIA in the construction phase, with no indication of their characteristics in the EIS. In the case of projects submitted to EIA in early phases—generally the informative study phase—EIA selects one or two alternatives with no analysis of their characteristics. In two cases, the best alternative is indicated, but without explaining the environmental criteria used for that decision.

For the railroad projects no explanations about the content of the summary nor the project features are made. The same situation applies for the commercial harbor as for the quarry. For the dams, there is no comparable criteria for the project characteristics and their chronological evolution; in one of the cases, no mention of the project features are made in the EIS; in another, the construction project and the objective of the project are the only information mentioned; in a third case, the EIS accepts automatically an alternative chosen in early phases; in the last case, the EIS indicates several alternatives but without providing any more information about them. All of them lack an explanation of important features of the project.

In the last period, EIS take into account the summary content. They also explain the project characteristics although it is very much focused on their physical location without considering the economic and social features, except for the dams. By doing so, the analyses and environmental conditions required by the projects are very much conditioned by that framework. This is the period with the most EIS issued, and some of the Environmental Impact Studies were evaluated by expert panels resulting in more detailed EIS contents. Among this period's projects are harbors, quarries, and the refrigeration system expansion of a nuclear plant. All of these projects were reviewed during their final or construction phase. There were no major improvements for the EIS process during this period besides the inclusion of the project summaries.

For the dam projects, the issued EIS indicated the projects' objectives and made explicit that no other alternatives have been considered, as the reviews were conducted during the construction phase. They presented a short summary of the physical characteristics of the project, but no mention of social and economic aspects.

Finally, with regard to roads, EIS show variations in content and inconsistencies as to the schedule for implementing project evaluation. Most of the projects do not present any summary, and thus the scoping process to institutions and organizations is initiated without any concrete project documentation. Few of the EIS include complete information about the project design or the study conducted.

Most of the EIA in these projects have been conducted when very little could be changed, and then only a few mitigating measures are proposed, mostly limited to reforestation. For those reasons EIA cannot prevent severe impacts on the biophysical and the social environment. Such consequences can only be explored at early stages of a project, when time is given to looking at the outcome of a proposed development.

In addition to that, in such a constrained EIA, process for dialogue among the institutions in the project or environmental experts or any other opinion is made impossible.

The Scoping Process

The aim of the scoping process is to present opinions and ideas related to a particular EIA. The environmental administration is in charge of deciding which institutions, organizations, and people are consulted. The theory is clear; let us see the reality.

During the first two periods, EIS indicate nothing about scoping; in the last period, there is some improvement in this regard as a list with the institutions and people consulted, and their answers, is provided. Some of the conclusions from these last periods are the following:

- The Administration was the most frequently consulted body. There is a lack of expert opinion and testimony, and the environmental groups are the only representatives of public opinion.

- On the other hand, the least consulted are political and social organizations, and universities or research institutes.
- Participation is generally low because, among other things, the queries are made to the top of the administrative hierarchy and the procedure is too rigid for social organizations, which require more flexibility.

Persisting with such a procedure is impeding real public participation processes and, as such, alternative solutions to the problems.

In the third period, EIS made explicit the content of the environmental impact study, which is an improvement in comparison with the previous periods, but they also show lack of relevant information and detailed impact analysis, mitigation measures, and monitoring program. In particular, there are no prevention measures or any different from corrective ones, as the EIA is conducted in the last phase of the project when there is little possibility to change the site location, or the technology, or similar ones. This is important to notice as the "spirit" of the law defines EIA as a preventive tool, and thus a tool for planning rather than for correcting negative impacts.

The Environmental Impact Study

The Environmental Impact Study should start when the environmental Administration receives the project documentation, makes the screening process, and sends the EIA scope to the competent administration (the one responsible for approving the project). In fact, very often, by the time the environmental administration knows of the project, the Environmental Impact Study has already been made.

Under such circumstances, the screening process cannot give any input to the study but only verify its deficiencies. Often, the environmental administration also both performs and receives the scoping responses late, which means a delay for the project. As a new regulation on "administrative silence" is expected to be approved, it might imply an unfeasibility of the EIA procedure—or just to accept the project without any control of the environmental impact study—given the lack of resources within the administration.

In the first two periods, the information included in EIS regarding the study's content is very scarce; it is limited to a description of both the environmental conditions and the project alternatives when applying. There is no analysis of the content nor its deficiencies, no effects evaluation, nor mitigation measures or a monitoring program.

In the last period, EIS include giving an analysis of the study's content. Through this, one notices how poorly these analyses are made: lacking relevance, little detail in impact analysis, and a vague definition of the mitigation measures and the monitoring program.

This effort to improve EIS by including this information does not mean more efficiency as a final result, as the EIS, even with those deficiencies,

do not conclude by requiring additional studies or new alternatives, and, in most of the cases, they just grant approval of the development.

Public Information

In the first and second periods EIS say nothing about the public information process, nor about relating any allegations to the environmental conditions of the project.

Only in the last period do EIS include a list with allegations from the public and the names of those who brought them.

One case is remarkable (Bilbao Harbor), where some social organizations proposed new solutions to some of the problems, which had not been formulated in the screening and scoping process, nor in the Environmental Impact Study.

In some road projects, the people also indicated alternatives to some sections, but the EIS did not include them.

The Official Environmental Impact Statement

EIS allows environmental control of the project, but in the Spanish experience only in very few cases has a project been stopped or forced to choose a different location. Nor had they been made to yield to revision of some part of the procedure to correct the detected deficiencies in the process.

Regarding the project environmental monitoring, there is no way for verification; no administrative institution performs EIS follow-up. Only two regions, Andalusia and the Basque country, have teams for this task.

In the first period, the attached environmental conditions in the EIS are very general, not tied to the project or, more surprisingly, to the physical environment where the project was to be located. Environmental follow up was limited to requiring additional reports, but only when there is no possibility of any compensatory measure, as the procedure is legally closed.

During the second period, the uniformity in the environmental requirements, regardless the characteristics of the project, is what stands out. The conditions relate only to the physical environment.

In the last period, one can notice more differentiation in the environmental conditions by projects and more relation to the affected environment. For the road projects, the particular environmental conditions follow the standard of previous periods, but they are more concrete on designing the measures, and they incorporate noise and fresh water protection. Nevertheless, the conditions are always referred to as countable measures. For the dam projects, EIS focus on corrective measures such as revegetation and pollution control. There are no compensatory measures for social impacts.

In the last two periods, with regard to environmental follow-up and monitoring, EIS are limited to requiring landscaping sites. They also require a series of environmental reports.

Analysis of the Environmental Impact Study Content

This research on the particular Environmental Impact Studies has been done on a sample of the analyzed EIS, taking into consideration different type of projects.

The main conclusions of the research are the following:

- The first surprising result is that none of the EIA mentions any of the scoping process indications made by the environmental agency, when supposedly that process is performed specifically to focus the Environmental Impact Study.
- The project alternatives presented for environmental evaluation are, in most of the cases, pseudo-alternatives as they do not even consider a change of location. Thus, the decision-making on the project's alternatives was conducted without considering environmental factors in their analysis.

There is also a shortcoming in the impact analysis in the instance of production processes, emission of pollutants, waste, and environmental safety conditions. In some cases, some of these aspects are described but not thoroughly analyzed. Issues such as project technology, energy use, and demand for goods and services are examples of those absent from the analysis. Some of these elements are indicated afterward in impact evaluation, but they should have been analyzed before, related to essential parts of the project.

The construction planning is not mentioned in most cases, and sometimes is only provided for the first phase, omitting the second phase, which makes it difficult for overall project analysis. The same applies for the labor needed throughout the project.

The project under review should provide enough information for the EIA procedure. This particular requirement should be promoted by the environmental Administrations.

- The biophysical analysis considers most of the usual elements for EIA, excepting the landscape. In cases where it is included, it is done through visibility analysis, omitting fragility and other features. The study area is generally limited to the immediate surroundings of the project, not taking into account possible effects on the region. Fauna is examined without concrete application to the study area. Evaluation of biophysical conditions is superficial if done at all. There is no reference to sources for most of the biophysical data in these studies; only a general bibliography is provided.
- The social analysis is also deficient. Demography is examined only briefly and with a level of detail inadequate to the project. Territorial analysis is limited to descriptions of population distribution, and both the study area and its detail are unsuitable. Historical patrimony and

the economy are the two types of analyses made in most of the cases, but with only minimum consideration. It is curious to notice that legislation affecting the territory and the historical and territorial constrains are brought up only in one case. Most of the data used for these analyses are secondary sources, and often are out of date. Municipal government sources, which are important references for land use, planning, legislation, are under-utilized. Most of the EIA do not conduct social acceptance studies, and when they do, the methodology is left unexplained.

The lack of social acceptance studies correlates to the low value that the Spanish Environmental Administration places on the social dimension of environmental assessment. For that reason, it is difficult to predict the impact of projects as it is mainly based on secondary data.

- There is no provision for describing the evolution of the biophysical and social environment, except for some demographic analyses in some cases. This fact implies that there is no global vision of the situation, which is very important to impact identification.
- The lack of standardized methodology to evaluate environmental conditions is evident. For biophysical analysis specific methods are only used to elaborate primary data, or when mandated by legislation. For social analysis, it is restricted to analyzing quantitative statistics and statistical indicators.
- Impact identification considers most of the relevant elements in these projects, but not always identifies the concrete reasons behind the impacts.
- Regarding the criteria, methodologies, and techniques used for impact identification and for its evaluation, they are absent in most of the cases, or are very general. Some of these shortages are the following: In some cases, impacts are evaluated in groups, tending to muffle their magnitude, and enhancing the positive ones without explaining the criteria for doing so; in some others, there is no coordination between biophysical impacts and social ones, evidencing a lack of interdisciplinary analysis in EIA; the impact matrix is the favored technique but very irregularly used—instead of as a tool of previous impact identification, it is used as the only analysis.
- Mitigation measures seem to be the only basis in Spain for EIS, and that is why their orientation and definition are central.

These measures have changed from being preventive, compensatory, and corrective—as is the "spirit" of the law—to being only corrective ones. Such a situation implies *de facto* an adaptation of the EIA result to the project. The only others considered in some of the EIA are compensation ones, and mostly tend to suppress social conflict. But even just considering

the corrective measures, the ones being included have exclusively been those easy to define and to budget, leaving out the ones not responding to such a model.

This fact means that aspects not directly related to the construction work are excluded from control, as they are problems either not clearly defined before or because more data to evaluate them are needed. But even analyzing just the impacts considered in these studies, the result in some cases is that more than 60% of the severe ones cannot be corrected (according to the study), and even so, the project is approved; if we included the actual correction level of the proposed mitigation measures, the proportion of impacts without correction would be higher. In any case, this last analysis cannot be done as there is no evaluation of the effectiveness of these measures.

This lack of control is the result of the numerous deficiencies in the EIA procedure. To summarize these: the relativeness in the procedure observance; accepting for review projects in the last phase when little can be done; validating projects whose EIA lack of relevant analyses; and over all, issuing EIS based on environmental conditions which only include very limited corrective measures, without a comprehensive analysis.

- The monitoring programs in these studies lack specific action. In most cases, they are limited to setting objectives for the corrective measures, in particular those regarding revegetation. Nevertheless, there are no provisions for its verification, for the residual impacts, the likelihood that others might appear, and, overall, the articulation of new measures to take and who is in charge of the control and accomplishment of the objective and planning stated in the program.

In such circumstances, we can say that monitoring programs do not exist, as they have minimal effect.

- Document summary: Let us remember the importance of this document to explain the EIA findings in understandable language for the public. In the EIA analyzed so far, this goal has not been reached; there are even some EIA without this document; in some projects only parts of the study is included, focusing on impact assessment and mitigation measures; for those measures, no criteria is given for severe impacts, and sometimes there are contradictions in the results; the impact matrixes are also not explained.

Very few of the EIA researched include a complete summary chapter, describing all EIA parts and the evaluation criteria.

Conclusions

This research gives us elements to make some conclusions regarding the objectives to be pursued and the content to include in environmental assessment, and, over all, the improvement of the EIA procedure and EIS accom-

plishment in Spain. Moreover, the procedure should improve the participation of experts, organizations, and institutions, and should promote public participation to democratize the decision-making process and to incorporate alternative solutions for assessment.

The first conclusion of this research coincides with the experiences in other countries: It makes little sense to do EIA only for projects; it should be also carried out for policies, plans and programs.[11] An evaluation undertaken at that level allows for the incorporation of the ecological and social implications from the beginning of the decision-making process. Such an evaluation allows the incorporation of other alternatives and the evaluation of environmental costs from the early stages, and by doing so, it would reject those environmentally (ecologically and socially) unacceptable.

EIA of projects integrated in programs already evaluated would perform at a more concrete level. In the current situation, however, when the EIA process begins, the project is already too advanced, which makes it harder to consider alternatives, such as those with less environmental costs.

Another general conclusion is that regarding the evaluation framework—and in particular the value orientation of the evaluation process, either of politics, plans, and programs or of particular projects, where the sustainable development criteria should be an important element in environmental impact assessment.[12] EIA only makes full sense when applied as a preventive tool, and so "practical" in terms of sustainable development, and when it is applied in an interactive process from the first planning stages of the activity.

The cases researched show that is extremely difficult to evaluate and follow-up EIA. On one hand, there is no easy access to both the project and the EIA information. On the other hand, the very EIS did not include until very recently the EIA content, producing a disconnection between the technical study and the EIS.

EIS, in short, have become "legitimization with conditions" of both the process and the project, and so dismissing its capacity as a planning and decision making tool.

The last conclusion relates to monitoring. It does not make sense to continue with an EIA process whose executive tool is an EIS with no monitoring procedure. Environmental monitoring program has a dual purpose: the actual control of the activity, from an environmental point of view, and the knowledge for future situations in similar activities.

Proposals

The core of these proposals, based on the conclusions of this research, is to provide some elements to make the EIA procedure a planning and

[11] There is no EC Directive on Policies, Plans and Programs yet, but hopefully it will be approved soon. Some countries in EC have SEA (strategic environmental assessment) experience.

[12] Let us note that even the World Bank is issuing some publications in that sense: World Bank (1991), *Environmental Assessment Sourcebook*, Technical paper number 139.

decision-making tool capable of working to prevent environmental problems. These proposals are intended for Spain but might be applicable to other countries.

Stages of the Planning Process Which Applies to EIA

For any type of activity, three stages with different EIA might be applied:

FEASIBILITY PHASE. For activities not necessarily tied to a particular space, this first stage is necessary to select an optimal area in large scale, where carrying capacity can be defined. The final goal would be selecting one or more optimal zones.

For activities tied to a territory (e.g., lineal infrastructures), at this first level the objective is to detect its suitability or whether, on the contrary, the environmental cost (biophysical and social) would make it inadmissible. In the case that the activity is considered acceptable, several alternatives should be indicated.

STUDY OF ALTERNATIVES PHASE. In this second phase of the planning process the different alternatives and the optimal zones selected before should be compared in detail.

Such an alternative comparison should be made on the bases of identifying and evaluating the predicted environmental impacts. The final goal here is to point to one or more location alternatives in order to both minimize negative impacts and maximize positive ones.

For those alternatives that have been selected in this phase, the prevention, protection, correction, and compensation conditions should also be established. Previous studies should also be indicated for designing the project in detail in those aspects that, because its vulnerability or importance, might imply modifying the technical or technological conditions of the project before going further.

PROJECT PHASE. The aim here is to do a detailed analysis of the chosen alternative impacts and of the measures to take in order to protect, correct, and improve the environmental conditions and, eventually, the monitoring program for the several phases of the project—in particular the construction and the operation ones—and the dismantling phase if it applies.

In short, the entire planning process would be organized through several phases in EIA procedure, having a different content and detail according to the kind of decision to be made in every one of these phases.

Screening, Social Acceptance, and Public Participation

Public participation must be included in all of the phases. For the three indicated EIA levels, a summary schema is proposed to integrate the analyses for public participation and the public participation itself.

Scoping

Feasibility Phase:

- choosing of the institutions, groups, and experts to elaborate the previous environmental criteria.

Study of Alternatives Phase:

- incorporation of other consultants with more experience/competency in the specific territory;
- environmental assessment indicating specific problems.

Project Phase:

- incorporation of other social sectors that have appeared in the process;
- locally focused environmental assessment.

Social Acceptance Study

Feasibility Phase:

- global approach to problems and social groups affected.

Study of Alternatives Phase:

- detecting criteria for the social negotiation of different alternatives.

Project Phase:

- evaluation of loss and harm caused by the project.

Public Participation

Feasibility Phase:

- designing the procedure and consultation to affected people and opinion groups and indication of alternatives.

Study of Alternatives Phase:

- negotiation for the different alternatives.

Project Phase:

- compensation negotiations;
- legal allegations.

Environmental Impact Statement. In general, EIS should give account of the scoping process, the EIA content, the public participation process and the procedure.

Feasibility Phase:

- indication of the environmental operative alternatives, including those for public participation process;
- environmental conditions: project technical and technological criteria; technical team composition; EIA scope and content; definition of critical conditions; key environmental factors hierarchy.

Study of Alternatives Phase:

- viable alternative selection;
- environmental conditions: more detailed scope of all the aspects indicated in the previous level, and elaborating the prevention, protection, complementary, and correction measures, as well as the definition of complementary studies needed.

Project Phase:

- plan for the minimization, protection and complementary measures;
- environmental control program.

To make operative this procedure, it would be important to elaborate "Technical Instructions Complementary to the Norm" for the particular EIA to comply with. Such technical instructions should define and guarantee the concrete scope for every EIA according to different type of activities or projects and for every phase of the planning process.

Those instructions should take care of the following aspects:

- EIA team characteristics (guaranteeing at least a specialist in physical chemical science, other in life sciences, and another in social sciences);
- analyses scales;
- content scope for both the activity and the environment evaluation;
- the minimum budget required to perform the EIA;
- timing
- methodologies;
- social agents to consult;
- concrete responsibilities on the measures to be taken and the follow-up process.

Obviously, the environmental administration needs more resources and trained people in charge of the EIA process in an interdisciplinary way to take these issues in a more effective and coordinated way.

Finally, a central aspect to improve the field is to develop more research for at least the following:

- to evaluate the deficiencies in EIA process;
- to compare procedures/resources and its effectiveness in different countries;

- to provide new analysis methodologies;
- to design carrying capacity and territory saturation maps;
- to advance theoretically on impact assessment, its application to EIA, more connection between both fields (the theoretical and the applied), and interdisciplinary training.

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