



# Environmental Impact Assessment (EIA)

*In support of marine biodiversity and the sustainability of marine resources*

*based on lectures delivered by Maria Partidario*



Convention on  
Biological Diversity

SUSTAINABLE  
 OCEAN  
INITIATIVE

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## Introduction

Welcome to the Secretariat of the Convention on Biological Diversity's (CBD) Environmental Impact Assessment (EIA) training guide. This training guide aims to provide an overview of EIAs including examples of how it is applied to help readers understand the importance of the instrument and how it can be of relevance in development decision-making that concerns marine related development processes.

This guide has been created in support of marine biodiversity and the sustainability of marine resources and should supplement CBD training sessions and workshops. As not all the skills learned in a CBD training session can be implemented based on memory alone, this guide will help training participants pull through their new skills into real world work scenarios.

It is important that readers use this guide as a reference when putting their new knowledge of EIAs into action. To get the most from this guide, readers should aim to draw upon the guide directly when planning, preparing, or practicing EIAs, or to use it as a base for the creation of their own training sessions or workshops.

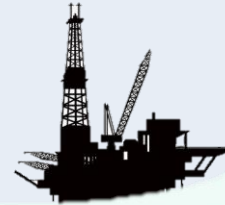
This module is based on lectures delivered by Maria Partidario during Sustainable Ocean Initiative capacity building workshops, coordinated by the CBD Secretariat.



## Defining EIA





### What is an EIA?

An EIA is the process of identifying, evaluating, and mitigating the possible environmental impacts of proposed developments before any major decisions are made. These impacts include biophysical, social, and other relevant effects of development proposals. (IAIA, 1999; CBD 2010)



### EIA Objectives

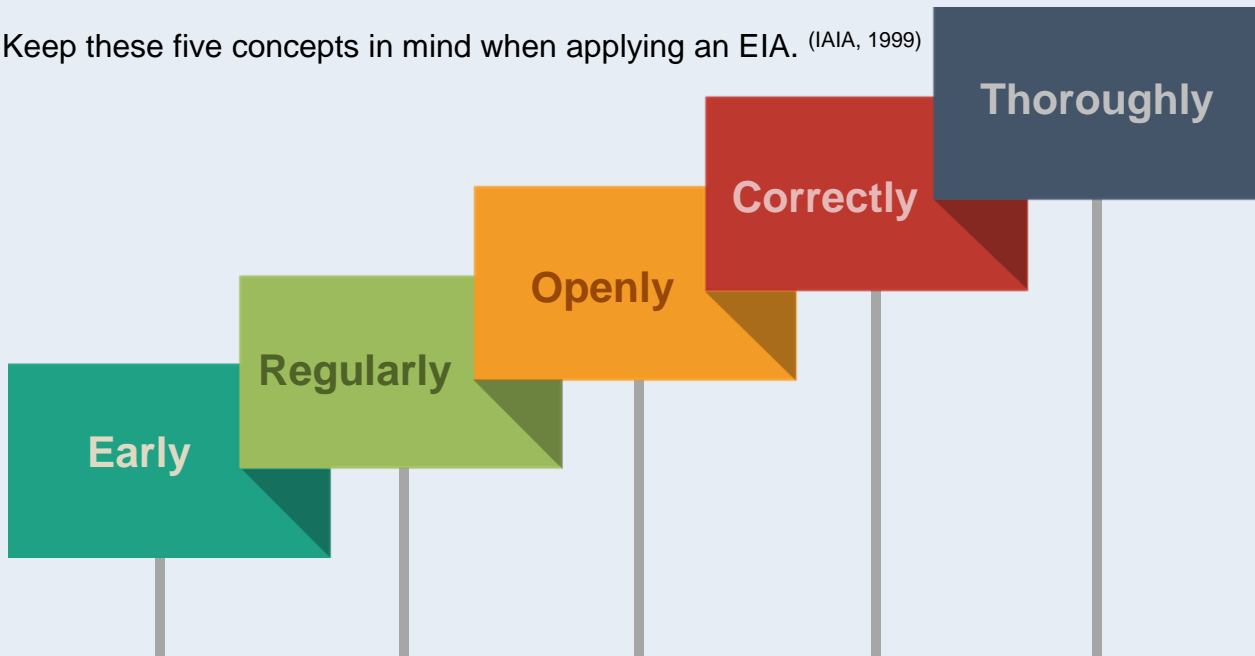
It is also important to know the aims of an EIA: (IAIA, 1999)

-  To ensure that environmental considerations are explicitly addressed and incorporated into the decision making process.
-  To anticipate and avoid, minimize or offset the adverse significant biophysical, social and other effects of development proposals.
-  To protect the productivity and capacity of natural systems and the ecological processes which maintain them.
-  To promote development that is sustainable and optimizes resource use and management opportunities.



## How Should EIAs be Applied?

Keep these five concepts in mind when applying an EIA. (IAIA, 1999)



### Early

As early as possible in decision making and throughout the life cycle of the proposed activity.

### Regularly

To all development proposals that may cause potentially significant effects.

### Openly

To provide for the involvement and input of communities and industries affected by a proposal, as well as the interested public.

### Correctly

In accordance with internationally agreed measures and activities.

### Thoroughly

To biophysical impacts and relevant socio-economic factors, including health, culture, gender, lifestyle, age, and cumulative effects consistent with the concept and principles of sustainable development.



# The EIA Process

All EIAs should follow this general process: (IAIA, 1999)



## Ocean and Maritime Application of EIA - The Background

Why are EIAs a required process? When were they first implemented, and how are they regulated? Keep reading to review the background and treaties on ocean and maritime application of EIAs.

### International Treaties with Provisions for EIA Systems

#### UN Convention on the Law of the Sea

The earliest treaty to make provisions for EIA systems related to marine issues was the 1982 UN Convention on the Law of the Sea (UNCLOS) in Montego Bay, Jamaica.

An agreement was made to use the EIA system for applications for the research and exploitation of mineral resources in the seabed. The agreement was in relation to the implementation of Part XI of the UNCLOS.

#### UN Convention on Biological Diversity

The CBD, of course, also has provisions for the implementation of EIA systems. The Conference of the Parties (COP) has adopted five decisions on EIAs in Article 14: Part C of decision IV/10, decision V/18, Part A of decision VI/7, decision VII/7 and decision VIII/28. (CBD, 2010)



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## Components, Concepts and Aspects of an EIA

Now that we have the definition, background, and process of an EIA, let's take a deeper look at several components, concepts and aspects that make up an EIA.

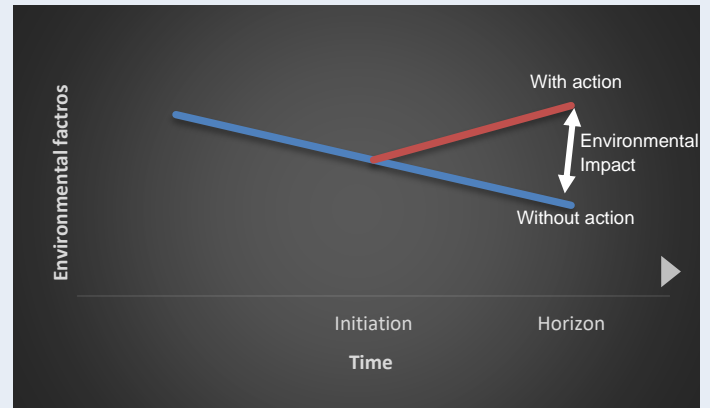


## What is an Impact?

In essence, an impact is a positive or negative change on a valuable asset resulting from the effect of human action.

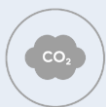
Impacts are “measured” on the effects of human actions on environmental factors. These include physical, ecological, social, cultural or economic aspects, both beneficial and adverse.

They are measured within a given time period in a given geographical area.



## Scope

What constitutes an environmental factor? Here are some examples:



Climatic factors, including climate change



Water resources, freshwater streams, groundwater



Soil and geology



Air quality



Noise



Ecology and biodiversity



Flora and fauna



Landscape



Land use planning and spatial occupation



Social factors



Cultural factors



Economic factors








Fiscal factors



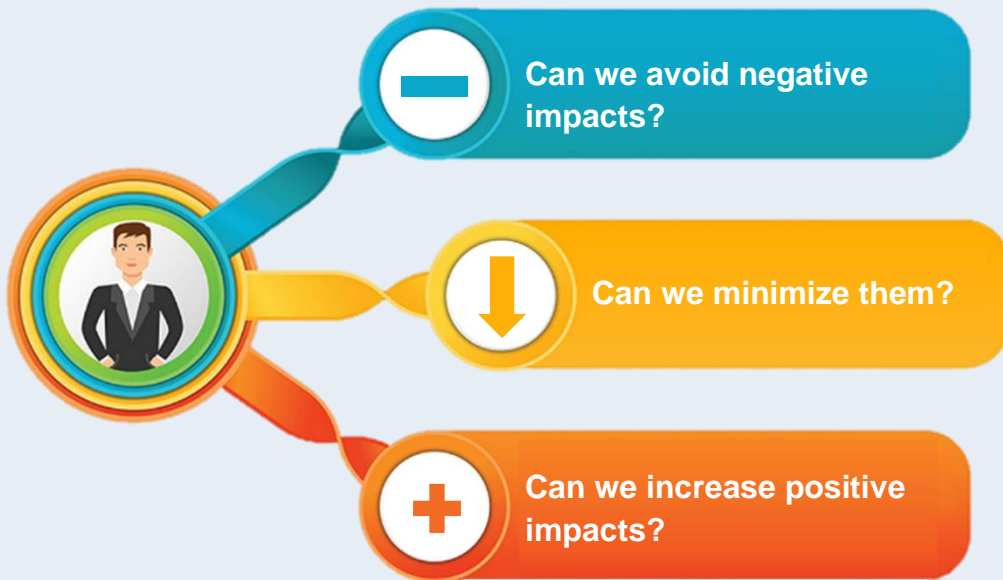
Governance factors

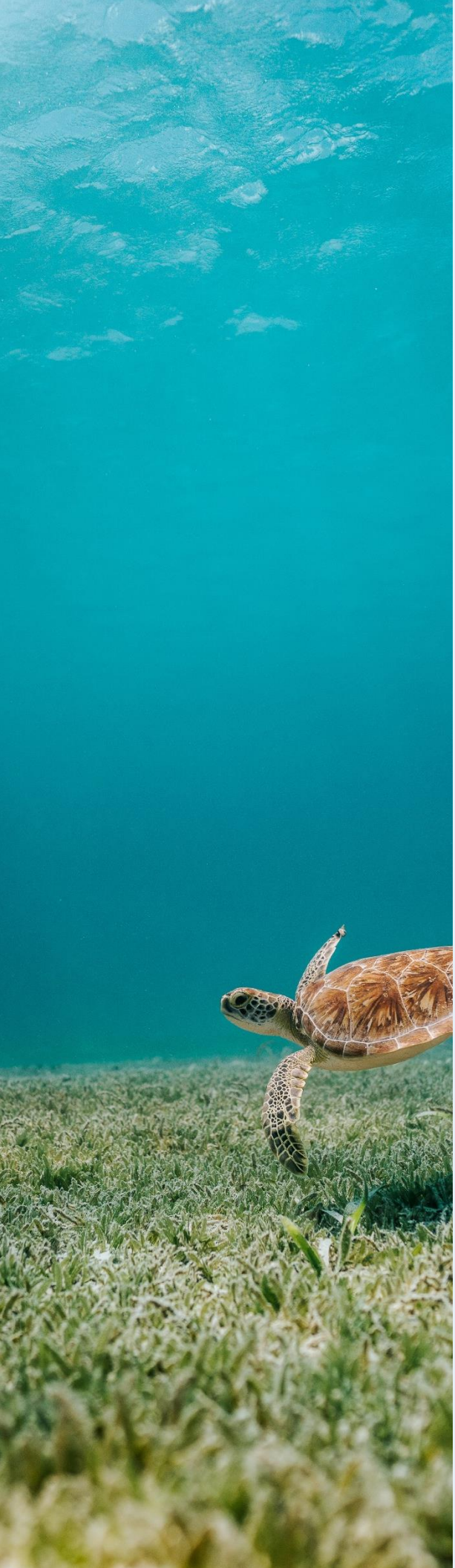


When attempting to identify the environmental factors that may be impacted by your proposed development, consider these key questions:

1. What will be affected?	
2. Who will be affected?	
3. Will it be destroyed?	
4. What are the benefits?	
5. Who are the beneficiaries?	

Next, ask yourself what you can do to reduce negative impacts and increase positive impacts:





## Impact Significance

Once you have determined what impacts your development may have on the various environmental factors, you must establish the significance of these impacts.

### Importance of Impact

How important, or significant, is an impact? This depends on two factors: context and intensity. Context considers spatial and temporal aspects. Intensity considers the magnitude of the impact.

There are many criteria for establishing the significance or importance of an environmental impact. Here are the 5 most common criteria to account for:

- Population
- Health issues
- Natural protected areas
- Cultural heritage
- Costs

Other criteria to consider include:

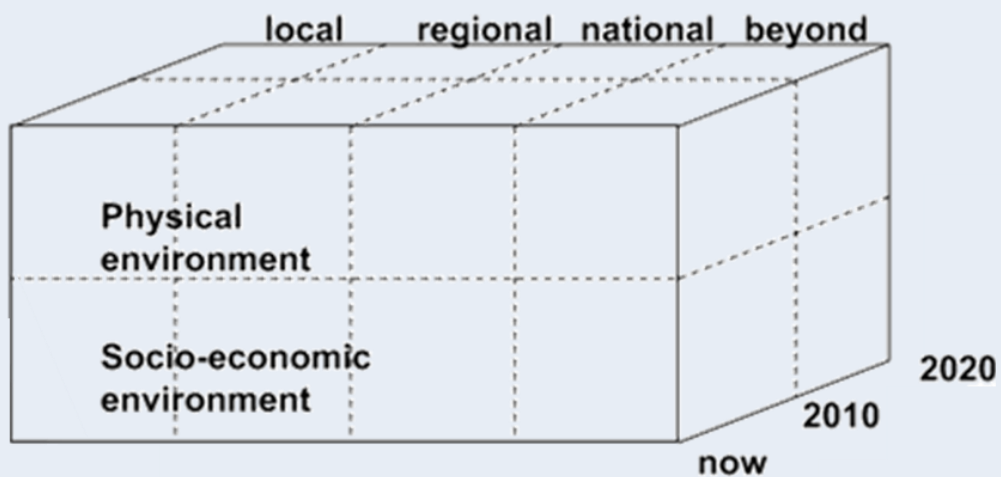
- Cultural importance
- Social importance
- Ecological relevance
- Environmental standards
- Statistical significance
- Technical issues
- Political/institutional issues













## Dimensions, Scale, Time

An EIA is multi-scale, meaning both time and space must be factored into the equation, and considers both the physical and socio-economic environment dimensions. The figure below depicts the multi-scale nature of EIAs.



## Impact Classification

Use the following criteria to classify an impact and determine its range:

Pathway		Is the pathway direct or indirect?
Signal		Is the signal positive, null, or negative?
Importance		Is the importance highly significant, less significant, or irrelevant?
Magnitude		Is the magnitude maximum, moderate or minimum?
Probability		Is the probability certain, probable, or uncertain?
Duration		Is the duration permanent or temporary?
Temporal Dimension		Is the temporal dimension immediate, medium term, or long term?
Spatial Dimension		Is the spatial dimension adjacent, local, regional, national, transboundary, or global?
Reversibility		Is the impact totally reversible, partially reversible, or irreversible?



## Alternatives

An important component of EIA is the identification and exploration of alternatives.

### What are Alternatives?

Alternatives are your options for how to do a project, such as location, design, technology or other.

They enable informed choices to be made in order to avoid or minimize environmental impacts.

### Zero Alternative

It is important to compare your alternatives to the “zero” alternative. This is the expected evolution of the state of the environment in the absence of any project.



# Nature of Impacts

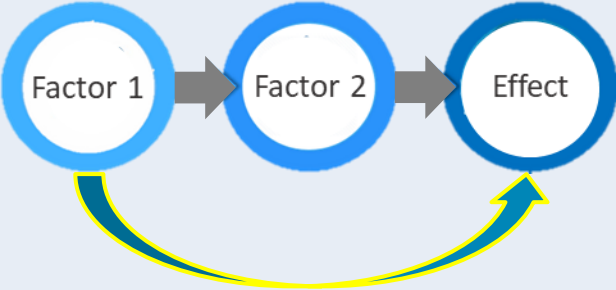
In order to successfully determine what impacts a project will cause you need to understand the nature of impacts. Impacts can be:

- Direct
- Indirect
- Cumulative

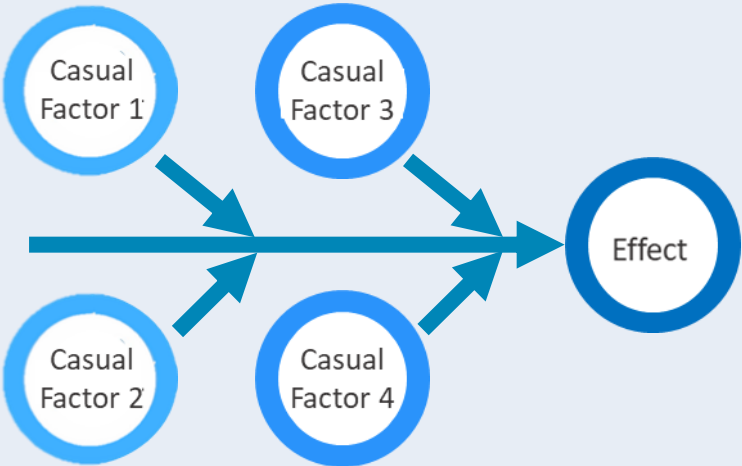
## Direct



## Indirect



## Cumulative



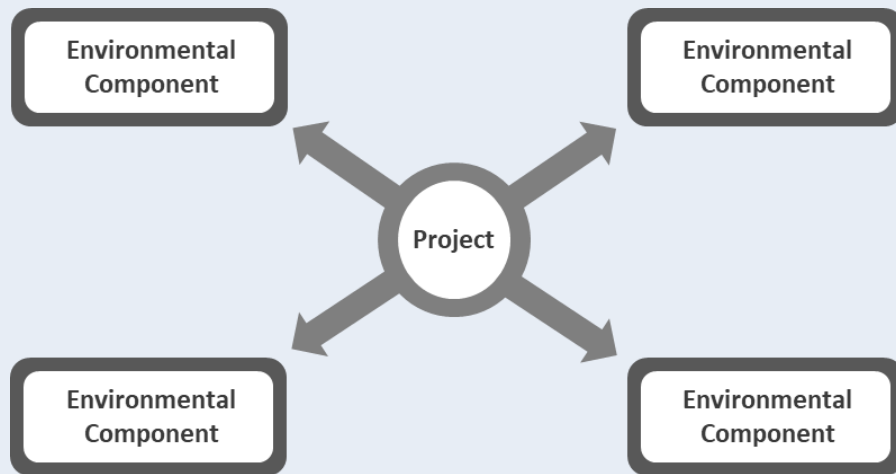


## The Cumulative Impact concept

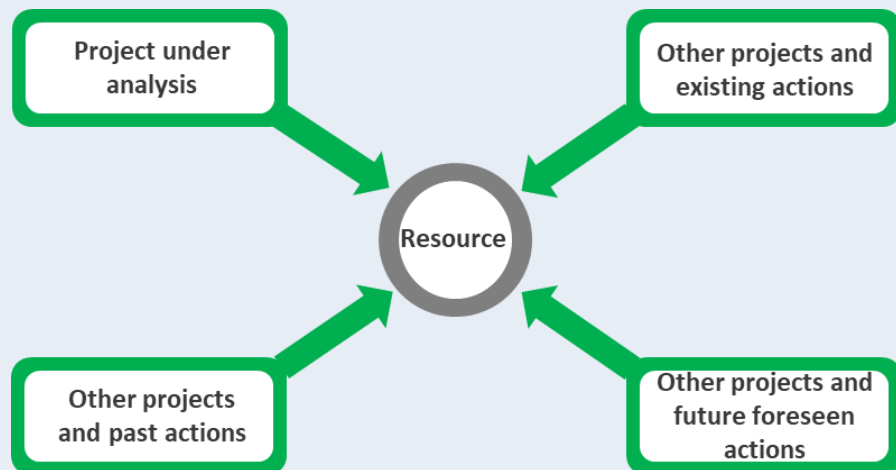
Understanding and applying the concept of cumulative impacts is very relevant. This is because cumulative impacts are often overlooked, despite being extremely important, and are usually only noticed when the level of accumulation is high.

The difference to the usual EIA is that:

In the usual EIA we assess the impacts of one project on several environmental components:



In cumulative effects we assess the impacts of past, present, and future foreseen actions that accumulate on given resources (water, air, ecological systems, social systems, etc.):



## Mitigation

When potential impacts have been identified, explore ways to mitigate these impacts.

### What is mitigation?

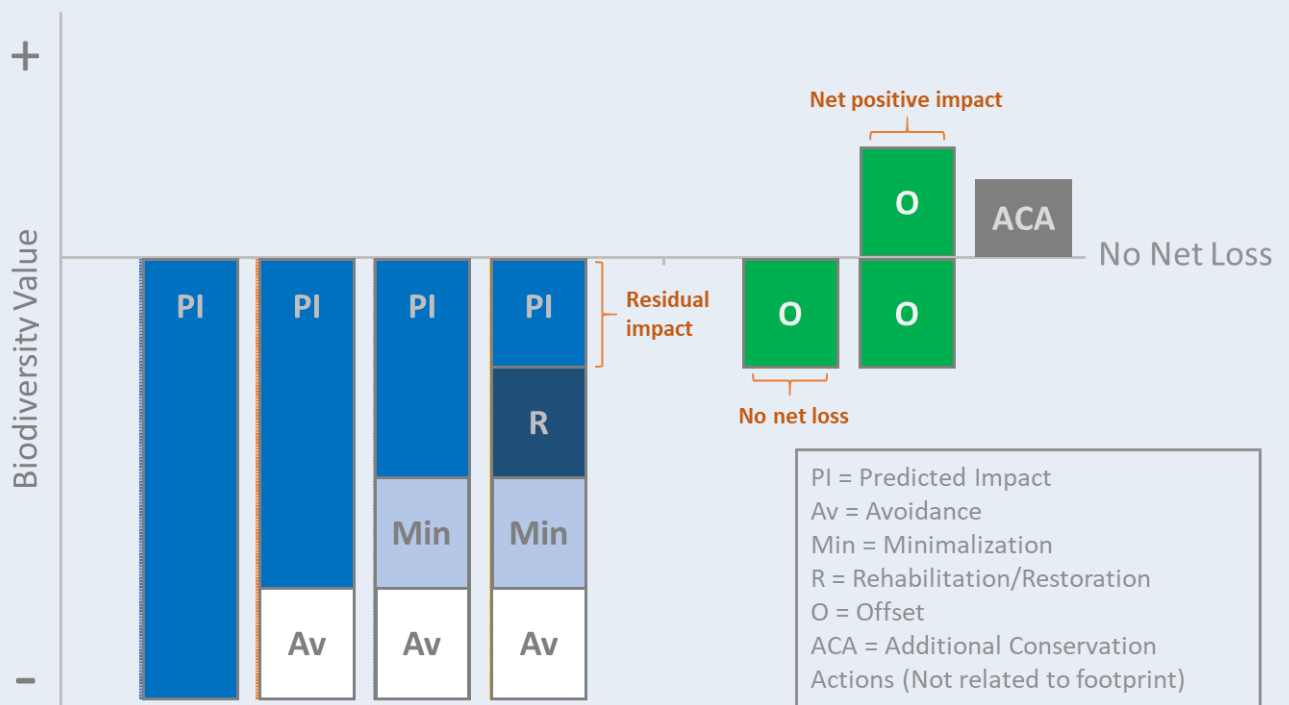
Mitigation is the measures adopted to avoid, reduce or compensate foreseen adverse impacts.

### Residual Impacts

Once mitigation efforts have been made, the remaining net impacts are called “residual impacts”.

### Mitigation Hierarchy

The chart below displays the different levels of mitigation and their biodiversity value. The “no net loss” and the “net positive impact” are important offsets to aim for.



Adapted from Rio Tinto & Government of Australia



# EIA Case Study: Portuguese WindFloat

## Location

This case study examines the EIA carried out for a windfloat in Portugal. The windfloat was established several kilometers off the coast of northern Portugal, roughly half way between the towns of Viana do Castelo and Leixoes (Figures 1 and 2).



Figure 1

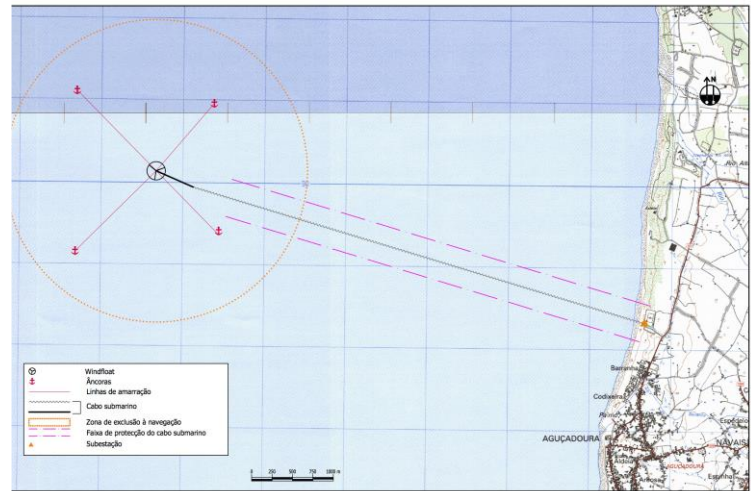


Figure 2

## The Project

The project consisted of a floating wind turbine (shown in Figure 3) anchored to the seabed by a mooring system.



Figure 3

There is also an electrical substation associated with the windfloat, which is located on the coast at Aguçadoura beach (Figures 4 & 5).



Figure 4

Both the windfloat and the substation had the potential to impact the environment.

Mitigation measures to protect the coastal dunes have been implemented (Figure 5).



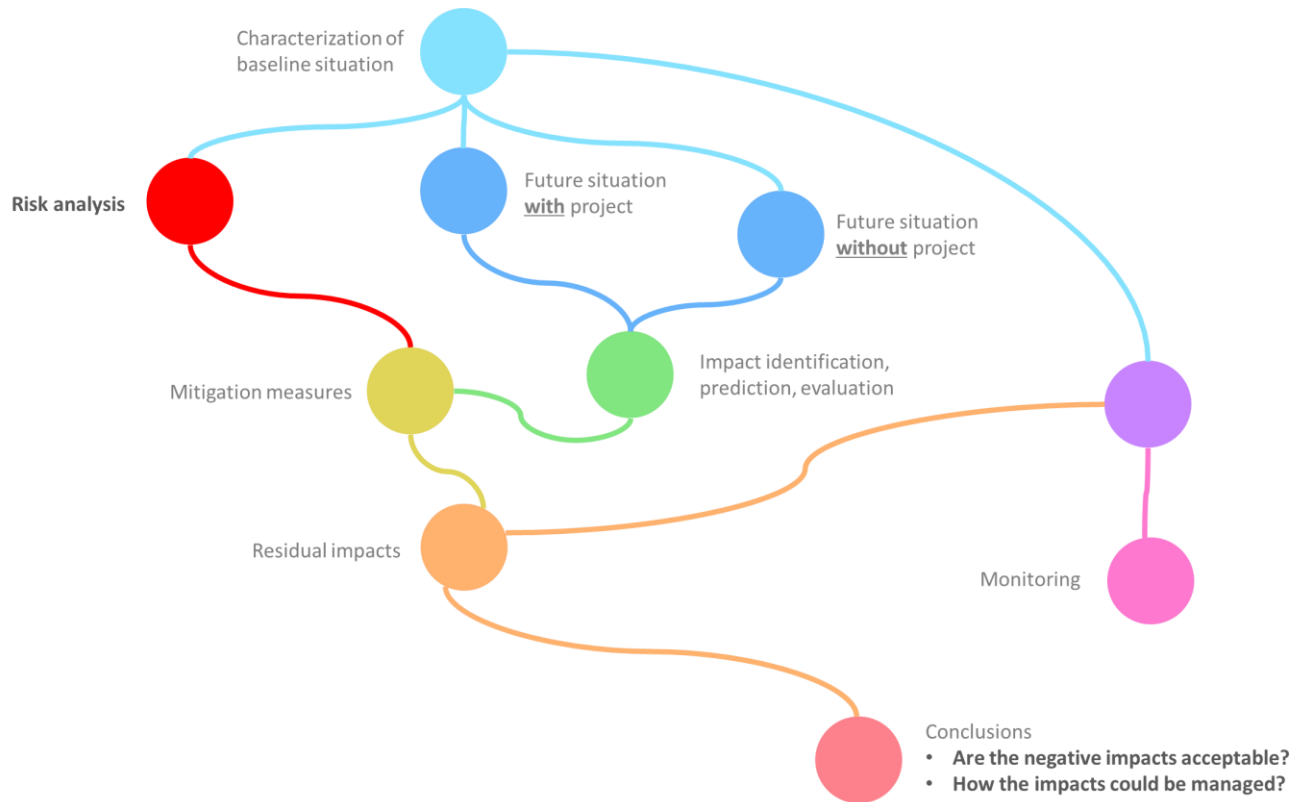
Figure 5

The following pages will provide an overview of the EIA undertaken, including the methodology, scope, impacts, mitigation measures, and monitoring. This and other similar case studies can be used as examples when undertaking your own EIA.

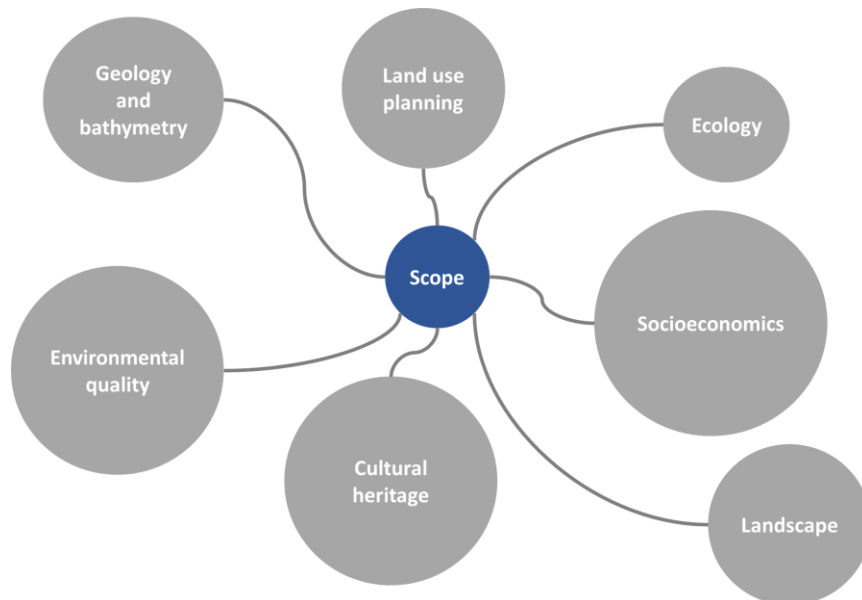


# EIA Case Study: Portuguese WindFloat

## Methodology



## Scope



# EIA Case Study: Portuguese WindFloat

## Positive Impacts

- Sanctuary effect on marine resources



- Demonstration of viability of offshore wind energy exploitation



- Positive image of the region



- Opportunities for environmental and scientific education



## Negative Impacts

- Seabirds & bats: collision with turbine



- Dunes: inadequate long-term location for substation



# EIA Case Study: Portuguese WindFloat

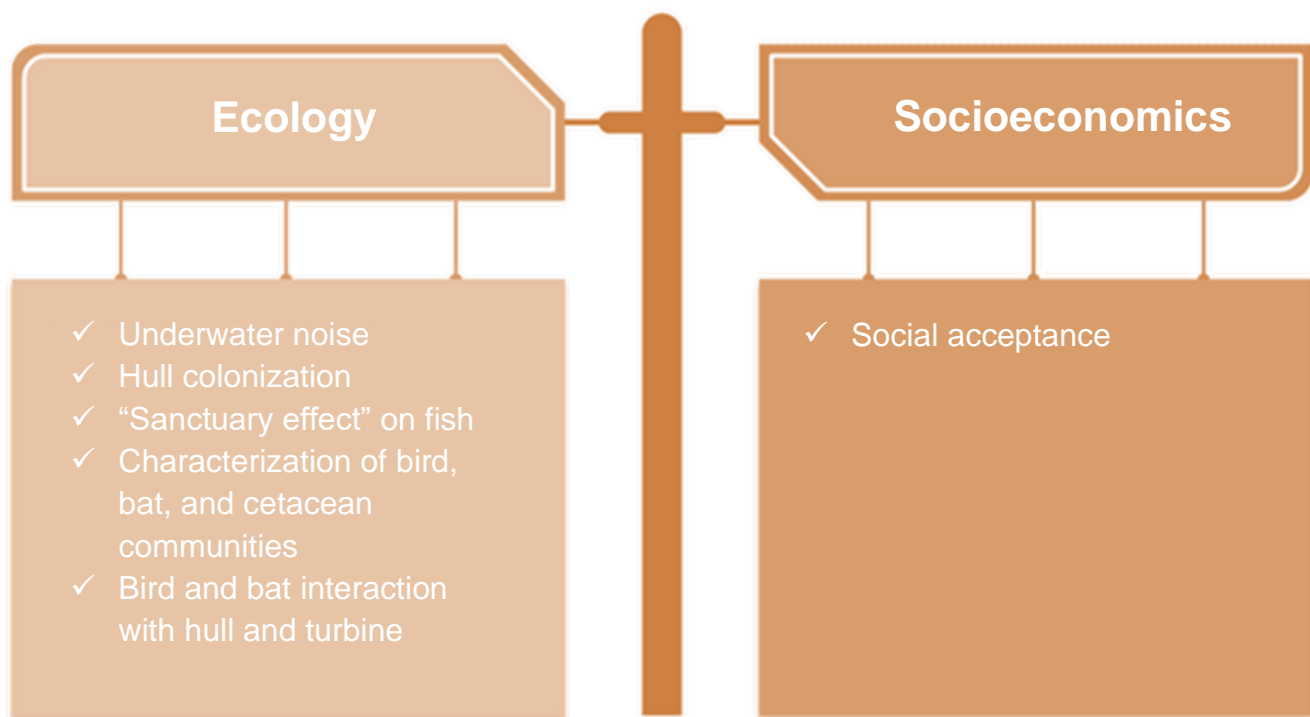
## Mitigation Measures

Having identified the impacts associated with this project, the EIA team selected two mitigation measures that could be implemented:

- Spillage prevention
- Public information

## Monitoring

Mitigation will also be combined with ongoing monitoring in key areas. For this project, monitoring can be divided into two divisions, ecological and socioeconomical.



## Key Messages

This guide was designed to assist with and provide an example for the preparation of EIAs in marine and coastal areas.

EIA is a key instrument in the development of marine and coastal projects and for designing projects in ways that are consistent and contribute positively to a better environment. It also helps to avoid major negative impacts, thus contributing to protect marine and coastal biodiversity across the globe.

Key messages to take away from this module include:

- EIA is the process of identifying, evaluating, and mitigating the possible environmental impacts of proposed developments before any major decisions are made.
- The key steps in the EIA process are: Screening, Scoping, EIS Preparation, Quality Review, Decision, Post-evaluation, and Consultation.
- An impact is a positive or negative change on a valuable asset resulting from the effect of human action
- The various components of an EIA are equally important, and sufficient time and resources must be spent on each one

## References

IAIA (1999) Principles of Environmental Impact Assessment Best Practice. International Association of Impact Assessment and the Institute of Environmental Assessment (IAIA).

CBD (2010) What is Impact Assessment? Retrieved from <https://www.cbd.int/impact/whatis.shtml>



## **Convention on Biological Diversity (CBD)**

Opened for signature at the Earth Summit in Rio de Janeiro in 1992, and entering into force in December 1993, the Convention on Biological Diversity is an international treaty for the conservation of biodiversity, the sustainable use of the components of biodiversity and the equitable sharing of the benefits derived from the use of genetic resources. With 196 Parties, the Convention has near universal participation among countries. The Convention seeks to address all threats to biodiversity and ecosystem services, including threats from climate change, through scientific assessments, the development of tools, incentives and processes, the transfer of technologies and good practices and the full and active involvement of relevant stakeholders including indigenous and local communities, youth, NGOs, women and the business community. The Cartagena Protocol on Biosafety and the Nagoya Protocol on Access and Benefit Sharing are supplementary agreements to the Convention. The Cartagena Protocol, which entered into force on 11 September 2003, seeks to protect biological diversity from the potential risks posed by living modified organisms resulting from modern biotechnology. To date, 172 Parties have ratified the Cartagena Protocol. The Nagoya Protocol aims at sharing the benefits arising from the utilization of genetic resources in a fair and equitable way, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies. It entered into force on 12 October 2014 and to date has been ratified by 124 Parties.

