

## ABSTRACT

The main objective of this study is to analyze the compensatory measures, as mechanisms of biodiversity protection, imposed under the Environmental Impact Assessment (EIA) of electricity transmission projects. It is, therefore, an important subject to the environmental policy related to the energy policy, specifically to transport activities in the electricity sector, of great importance and relevance, although little discussed in academics and which entails many challenges to its operation.

In general, human activities cause impacts on the environment in which they are developed, impacts that have different characteristics and may be classified as negative and / or positive. Usually the positive impacts are associated with socio-economic benefits such as income generation, employment, goods or the provision of services. In contrast, the negative impacts are usually related to environmental degradation, such as the depletion of the ozone layer, water pollution and soil, biodiversity loss and the degradation of coastal areas.

The projects in the electricity sector are typical examples of generating impacts, either in their production, transportation or distribution activities. In this sense, considering that the electricity has become an essential commodity for contemporary society, recognized as a technological and economic development factor and responsible for improving the quality of life of the people, under the socio-economic perspective the sector's activities are of strategic importance for any nation.

In contrast, given their nature and size, the sector's activities are generating ecological impacts. Specifically within the electric power transmission activities, the most significant impacts involve loss of biodiversity, a fact that becomes even more significant when involves crossing high nature value areas.

Therefore, in order to guarantee a sustainable development, both the European and the Portuguese policies require a previous evaluation process over every project which may significantly impact the environment. Composed by studies and consultations, these evaluation

processes are procedures in which the relevant impacts are weighted in biophysical, economic, cultural, social and political terms, taking into account, among other things, the state of the environment, the evaluation of alternatives, the reference scenario, the cumulative impacts with other projects, and underlying the decision on the environmental viability of such projects.

Among the specific objectives of the EIA, there are the identification and prediction of environmental effects of projects and, therefore, the proposition of measures to avoid, minimize or compensate such effects. In this context, preventive measures are aimed to prevent the occurrence of impacts, first ratio on the environment issue. When the whole prevention of impacts is not possible, then minimization measures should be taken to reduce those impacts. However, in order to remedy a predictable impact whose effects cannot be prevented or minimized, exceptional compensatory measures should be applied making the entrepreneur provide proportional environmental improvements to neutralize the losses caused by the project impact.

Therefore, compensatory measures are usually set in EIA as a way of internalizing negative environmental externalities arising from activities deemed relevant to the socio-economic development. In this sense, the institute aims to equate socio-economic development with environmental protection in a pragmatic and holistic manner, through the establishment of an early compromise between losses and counterparties. In other words, it is characterized as a prospective and conciliatory legal instrument, which, however, should be accepted with reservations and in an exceptional way, as it constitutes a derogation manifests the precautionary principle - nuclear principle of Environmental Law.

Internationally, the notion of ecological compensation arises for the first time in the Ramsar Convention, the first international treaty dedicated to the conservation of nature, specifically the protection of wetlands with international interest for waterfowl. At the European level, it was originally foreseen in the Habitat Directive, while exceptional mechanism of restoration of biodiversity loss, and currently it is also consecrated in the Directive on the assessment of the effects of certain public and private projects on the environment. In the Portuguese legal system, as an economic and prospective instrument of environmental policy, the ecological compensation currently is forecast

in the Base Regulations of the Environment (Lei de Bases do Ambiente), in the National Environmental Impact Assessment law (Regime Jurídico da Avaliação de Impacte Ambiental), in the diploma transposing the legal regime of the Natura 2000 Network (Regime Jurídico da Rede Natura 2000), and in the Nature Conservation and Biodiversity legal framework (Regime Jurídico da Conservação da Natureza e da Biodiversidade).

Despite the forecast in these international, European and national legal instruments, the application and implementation of the compensatory measures entails challenges, which call into question both their usefulness as an effective instrument of environmental protection, and also their promotion capacity of social justice distributive and equity between economic operators. This scenario becomes even more serious when compensatory measures are directed to address impacts on biodiversity, since the loss of this environmental well, abreast of climate change, is recognized as the most significant environmental threat that the planet faces today.

In this context, this work is of particular importance and relevance in that it aims to contribute to the deepening of academic discussion about ecological compensation, highlighting its strengths and weaknesses, gaps and some possible solutions. At the same time, while analyzing its implementation and operation along the electricity transmission projects this work intends to discuss the issue within a concrete reality, specifically in a strategic sector whose activities directly interfere in the environment, agreeing with the integration and transversality principles.

Therefore, the research was developed to address the following key issues: (i) What is the current legal framework of the compensatory measures to address impacts to biodiversity in the European and Portuguese context? (ii) When and how they are applied to electricity transport projects? (iii) What are the main challenges for its operation?

In order to reach its target, the work was divided into five parts. The first chapter is an introduction, where the reader can identify the context of the study development, realize the relevance and topicality, as well as identify the research issues and the organization of the dissertation. The second chapter aims to proceed with the definition and distinction of some relevant terms associated to the issue of compensatory measures, aiming to bring closer the reader to the specific object of this dissertation study.

The third chapter aims to carry out the ecological compensation legal framework, i.e. present the characterization of its “state of art”. In this sense, first their structural characteristics are highlighted, namely its function, principles and legal nature. Then its forecast in European and Portuguese legal-environment schemes is identified, where the specific contours of the compensatory measures set out in each of the legal diplomas, as well as the articulation of these specifics in case of overlapping regimes are discussed.

The fourth chapter proposes to examine the applicability of compensatory measures within the electric power transmission activities as well as to discuss the main challenges to its operation. First, however, the activities of the electricity sector and the major impacts on the environment from electricity transmission are characterized, introducing the reader to the practical context in which the case study was developed. Finally, in the fifth chapter the main conclusions are highlighted, and suggestions to contribute to the resolution of the problems are encountered.

The methodology used in this study included a review of the main reference literature on the subject, lifting the European and Portuguese legal order related Portuguese, as well as research of the case law on the subject. In addition, specifically in the fourth chapter, it was complemented by an online survey submitted to the electricity sector players operating in transmission activities, which covered aspects related to the applicability and implementation of compensatory measures within its activities.

**Keywords:** compensatory measures; ecological compensation; biodiversity offsets; environment impact assessment; environmental law; nature and biodiversity law; Natura 2000 Network; Birds and Habitats Directives; energy sector; electric sector.