

연구논문

# Comparative Analysis of EIA System between Paraguay and South Korea

Hugo César Martínez · Sang-Pyo Hong

Department of Environmental Engineering, Cheongju University  
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파라과이와 한국 EIA 제도 비교 분석

Hugo César Martínez · 홍상표

청주대학교 환경공학과

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## Abstract

파라과이와 한국의 환경영향평가에 관련된 제도와 법률은 환경영향평가 대상사업, 실행방법 및 사후감시 등에서 상이하다. 양국의 환경영향평가 제도 중에는 전혀 관련 없는 것도 있는데, 경제적, 사회적, 문화적, 역사적 그리고 지연조건이 상이하여 양국의 환경영향평가 제도에 영향을 주는 것으로 분석된다. 파라과이에서는 스코핑이 Term of References (TOR)가 준비되는 단계이다. TOR은 환경부에 의해 준비된 특정의 환경영향평가의 요구조건을 포함한다. 파라과이에서는 스코핑 단계에서 환경부의 주도로 주민참여가 진행된다. Environmental Impact Relatorio (RIMA)가 개발사업으로 인해 영향을 받는 지역사회에 시행되고, 간결하고 이해하기 쉬운 표현으로 작성된다. 파라과이에서는 EIS가 승인되기 전에 RIMA를 지역사회에 공개한다.

주요어 : EIA, TOR, RIMA, Paraguay

## I. Introduction

The past two decades have been characterized by passage of major federal legislation dealing with the environment, including specific legislation on control of water and air pollution, solid and hazardous-waste management, resource pro-

tection, and soil and groundwater remediation. Perhaps the most significant legislation is the National Environmental Policy Act (NEPA) of 1969, which became effective on January 1, 1970 (Canter, 1996). NEPA represents the national environmental goals and policies which are intended to mitigate mistakes of the past and to

avoid possible problems in the future through thoughtful and coordinated planning efforts (Bregman, 1999).

Environmental Impact Assessment (EIA) is a tool used to identify the environmental, social and economic impacts caused by various human projects. It aims to predict environmental impacts at an early stage in the project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.

EIA requirements have been applied, to varying degrees, to policies, plans, programs, legislative proposals, technologies, development assistance, products, and trade agreements (Lawrence, 2003).

The EIA is one of the fundamental pillars of a country's environmental laws, additionally it is one of the standards by which a country is considering to preserve the environment and reduce pollution from different human activities, through its regulations for each activity. The EIA law is implemented worldwide, and differs between countries depending on the regulations and activities of each individual country.

The Korea government was pressured to take measures to handle emerging environmental problems, as rapid industrialization and urbanization since the 1960s made the quality of the environment deteriorate rapidly, especially from the mid 1970s. Based on the development of environmental regulations correspondent to EIA, in 1977 the Environmental Conservation Act was enacted for the basis of the introduction of EIA. In 1981, the legislation and notification of "Regulation on the Drafting of Environmental Impact Assessment Statement" could frame the imple-

mentation of EIA in a concrete way. In 1993, "Environmental Impact Assessment Act" was enacted as an independent law. EIA in Korea has been embodied with Korea Environment Institute (KEI) establishment in 1997. In 1999, the Prior Environmental Review System (PERS) was established as preliminary basis for Strategic Environmental Assessment. In 2000, the Impact Assessment Act on Environment, Transportation and Natural Disaster replaced the Environmental Impact Assessment Act (Lee, 2006).

The Implementation of EIA in Paraguay was a long process because the system of government which was dictatorial, prevented the process. In the 1980s, Paraguay began with implementation of the EIA, not as law but as rules granting certain loans that were made to the World Bank. In 1989, when the dictatorial government was overthrown, Paraguay began to implement the EIA as a law.

With the new government system, that was democratic, the Paraguayan parliament promoted the EIA law national law. In 1990, it enacted the first law of EIA which was repealed in 1993 and regulated in 1996

## II. Methodology of Research

The method of this research will provide the chronology and ordered steps to follow in order to achieve the research objectives which are the differences and similarities of environmental acts related to the Environmental Impact Assessment of South Korea and Paraguay.

### 1. Formulating of the research objectives

Compare the existing acts on environmental impact assessment between South Korea and

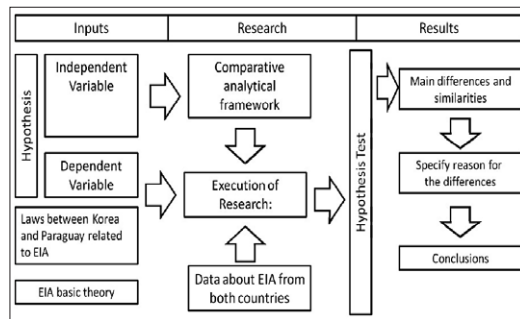


Figure 1. Methodology Process

Paraguay. Identify differences and similarities of environmental acts relating to the EIA between South Korea and Paraguay. Analyze environmental acts of the EIA between South Korea and Paraguay. Evaluate the differences and similarities between the acts of the EIA between South Korea and Paraguay.

## 2. Preparation of the Research Design.

This part will be an analytical and critical step of the research. The research design will conduct all the research processes with the purpose to give an appropriate answer to the question of research.

As basically depicted in Figure 1, the objective of the research is an analysis of how the acts and regulations relate to the EIA process in each country and compare the differences between them.

This research will be investigating different acts and regulations that relate directly to the EIA and will utilize methods that can simplify its comprehension and comparison. At the same time, it will give a broader view of the EIA application. It will analyze examples of the application of the EIA in the situations of South Korea and Paraguay.

Input variables and EIA theories will serve to interpret the hypothesis and research results that

contribute to analyzing the subject of the EIA between Paraguay and Korea.

## III. Evolution of Environmental Impact Assessment in Paraguay

The United Nations Environment Programme has defined Environmental Impact Assessment (EIA) as an examination, analysis, and assessment of planned activities with a view to ensure environmentally sound and sustainable development (UNEP, 1996). The OECD, the United Nations Environment Programme and the World Bank have all published guidelines for instituting EIA legislation and provided training and advisors (Ruster *et al.*, 1993).

Environmental rights and obligations have now been embodied in the constitutions of most Latin American countries. Some Latin American countries have adopted national environmental strategies, or have incorporated an environmental component into the national development plans.

Since Rio Declaration in 1992, all Latin American countries now have a ministry or equivalent devoted to the environment. However, many of these these organizations are in a hierarchically inferior position to other areas of public policy and are given lower priority in the allocation of financial and human resources.(UN, 2010).

In Latin America, Bolivia, Nicaragua, Paraguay and Peru legally mandate public participation early in the drafting process of Environmental Impact Assessments.

The submission of an EIA was maturing until the need for global regulation through legislation requiring the submission of an EIA for projects affecting the environment. From this background, the Paraguay government enacted the Law 294 in

1993 which required the submission of an EIA of 20 projects, as well as the exclusion of some cases considering that such projects do not produce major adverse effects on the environment or because such projects are not developed on a large scale of pollution, such as national defense.

Three years later, after a thorough study by a special committee composed with professionals, in 1996 the government of Paraguay legalized and put the rules of the implementation of the Law 294/96 through Decree number 1428/96.

The Law 294 declared mandatory Environmental Impact Assessment: The Environmental Impact Assessment includes legal effects, any modification in the environment caused by human activities or projects that have positive and negative consequences either direct or indirect. The assessment investigates the effects on life in general, the biodiversity, quality, or a significant quantity of natural resources or the environment and its use, and the welfare, health, personal security, habits and customs, cultural heritage, and legitimate livelihoods of people (SEAM, 2011).

As described in table 1, the Project is a document prepared by the proponent for its approval and then, to be executed.

The Project should contain (Ley 294, 2011):

A) A description of the type of work or nature of the proposed activity, includ-

ing their owners and managers, their locations, magnitudes, installation process, operation and maintenance, types of raw materials and inputs to be used, the stages and the implementation schedule, number and characterization of the labor force.

B) An estimate of the socio-economic significance of a project, its relationship with government, departmental and municipal policies, and its relevance to sustainable development policy, as well as territorial and urban regulation and techniques to reduce the impact on the environment.

C) The boundaries of the geographic area to be affected with a physical description, geological, economic and cultural, detailed quantitative and qualitative terms, the area of direct influence of the works and the environmental inventory, thereby to characterize their state prior to the planned transformations, with special attention to determining watershed.

D) The analysis needed to determine potential impacts and risks of the work or activities at each stage of implementation and completion.

E) Environmental Management Plan that will contain the description of the protective measures or the mitigation of negative impacts of the compensation and allowances.

Table 1. Stage and Participants

STAGE	PARTICIPANTS
Project or Activities	Proponent
Notice to the Authority and presentation of Basic Environmental Questionnaire	Proponent
Get the terms of reference	consultant
Environmental Impact Assessment (EIA)	consultant
Preparation of Environmental Impact Relatorio (RIMA)	consultant
Notice and public participation	Management Authority
Environmental Impact Statement	Management Authority
Control and Monitoring	Management Authority

- F) A list of technical alternatives of the project and its location.

The Project should inform the Minister of the Environment of the analysis and then determine if the project needs to develop an EIA, with the checklist. The checklist should contain:

- A) Project ID: Name of the project and name of the owner, property, location map, and its topography. The proponent should attach the property title, authorization from the municipality, statement of interest from the Department Government and the project description.
- B) The project objectives, type of activity (forestry, livestock, agricultural, industry, tourist, urbanistic).
- C) Raw material (name and quantities), production per year, specified kind, quantities and treatment of the waste, noise production.
- D) The area description (total surface, topography description), characteristic of the area (river, wetland, vegetation types, distances from the population).

After informing the Minister of Environment, the Minister will inform the proponent if the project needs an EIA. If the project needs an EIA, the Minister gives the proponent or consultancy the Term of References (TOR). The TOR, is a document that contains the content requirements of a particular EIA prepared by the administrative authority.

When the proponent gets the TOR, the consultancy begins to develop the EIA according to the instructions given by the Ministry. Upon completion of the EIA, the consultancy should present the Environmental Impact Relatorio (RIMA). This RIMA should be addressed to the affected community, and be written in clear, simple and

understandable words.

It is like a summary of the EIA available to all stakeholders, so that they could understand the advantages and disadvantages of the project. The document must be submitted separately from the EIA document and should contain the summary, conclusion and its clarifications. It may include graphic materials, to facilitate their interpretation.

The Ministry offers the community the summary of the EIA to be consulted and gives their suggestions to the administrative authorities. After giving the community their suggestions, the Ministry gives the Environmental Impact Statement to the proponent to continue the project or not.

Monitoring Program is a technical document of the environmental control, with specific parameters, to carry out monitoring of the quality of different environmental factors, as well as control systems and measurement of these parameters.

The Environmental Monitoring Program can be structured in three sections: related to the design phase, construction phase and operation phase.

According to the Figure 2, the person or the company, who wants to make an EIA based on the regulation, should inform the minister of environment with the Basic Environmental Questionnaire, location certificate from the Municipality and declaration of interest from the departmental governance. The minister will make a decision within 30 days whether or not it needs to be presented as an EIA.

From the Basic Environmental Questionnaire, the minister could make inquiries to the people, institutions and authorities expected to be affected by the Project, related with the environmental impact that in the opinion of each is derived

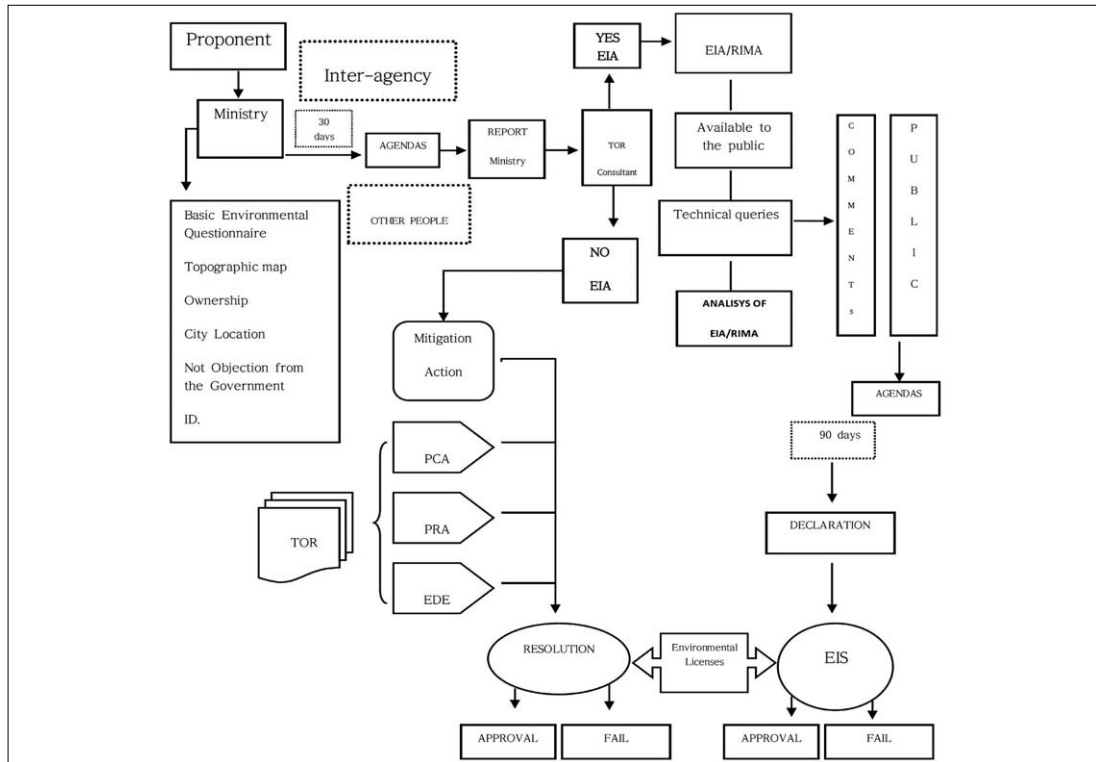


Figure 2. General Process of EIA in Paraguay

Source: Paraguay Minister of Environment.

from them, or any indication that it is beneficial for environmental protection. Activities or projects because of their size are below the limits for the completion of an EIA shall be governed by environmental standards regulation.

The ministry will establish rules for the participation of the community from the area where the project will be developed. This area is understood to be the geographical area with each alternative location from the project that should be well defined in the TOR stipulated by the minister.

When the minister established that an EIA needs to be made, the minister fixed the content requirement in the EIA. Failure to settle the obligation to carry out an EIA, the project should incorporate mitigation action (in Figure2) for the environment.

The mitigation action for the environment, should content:

- 1) Plan de Control Ambiental (PCA): The Environment Control Plan is a document presented by the proponent that explains the project plan how to prevent and control the negative impact coming from the project. This document should be presented to the ministry, explaining in detail the negative impact in the environment and the alternative activities that can reduce the negative impact in the environment
- 2) Plan de Recuperaci?n Ambiental (PRA): Environmental Recovery Plan is a document describing protocols for protecting and enhancing rare and endangered species population in the influenced area of the project. This document should present a list of animal

and plant that live in the area of the project. If there any rare and endangered species of animal and plant, the project proponent should present a protection plan to those species.

- 3) Estudio de Desague de Efluente (EDE): Sewage Effluent Study is a document that explains the system of the Sewage Effluent treatment in the project. The study of sewage effluent is a very important document if the project does not require the submission of an EIA because in Paraguay there are many small industries processing the raw materials coming from the harvest. For example, sugar cane waste dumped in the courses of streams or rivers without any treatment is killing the fish as well as farmers who use pesticides without a preventive plan are causing contamination of soil, air and water course. In the EDE, the proposer will explain the treatment to the waste they produce in the project.

The project manager must submit progress reports during the execution of the study, in order to expedite the evaluation process itself, when the ministry requires. When the EIA is finished, the proponent shall refer the document to the ministry.

The ministry will formulate the Environmental Impact Statement within 90 days, where it establishes the condition as to how to protect the environment. If the EIA is not approved, the ministry should announce its refusal and grounds to the holder.

The RIMA should be available for public review and consultation within 15 days in the ministry or in an available place, which is communicated through publications for 3 consecutive days in 2 newspapers and radio. The 15 days should be counted from the day following the

last advertisement. This could be extended if the arguments and formulations presented merit further consideration as determined by the ministry.

The RIMA should be widely publicized in the affected areas. For this purpose, the proponent should make copies of the RIMA and submit it to the municipality, departmental governance and the ministry for the public consultation.

Before giving the approval of the Environmental Impact Statement - the suggestions from the ministry made during the period of public information within 15 days following the termination of the proceeding- should notify the proponent of the ways to develop the project, if the study should be modified and / or supplemented, setting a deadline of 15 working days for compliance, it may be extended if the circumstances and criteria required are from a higher ministry.

Observations or comments to the project must be in written format including technical foundations, scientific and legal support. Comments may be fully or partly from the EIA according to the technical evaluation.

The EIS from the minister should have:

- 4) The project approval.
- 5) The return of the EIA to complement or rectify data and estimations, or partial or total rejection.
- 6) Validity period: maximum 2 years, after 2 years the project should be evaluated and then asked to extend the EIA or make a new one.

In the absence of parameters, setting benchmark or official standards for the purposes of fulfilling the obligation of the EIA, have recourse to international treaties (Emergencias, 2002).

The Environmental Impact Statement is a document to continue the project. The EIS will be

canceled if a breach occurred in the Environmental Management plan.

The Ministry may suspend the activities in the following cases: 1) Failure to comply with mitigation measures or compensation, resulting in damage to others or the environment. 2) When there are changes in project implementation 3) When any deliberate concealment or misrepresentation of information in the EIA.

#### **IV. Comparative Analysis of EIA between Paraguay and South Korea**

Analyzing the EIA systems of Paraguay and Korea, we can conclude that general EIA systems are similar, but different in some process from each other. The public participation in both countries, Korea does it at the initial process, but in Paraguay at the end of the process the community can participate and give technical-scientific suggestion according to the regulation.

The consideration of alternative project is required for both countries, to minimize the project impact in the environment. And it is controlled during the mitigation stage if the alternative project is implemented.

There are several projects in each country that do not match, in another words, projects that are specific for each country that require an EIA. For example, in Paraguay, an EIA is required for projects in the area of farm and forestry, and in Korea projects related to the development of tourist places require an EIA.

The results of the comparisons made in the system of Environmental Impact Assessments between Korea and Paraguay show that the components of the EIA system are different, some

projects overlap, but some project parameters between the two countries are distinct, which makes them different when conducting an EIA.

Other project components of the EIA are not specific to one country or the other. For example, the Distribution Complex, Passenger and Cargo Terminal, and Terminal Passenger, apply to EIA standards in Korea, while in Paraguay these projects are not required. This is because Korea's population is around 50 million, which means there is a large movement of people in the country, while Paraguay has 6 million, which implies that Paraguay does not need an EIA in these project areas. Another similar project is the Parking Area in Korea; compared to Paraguay, the transportation fleet is larger than that in Paraguay.

Looking at the economic activity of each country, industry is one area where Korea has well developed and well defined project types. Similarly, the EIA project parameters are well established, which is not the case in Paraguay. Agriculture is an area of the Paraguayan economy where the types of projects and their parameters are very specific, but the Korean EIA does not mention. Another striking point from an economic standpoint is the construction of ports which, by its location, Korea has developed well to facilitate the exports and imports. In Paraguay, a landlocked country, direct sea access ports are not well developed.

#### **V. Conclusion**

Upon completion of this study, we can confirm and prove the hypothesis that there are differences between the Environmental Impact Assessment Acts of South Korea and Paraguay,



because the types of projects are different, and if they match, the project parameters to consider are different.

This differentiation reflects how the economic, social, cultural and natural conditions of the countries directly and indirectly influence the articulation of the laws and regulation pertaining to EIA.

Korea has rapidly industrialized, therefore the basis of its economy has been based on commercial industry, while Paraguay is a country where the staple economic base is agriculture. This contributes mainly the EIA regulations between the two countries different, as is the population density of the two countries.

Analyzing the EIA process in Paraguay, the TOR is one document prepared by the administrative authority and contents the requirements of a particular EIA. The consultancy begins to develop the EIA according to the TOR instruction. Upon completion of the EIA, the consultancy presents to the community the RIMA of the EIA to be consulted and the public give their suggestions to the Ministry. The Ministry, after getting the community suggestions, the ministry gives the EIS to the proponent to continue the project or not.

## References

- Bregman, Jacob I., 1999, *Environmental Impact Statement*, United States, CRC LLC, p.7
- Canter, L. W., 1996., *Environmental Impact Assessment*, New York: McGraw Hill, p. 1
- Emergencias, C. D., 2002, *Compilación de Leyes Ambientales*, Asunción, QR Producciones Gráficas, p. 13-14
- Lawrence, D. P., 2003, *Environmental Impact Assessment: Practical Solutions to Recurrent Problems*, New Jersey: John Wiley & Sons Inc., p. 10
- Ley 294, 2011, HYPERLINK "<http://gat.org.py/gat/baseslegales/LeyN-294-Deevaluaciondeimpactoambientalydecretoreglamentario.pdf>" <http://gat.org.py/gat/baseslegales/LeyN-294-Deevaluaciondeimpactoambientalydecretoreglamentario.pdf>
- Lee, Y. J., 2006, *Environmental Impact Assessment (EIA) in Korea*, Korea Environment Institute.
- Ruster, Bernd, Bruno Simma, and Michael Bock, eds, 1993, *International Protection of the Environment: Treaties and Related Documents*. Dobbs Ferry, NY: Oceana Publications.
- SEAM, 2011, [www.seam.gov.py](http://www.seam.gov.py)
- UNEP, 1996, *Environmental Impact Assessment: Issues, Trends and Practice. United Nations Environment Programme, Nairobi*.
- UN, 2010, UN Conference on Sustainable Development (Rio + 20).