

A qualitative assessment of Environmental Impact Studies in Greece

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Abstract Environmental Impact Assessment (EIA) is a proactive methodical process that investigates and predicts the potential direct, indirect and cumulative impacts of a proposed project/activity on various environmental components, ideally from project/activity initiation to decommissioning. The output of the above process is the Environmental Impact Study (EIS) that should be of high quality and include all the relevant information.

The aim of this study is to evaluate the quality of EIS of projects/activities in Greece. The sample consists of 75 complete EIS, conducted after the issue of Law 4014/2011 and includes projects/activities of both categories A1 (extremely significant impacts) and A2 (significant impacts) and of various groups of projects (e.g. hydraulic projects, environmental infrastructure systems, renewable energy sources, industrial and related facilities). The methodology includes a structured evaluation of the above EIS, using the quality evaluation criteria checklist (8 categories and 92 evaluation criteria) of the Environmental Impact Statement Review Package developed by the Impact Assessment Unit (IAU) of Oxford Brookes University. The findings showed that the majority of EISs perform above the average grade of 2.5, when compared against the evaluation criteria. However, the studies omit important environmental and social issues, such as public consultation and alternatives.

Keywords: Environmental Impact Assessment, Environmental Impact Studies, evaluation criteria checklist, Oxford Brookes University Environmental Impact Statement Review Package

1. Introduction

Environmental Impact Assessment (EIA) is defined as the systematic process to identify, predict and evaluate the environmental impacts of proposed actions and projects (Glasson et al., 2012). The purpose of the EIA is to identify and evaluate the environmental, as well as the socioeconomic impacts of a project/activity, ideally from project/activity initiation to decommissioning and prior to any decision regarding its implementation. Various legislative schemes, regarding the establishment of EIA systems, have been introduced worldwide over the last 30 years (Canter, 1994). Each EIA system is unique and is a

product of a particular set of legal, administrative and political circumstances (Wood, 2003). However, the effectiveness of EIA systems is a matter that should be investigated. Among the most frequently debated issues in connection with EISs is 'lack of quality', which can significantly affect the overall effectiveness of the EIA process (Ross et al., 2006). A systematic quality review of EISs involves the sampling and methodical evaluation of several approved project EISs, using a set of review criteria (Anifowose et al., 2016)

In Greece, Cashmore et al. (2002) examined the performance of the Greek EIA system and reviewed 72 EISs produced for development proposals in Thessaloniki during 1991 and 1999 using the amended version of the Lee and Colley Environmental Statement Review Package. Androulidakis and Karakassis (2006) appraised the quality of a randomly selected sample of EISs produced in Greece during the decade (1993–2003) using quality-related indicators and evaluated the overall quality of the selected studies.

The main purpose of this study is to assess the quality of a representative number of EISs that have been submitted after 2011 in Greece, in order to evaluate the effectiveness of the EIA system introduced by Law 4014/2011. The rest of the paper is organized as follows: Section 2 describes the methodology applied, section 3 presents the emerging evidence of the EISs' assessment, whilst section 4 provides concluding remarks.

2. Methodology

In this research study, 75 EIA reports of development projects from various groups are reviewed. The EIA reports are selected randomly from the EISs produced between 2011 and 2020. The established EIS review checklist by Glasson et al. (2005) is used to assess the quality of EISs in Greece. The Oxford Brooked University Review Package (Glasson et al., 2012) is divided into eight sections and within each section there is a number of topics and individual review criterion (92 criteria in total). The package includes the following sections: (i) Description of the Development (4 topics, 21 criteria), (ii) Description of the Environment (2 topics, 9 criteria), (iii) Scoping,

Consultation and Impact Identification (2 topics, 15 criteria), (iv) Prediction and Evaluation of Impacts (3 topics, 13 criteria), (v) Alternatives (5 criteria), (vi) Mitigation and Monitoring (3 topics, 10 criteria), (vii) Non-technical Summary (6 criteria), (viii) Organisation and Presentation of Information (3 topics, 17 criteria).

An example of the structure of the Oxford Brooked University Review Package (Section iv: Prediction and Evaluation of Impacts) is provided in Figure 1.

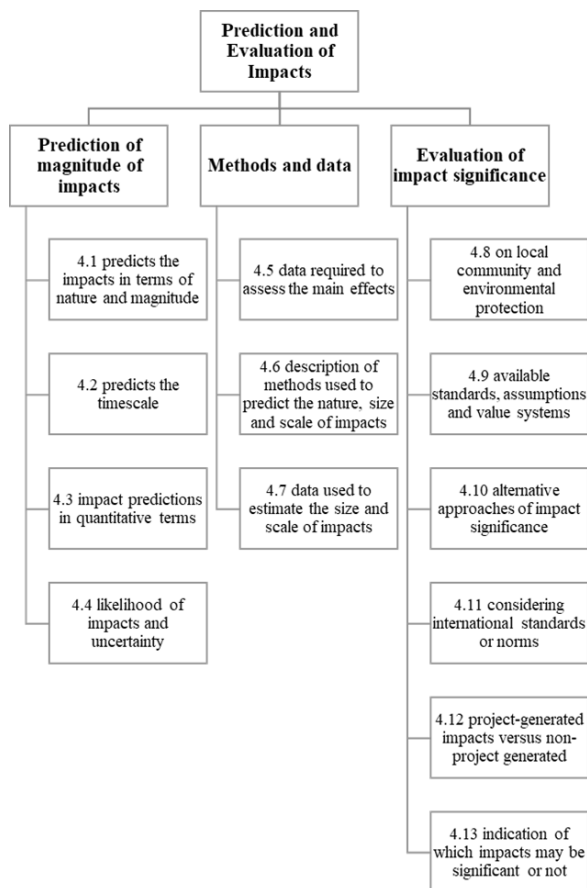


Figure 1. Indicative structure of the Oxford Brooked University Review Package

The EIS are evaluated against the 92 criteria, each of which is graded separately and according to the quality of the information provided in the EIS. It should be noted that some of the criteria are not necessarily relevant to all projects. The grading system of the review package is adapted to the numerical values presented in Table 1. Thus, the review process involves assigning assessment grades, from 5 to 0, according to quality, to various elements of an EIS.

Table 1. Grading system

Grade	Description	Numerical Value
A	indicates that the work has generally been well performed with no important omissions	5
B	is generally satisfactory and complete with only minor omissions and inadequacies	4

C	is regarded as just satisfactory despite some omissions or inadequacies	3
D	indicates that parts are well attempted but, on the whole, just unsatisfactory because of omissions and inadequacies	2
E	is not satisfactory, revealing significant omissions and inadequacies	1
F	is very unsatisfactory with important task(s) poorly done or not attempted	0

3. Results

The sample includes projects/activities from all the twelve (12) categories and covers all the seven (7) Regions of Greece. 72% of the examined projects/activities are classified in subcategory A2 (significant environmental impacts), while the rest (28%), in subcategory A1 (extremely significant environmental impacts).

Figure 2 illustrates the overall average grade for each group. It is obvious that in almost all groups, apart from Transport projects, Bird and livestock facilities, Renewable Energy Sources and Special projects and activities, the total grades are above the base grade of 2.5, which means that the EISs perform adequately against the 92 criteria. Hydraulic projects, Environmental infrastructure systems, Tourist facilities and Energy, fuel and chemical transportation receive the highest grades, while Transport projects, Bird and livestock facilities, Renewable Energy Sources and Special projects and activities receive the lowest grades in the quality assessment. These results might reflect the nature of the developments assessed, as the first ones include larger projects (in size) that may create more complex and controversial impacts. Thus, the project proponent might invest more resources and time in conducting the EIS. On the other hand, the projects/activities with the lowest grades include mostly developments with scarce environmental impacts.

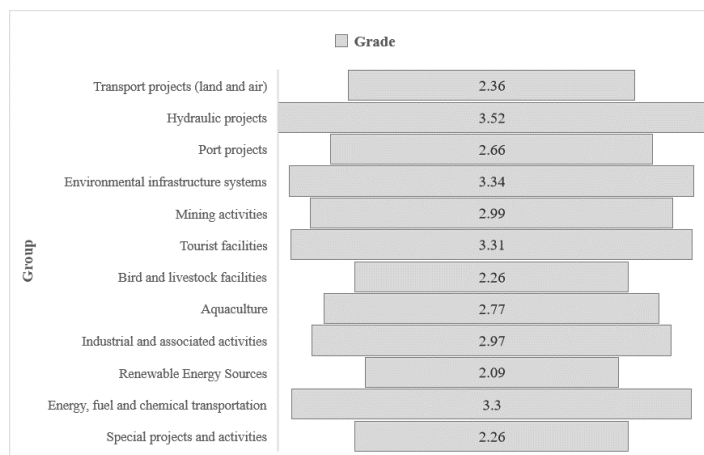


Figure 2. Groups' performance of EISs

Figure 3 presents the total average grade of the EISs evaluated against the eight (8) sections of Oxford Brooked University Review Package. The section of Alternatives is the section that receives a relatively low grade, below the average of 2.5, followed by Scoping, Consultation and Impact Identification and Mitigation and Monitoring. The Non-Technical Summary and the Description of the environment receive the highest score.

In most of the examined EISs, the section of Alternatives is completely missing, while in others, only a simple explanation of the final choice is included, without identifying and analyzing any other possible alternatives.

The analysis of impact is related to the size of the project. In some projects, the potential impacts are expressed in both qualitative and quantitative terms. However, in most EISs, many evaluation criteria of impacts are missing (e.g. magnitude of impact, permanence of impact, reversibility of impact and confrontability of impact).

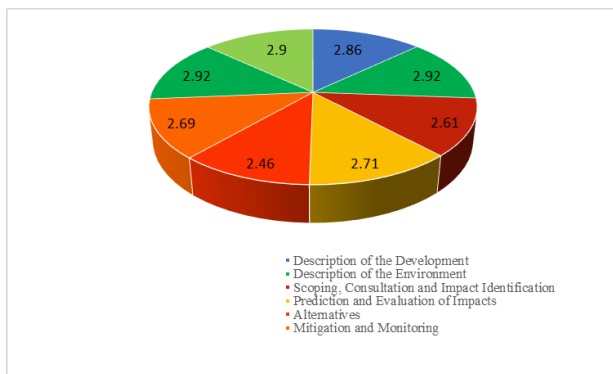


Figure 3. Performance of EISs against Oxford Brooked University Review Package Sections

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4. Conclusions

The quality of the EIS is of great importance in order to properly inform the public and decision makers about the potential environmental impacts of proposed projects/activities and the measures to be taken to mitigate the adverse effects (Canelas et al., 2005; Peterson, 2010; Badr et al., 2011). The quality of EISs produced in Greece appears to vary between different project types, although the data should be interpreted with caution given the small sample for some groups.

Most weaknesses are identified in the alternatives section and quantitative impact assessment. This finding is in qualitative agreement with the results of other previous studies of EIS quality, which support that descriptive and presentational tasks perform better than core analytical tasks (e.g. Baker and Wood, 1999; Badr et al., 2004; Badr et al., 2011).

According to the EIS quality evaluation results, the majority of EIS seem to perform above the average grade of 2.5. Consequently, the implementation of Law 4014/2011 has positively affected the quality of EISs, as the findings of this study indicate higher quality of EISs produced for development proposals, compared to the results of a previous study performed in Greek project/activities (more than half of the studies are of unsatisfactory quality (Cashmore et al., 2002).

Innovative work on systematic periodic quality review of EISs is necessary to further highlight specific problematic issues, promote best practice guidelines and encourage both the proponents and consultants to improve the quality of EISs.

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