FACTS ABOUT

Environmental Impact Assessments

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What is an Environmental Impact Assessment?

Nowadays, for most dredging projects some sort of Environmental Impact Assessment (EIA) is normally prepared, often specified and required by law or regulation, sometimes just as a part of good, modern project management. Although no uniform standard for such an assessment is universally accepted, an EIA regularly contains: an explanation of environmental objectives and policy; a description of the existing environmental situation (the baseline conditions); a description of the project; an assessment of the potential effects of the project; a summary of recommendations; and an Environmental Management (or action) Plan (EMP).

What is the purpose of an EIA?

The purpose of an EIA is to ensure that dredging activities are performed in an environmentally acceptable manner, use sound engineering techniques, that they are economically warranted and take sufficient consideration of long-term effects.

The scope of an EIA usually includes a survey and review of prior studies done by others to describe the physical, chemical, and biological conditions of the study area; an evaluation of regional dredging and disposal needs; and a characterisation of physical and chemical properties of typical regional dredged materials. The EIA will also formulate alternatives for dredged material management, perform a preliminary evaluation of alternatives management methods, and make recommendations for further evaluation.

What is the difference between an EIA, an EIS, an EES and an ES?

There is no such thing as *the* Environmental Impact Assessment, nor is there one single international organisation regulating the requirements of the EIA. EIA is often used as a collective term, which can also refer to the Environmental Effect Study (EES), the Environmental Impact Study (EIS) or the Environmental Study (ES), all indicating some sort of environmental evaluation. In some cases the term EIA may have a formal or legal specificity, while in other cases it is a descriptive term comparable with the ES, the EES or the EIS.

Are EIAs only obligatory for projects involving contaminated materials?

EIAs preceding a dredging project became obligatory in specific cases in many industrialised countries in the 1970s, when the environment first appeared on the political agenda. In the beginning, the obligation was limited to dredging projects where contaminated materials were suspected. Later on, dredging projects with other environmental considerations, for instance habitat protection, required an EIA.

In the 1980s environmental and ecological considerations also became part of the policies of the International Finance Institutions (IFIs), such as the World Bank. This was formalised in the 1990s when an EIA became a condition for the funding of IFI-sponsored projects. The World Bank definition of the EIA is important because it more or less established the minimum requirements.

What is the World Bank definition of an EIA?

In a World Bank study, the EIA is summarised as: *"[…] environmental impact assessment (EIA) is taken to mean the systematic examination of the likely environmental consequences of proposed projects. The results of the assessment – which are assembled in a document known as an Environmental Statement (ES) – are intended to provide decision-makers with a balanced assessment of the environmental implications of the proposed action and the alternative examined. The ES is then used by decision-makers as a contribution to the information base upon which a decision is made. The overall goal of an EIA is to achieve better developmental interventions through protecting the environment (human, physical and biotic)."*

Simply said, the EIA leads to an ES and the ES ideally results in a management directive, or Environmental Management Plan (EMP), a plan for managing and controlling the environmental effects of a project and guiding the environmental control mechanisms.

Is an EIA always required?

Almost always is the short answer. Most dredging projects will require some type of environmental study. In some developing countries national environmental legislation requiring an impact study is not yet in place. Nonetheless, since almost all projects in developing countries are (at least partly) funded by IFIs, an EIA will probably be required. In recent years, even where compliance with IFI guidelines may not be necessary, many project owners have adopted a policy of corporate social responsibility and will no longer operate without taking into account the environmental situation.

In developed countries, national legislation will often require an EIA. In fact, the requirements in most industrialised countries are often much more specific than the IFIs, so before embarking on a dredging project, national legislation should always be studied to find out which legal obligations are applicable. Since legislation is constantly being renewed, finding the most up-to-date information for a specific country or region is imperative.

At what stage of a project should an EIA be undertaken?

The EIA should be part of the project from the start of the project planning phase, since the EIA is the basis for the EMP and the EMP must be fully operational as soon as the execution or construction phase starts. The EMP is often obligatory, but also in cases where it is not, it is considered to be "good practice and policy" to conclude the EIA with some sort of EMP.

What is an Environmental Management Plan?

Technically speaking, the Environmental Management Plan or EMP is the synthesis of the information gathered in the EIA, incorporating the overall assessment into the entire dredging project, from implementation to construction to execution.

The EMP sets out the actions for controlling, monitoring and evaluating the project during every phase. The EMP states which parameters should be measured, what the critical values are and what actions will have to be taken to stay within the critical boundaries.

The EMP often addresses mitigation measures to minimise adverse impacts; measures to enhance environmental benefits, if such benefits occur; measures necessary to guarantee effective monitoring; monitoring and auditing programme details; and resources, funds, contractual and management arrangements. The EMP maps out the processes that managers need to follow to maximise compliance and minimise harm to the environment.

Does an EIA address only ecological issues?

The European Commission describes the purpose of an EIA in the directive EC 1985/97: *"The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case […] the direct and indirect effects of a project on the following factors:*

- *human beings, fauna and flora;*
- *soil, water, air, climate and the landscape;*
- *material assets and the cultural heritage;*
- *the interaction between the factors mentioned in the first, second and third indents."*

This clearly shows that "environment" has become a much broader concept than simply ecology. EIAs now reach beyond assessing only possible contamination, and now include assessing material assets and political, social and cultural heritage. This broader view of environment can be seen as part of the recent "sustainability movement". Other terms used to describe this concept are the "triple bottom approach" or the 3 Ps, that is "people, planet, profit", meaning that social, environmental and financial considerations must all be integrated in decision-making processes. Most major dredging companies have already embraced this socially responsible way of working.

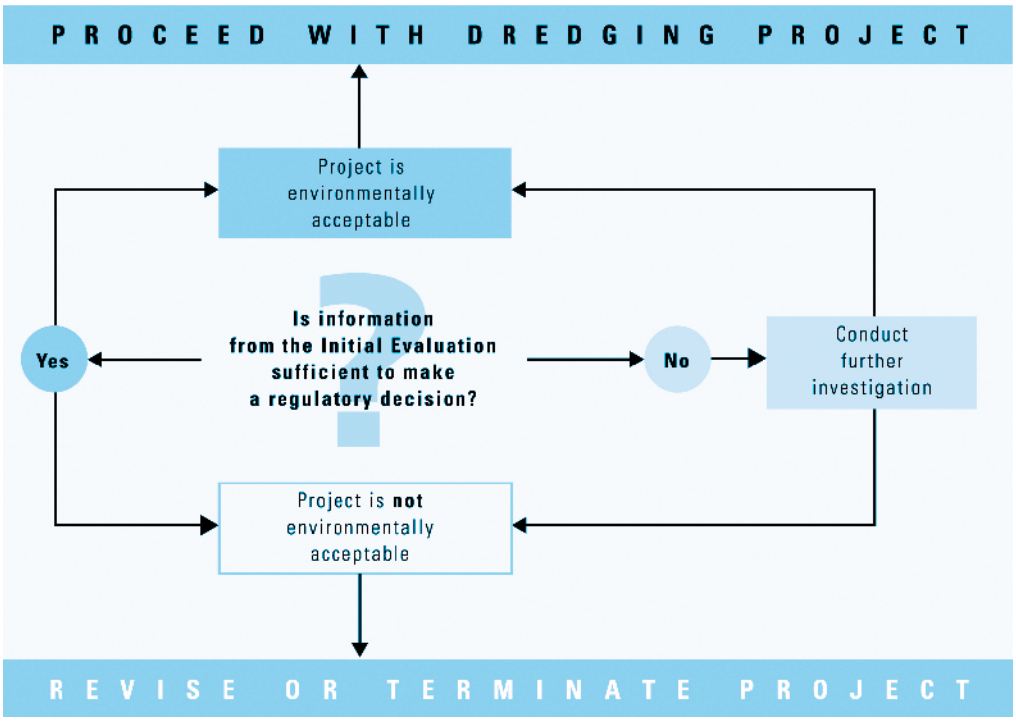
What are the main steps of an EIA?

An EIA is a data management process with three components: First, the appropriate information must be identified and collated. Secondly, changes in environmental parameters resulting from the proposed project must be forecast and compared with so-called "baseline conditions". Finally, the effects of the actual changes, with and without mitigation measures in place, must be assessed and communicated to the decision-makers. An EIA should answer the question: Is a project as planned environmentally acceptable? And if not, can changes be made to mitigate impacts, or to improve the overall project acceptability?

What are baseline conditions?

Baseline conditions describe the circumstances of the dredging site and the potential placement site(s) prior to the start of the project. These conditions are far from static and part of baseline conditions should also include the natural variability of the sites, including extreme events like storms and long-term developments such as seasonal influences. Collection of these data can be time-consuming, but it is worth the investment. If an EIA is based solely on average conditions then the results of a severe storm, which may have more impact than the dredging activities, could not be taken into account.

Initial Environmental Evaluation



An initial environmental evaluation provides a basis for determining whether or not to proceed with dredging. It should answer the question, is a project as planned environmentally acceptable, and if not, what can be done to improve overall acceptability.

What other types of data should be collected?

An EIA looks at a broad scope of effects of dredging, ranging from the consequences of suspended sediments on water quality to the consequences for local communities with respect to their livelihoods (access to fishing grounds) or to archaeological remains. In short, a typical EIA will include data about physical, chemical, biological and ecological impacts as well as economic, social and political effects. Depending on the type of project (capital, maintenance or remedial) and its location, these data may include assessing flood risks, salt intrusion, turbidity, and the vulnerability of local marine life and habitats. In addition, an EIA may also consider noise and air quality, aesthetics such as landscapes and seascapes, and interactions with other public uses of the water and adjacent land areas for recreation or commerce. Each EIA must be tailored to the particular project.

Who conducts the EIA? And who implements it?

Ideally the project owner hires independent consultants after an open and transparent tender procedure. These consultants are environmental engineers, who should give an unbiased assessment which should include an accurate sustainability appraisal, planning support, and ecological risk assessment. Careful consideration of the choice of a reliable consultant is crucial. In a certain cases the project owner requires contractors to participate in the application process for a dredging licence or permit. Whoever conducts the EIA, the project owner is responsible vis-à-vis the authorities for the implementation of and adherence to the EIA. On the other hand, the contractor will have to guarantee in the final contract that the execution of the project will meet the standards set out in the EMP, which is based on the EIA.

After the EIA is completed, then what?

An EIA offers a summary of the environmental issues that became apparent, for instance, the scope of the environmental impacts, the risks and/or the benefits; the significance of these impacts, risks and/or benefits and the likely mitigation measures required; and the actions to be taken (and by whom!). Processes then need to be implemented to enhance the environmental benefits of the proposed project (this can be the re-use of the dredged material); to ensure compliance with relevant regulations and international agreements (e.g., the DMAF or the London Convention); to consider alternatives; to identify significant adverse environmental effects and identify action; to provide for public consultation and input; to define the data assembly needs and necessary survey activities; and to determine the predictive techniques that are to be employed.

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If this leads to the conclusion that (mitigation) measures are necessary, these measures should be applied to the design & planning phase ("project effects") and/or the construction phase ("process effects"). In the first case the measures will probably have to be taken by the project owner, in the second case by the contractor.

Should the public be involved?

The process of impact identification is based upon an appreciation of how the proposed project might interact with the environment, both in the dredging and the placement sites and during the transport between the two. As such, this requires an appreciation of what are considered to be the valued environmental and community resources within the vicinity of both sites. Communication with the public about this is essential; they need to be informed and an explanation of the assessments made should be offered. In some cases, the public may identify additional impacts and might ask for broader impact consideration or further mitigation.

How can impacts be predicted?

Impacts can be predicted using logical, physical, biological or mathematical modelling. These may identify potential negative impacts, but also indicate options for enhancement of positive impacts (e.g., the re-use of dredged material). Once the possible impacts are identified, the project design must be adapted to attempt to minimise the adverse impacts and maximise the beneficial impacts. As soon as the project design is optimised, the effects must be forecast in different ways: The affected feature, the magnitude, the resource and/or population, the action causing the effect, the duration of the effect, and the proposed mitigation (or enhancement) measures.

Predicted effects can be divided into short-term (less than one week) or long-term (more than one week) effects and near-field (less than one kilometre) or far-field (more than one kilometre) effects, for both the dredging and placement site and along the transport route. In general effects created by the construction works are short term and near field, while impacts caused by the overall project can be far field and long term.

What are the advantages of conducting an EIA?

A well-executed and thorough EIA can lead to cost-effective mitigation and/or enhancement. When environmental mitigation is integrated as a fundamental part of project design, rather than as an add-on exercise, it will reduce project costs and lower community costs. For instance, mitigation of impacts to fauna and flora may be as simple as planning to adhere to seasonal restrictions by dredging during a window that does not interfere with marine life reproduction cycles. This is not to say that the costs of measures resulting from an EIA are lower than if no EIA had been conducted at all. But the costs will certainly be higher, if the plans have to be changed midstream when the project is already underway.

The EIA is an important tool for project planning and as such can minimise the risks for misunderstandings, provide clarity about environmental implications and lead to better cooperation between all stakeholders including project owners, dredging contractors and the public.

For further reading and information

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This brochure is presented by the International Association of Dredging Companies whose members offer the highest quality and professionalism in dredging and maritime construction. The information presented here is part of an on-going effort to support clients and others in understanding the fundamental principles of dredging and maritime construction.