**Sector Guidelines and Generic TORs for**

**Environmental and Social Impact Assessment**

**Wetland**

**Sector Guidelines[[1]](#footnote-1)**

Wetlands are “areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters” (UN Convention on Wetlands of International Importance, or Ramsar Convention). Three main categories of wetland habitats exist: (i) marine/coastal wetlands (estuaries, brackish, saline and freshwater lagoons, mangrove swamps, sea cliffs, etc); (ii) inland wetlands (lakes, rivers, waterfalls, marshes, peatlands, etc); and (iii) man-made wetlands (canals, aquaculture ponds, water storage areas, etc).

Wetlands are ecosystems of particular economic, ecologic and socio-cultural importance. The resources of wetland (land, water, and biological diversity) are often exploited by a range of users: croppers, grazers, fishermen, hunters, and gatherers. Wetlands perform an enormous variety of functions at global and local levels:

a. Regulation functions – storage and recycling of nutrients and human and organic waste; natural flood and erosion control; coastline protection from storms; groundwater recharge and discharge; water storage and treatment; maintenance of biological and genetic diversity; carbon sequestration and climatic stabilization.

b. Carrier functions – agriculture and irrigation; grazing; energy production, human settlement.

c. Production functions – provide multiple livelihoods and resources such as food (fish, crabs, shrimps, cray-fish, water-fowl etc.), water, raw materials for construction; genetic resources.

d. Information functions – role in cultural heritage; scientific information.

The priority when making choices about wetland management is to ensure that the ecosystem services of the wetland are maintained (and, where appropriate, restored). This can be achieved by application of the “Wise use principle and guidelines” of the Ramsar Convention, where wise use is defined as “sustainable utilization for the benefit of mankind in a way compatible with the maintenance of the natural properties of the ecosystem’, and following indications given in the Brisbane Declaration 2007.

**1. Potential Environmental Impacts**

The key environmental concerns in project areas which contain wetlands are as follows:

a. Conversion of wetlands (“development” and “reclamation”) – land use change to agriculture or aquaculture (mangroves for fish ponds); drainage of peatlands that store huge amount of carbon (causing carbon dioxide emission when dry peat oxidates and decomposes)

b. Loss of livelihoods – many groups of people who depend on the wetland’s natural resources and those who live downstream of the wetland will lose their main source of food and income.

c. Change of hydrological conditions – as a result of construction of dams, weirs, roads, flood control, lowering of aquifers (by drainage and irrigation), interception by polders, bunds, embankments or irrigation canals creating or exacerbating local flooding, changes in hydrological conditions, harm aquatic ecology including fisheries; deprive water elsewhere; and cause a loss of wetland vegetation and associated fauna.

d. Indirect disturbance of ecological conditions – as a result of pollution flowing into wetland (e.g. effluent from intensive animal production, fertilizer and pesticides), over-pumping for irrigation outside the wetland can cause salinization (increases in area and duration of inundation of saline water in tidal areas) to the detriment of mangroves, and ground subsidence.

In assessing a project’s impact on wetlands, it is necessary to have a clear vision of the relative importance of agricultural production and natural resource conservation. Involvement of local people in planning and management is essential, especially where access to wetland resources is essential to livelihood security.

In order to assess environmental concerns in wetland areas, remembering that the loss of wetlands magnifies the impacts of climate change, the following should be considered:

a. Importance of the wetland’s biodiversity – flora or fauna, rare or endangered species, in local, regional or global context; is the area in the Ramsar List of wetlands of International Importance or in a signatory country of the Ramsar Convention?

b. Importance of people’s resilience on wetland resources (water, land, biological) – products and uses of wetlands (i.e. construction material and fibres and fuelwood); household water supply; livestock grazing; capture fisheries; hunting; the socioeconomic value of the wetland (current or improved); and the replacement cost of the free goods and services,

c. Suitability of a wetland for proposed agriculture activities – potential for acidification; potential for subsidence (peat-type inland swamps); iron toxicity in rice (inland swamps); salinity; alkalinity; and low workability (seasonal swamps on mineral soil).

d. Importance of benefits accrued at the landscape scale and at the global scale - use of natural environment and nonstructural measures for flood control, control of water quality and of watershed erosion, carbon sequestration.

**2. Project Alternatives**

The projects which are likely to affect wetlands need special analysis. For wetland management usually a mitigation plan and monitoring program is required to reduce or compensate for unavoidable, adverse impacts. Options in wetland management include:

a. Appropriate design: design features to prevent disturbance of flow patterns and hydrologic regimes critical to the conservation of the wetland (e.g. flow regulation works; road crossings on trestles rather than embankments).

b. Livelihoods: devise means of solving the problem of “loss of livelihoods” of the local poor. Provide the affected people with alternative livelihoods (source of food and income).

c. Construct crossings: provide crossings for wildlife, cattle and people, with adequate cover for the concealed movement of wildlife.

d. Improved irrigation systems: design irrigation systems with provision for entry and exit of alternating saline and fresh water and avoidance of excessive periods of drying or high flooding.

e. Conduct studies: conduct studies of soils (e.g. mapping of potentially acid sulphate soils, etc.); catchment studies where soil erosion threatens wetland development; control of soil erosion in upper watershed through on-farm and off-farm soil; and water conservation measures.

f. Institutional and regulatory strengthening – strengthen institutions to manage and protect wetlands; establish appropriate regulatory systems to reduce the detrimental environmental impacts of aquaculture, marine fishery, overuse of agricultural nutrients, etc.

g. Explore the potential of water markets as a tool for reallocation of water to meet ecosystem needs – Payments for services derived from a river basin can support the management of wetlands or protect catchments that provide wetlands with adequate quantities and qualities of water.

Mitigation measures are not usually possible where interventions cause irreversible changes in hydrology, reduce flora and fauna, disrupt migration routes, or encourage human encroachment. The precautionary principle should be applied when the impacts of management options are uncertain. Suggested actions include:

a. Relocation of project – if wetland is on Ramsar list or if it provides a unique habitat not replaced elsewhere locally or regionally or is the exclusive habitat of rare organisms, or is essential for migrating birds.

b. Protection of neighboring equivalent wetland type, with provision for community conservation education (including potential benefits of tourism); benefits from wetland development conditional on community involvement with conservation; monitoring of the site; fencing corridors or other infrastructures; and anti-poaching patrols.

c. Project cancellation – due to the critical importance of wetlands for many poor rural communities and because of the many essential environmental services they provide, any development of wetlands should be avoided as much as possible. In addition, the long term impacts due to Climate Change and other natural phenomena are difficult to predict, and any changes to critical and sensitive ecosystems such as wetlands may lead to irreversible damage to surrounding ecosystems and peoples’ livelihoods.

**3. International Legal Context**

Designated wetlands, and to some extent all wetlands, have a special international legal status in those countries which have signed the Ramsar Convention. There are some 1.680 designated wetland sites in around 160 countries. Signatories are obliged to ensure that registered sites are managed in a way that protects the ecological values for which they were recognized. Wetlands may have international importance as biological areas and its water resources may be linked to more than one country and be influenced by projects in other countries. Hence management of wetlands and associated water resources shared by more than one country should be preceded by discussions and agreements between the various countries. Conservation measures in one country are not likely to be beneficial without the collaboration of neighboring countries which share the wetland resources. China signed the Convention in 1992.

All wetland sites, listed of not, could be subject to the broad provisions of the Convention on Biological Diversity negotiated under UNEP and signed by 160 countries at UNCED in 1992. This is the case with wetlands used by wild migratory birds and area of great global significance.

**Generic Terms of Reference**

These terms of reference will be used when commissioning an assessment of wetland degradation or an assessment of any project where wetlands and water resources may be affected as part of the environmental and social impact assessment (ESIA) and should be adapted and tailored to each specific situation. The actual scope and depth of the assessment will be determined by the nature, complexity and importance of the issues studied, as identified in the screening process.

**Introduction and Background**

1. Introduction. This section should state the purpose of the terms of reference, identify the development project to be assessed, and explain the executing arrangements for the ESIA.

2. Background information. Pertinent background for potential parties who may conduct the ESIA, would include a brief description of the major components of the proposed project, a statement of the need for it and the objectives it is intended to meet, the implementing agency, a brief history of the project (including alternatives considered), its current status and timetable, and the identities of any associated projects. If there are other projects in progress or planned within the region which may compete for the same resources, they should also be identified here.

3. Objectives. This section will summarize the general scope of the ESIA and discuss its timing in relation to the processes of project preparation, design, and execution.

4. ESIA requirements. This paragraph should identify any regulations and guidelines which will govern the conduct of the assessment or specify the content of its report. They may include any or all of the following:

* FECO Environmental and Social Safeguards Standards;
* National or provincial laws and/or regulations on environmental reviews and impact assessments;
* ESIA regulations of any co-financing organizations involved in the project.

**Required Qualifications and Expertise**

The expert or team of experts should have solid experience assessing the condition and possible impacts upon wetlands and water resources, with particular experience on, fisheries, hydrology, water quality, plant and animal ecology, social sciences, engineering, economics, and governance (where appropriate), and in addition be conversant with wetlands inventory techniques, land use system analysis and participatory socioeconomic assessment. Expertise in public participation is also required.

**Scope of Work**

**Task 1. Legal, political and institutional context**

This chapter should provide relevant information about the legal, political or institutional context – at national and site level. It should include reference to pertinent sector policies, environmental laws, regulations and standards as well as explore issues regarding institutional arrangements and institutional capacity.

Legal aspects should cover the law and regulations relevant to the project (including e.g. property rights and tenure regimes, registration governing participation and resource management). Political aspects should cover e.g. decision-making process, and current and potential conflicts. The institutional context should refer to the institutional environment (local and central government, private sector and civil society institutions relevant to, and with influence on the project), issues or constraints within existing institutions, and in their relationships with each other.

Sector policies and environmental laws (national, with information on how they relate to international environmental agreements) pertaining to wetlands, rivers, water resources of all kinds should be described, including through mapping where necessary.

**Task 2. Description of baseline information**

Baseline data is important in order to describe and map the receptors in the project site and to understand their sensitivity. The data is also key for defining mitigation measures, developing a monitoring plan and setting targets. Data provided should include a description of the project site and the bio-physical and socioeconomic conditions relevant to wetland degradation. The data needs to be focused and relevant for further decision making – e.g. for supporting decisions about project design such as project location, technology, mitigation measures.

To establish sufficient knowledge of the project site the assessment should compile the following information:

a. Defining specific ecosystem of the project site and around the wetland and water resource areas under consideration, and describing the relations between the wetland area and upland ecosystems and habitats (considers upstream and downstream impacts).

b. Identifying the distribution of ecosystems and habitats, dominant plants and connections between water bodies, wildlife use, fisheries characteristics, and evidence of past disturbances.

c. Identifying wetland functions which provide direct and indirect benefits of value to communities. The assessment should explain what methods were used to assess wetland functions and the strengths and limitations of the methodology applied.

d. Identifying dominant components of the land use system in relation to crop production, biophysical attributes, socio-economic attributes, water resources, forest resources; and the main form of wetland use: croplands (e.g. rice farming, flood recession agriculture), rangelands versus fisheries (in e.g. seasonal wetlands), etc.

e. Identifying key socio-economic information that has impact on the use of wetlands, river course and connected areas with respect to, but not exclusively: population growth, development interventions, institutional structures, tenure regimes, and livelihood strategies.

f. developing an understanding of status and trends with respect to: effects of impacts or changes proposed on livelihoods and socio-cultural services; vegetation and biodiversity status and trends; water resources status and trends in water level and flows; and the effects of land degradation in upland ecosystems and habitats on functions and services.

The analysis should also address planned developments and future land use in the site and the region other than the project under consideration. Potential data gaps should be identified; in case these constitute critical baseline data needed for the project, recommendations for the collection of these data should be made.

**Task 3. Determination of the potential impacts of the proposed project**

The impact assessment report should provide detailed information on how wetland functions and values will be adversely affected by the proposed project.

This section of the report should discuss the effects of both direct impacts (e.g. filling, dredging, clearing, alterations to wetland hydrology, and bad management) as well as indirect impacts (population growth, increased intrusion, increased noise, infrastructure nearby – both upstream and downstream, etc.) on wetlands and water resources.

In addition, potential water quality impacts (e.g. sedimentation, nutrients, hydrocarbons, and toxics) should be identified and highlighted. The report should also assess the level of adverse impacts as appropriate in relation to specific ecosystem services: provisioning services (e.g. food/vegetation/timber production, water and land availability), regulating services (e.g. hydrological, soil, biodiversity and climate) and socio-cultural services (e.g. cultural, livelihood security and health).

The impacts should then be analyzed on their significance as follows:

* Severity of impact on the receptor –biophysical and socio-economic,
* Duration of impact/seasonal variations,
* Extent of impact (local, regional, national, transboundary, global),
* Reversibility (no, yes, if the latter – to what cost/effort),
* Probability of impact.

Discuss any impact that might cause non-compliance with applicable regulation (laws and regulations, protection status, mandatory standards).

For each significant impact, identify opportunities for mitigation to be explored and analyzed in detail below, but also specify those impacts where no mitigation opportunity exists.

**Task 4. Analysis of alternatives**

Each of the anticipated impacts noted under the previous section should be addressed here, relative to the effectiveness of the mitigation at replacing lost functions and services.

The assessment should provide broad options for project alternatives and opportunities for eliminating, reducing to acceptable levels, or mitigating impacts, which could be through:

* Selection of alternative project sites to avoid adverse impacts on wetlands and water resources;
* Resource management plans or application of appropriate land/resource use management technologies (e.g. integrated livestock-crop-fisheries management, integrated water resource management);
* Project design features to prevent disruption of, or restore flow patterns and hydrologic regimes critical to maintaining wetlands functions, water resources and peoples’ livelihood;
* Enhance and/or protection of other wetlands in substandard condition to offset losses at the project site;
* Strengthening of institutions to manage and protect wetland, including NGOs;
* Promoting development of national wetland incentives and management strategies.

If any wetland creation, restoration, or enhancement is proposed as compensation, a detailed description of such alternatives should be provided.

Details should be provided on cost estimates of the proposed alternatives, their ability to mitigate the impacts, involvement of local communities in the planning and management of land use practices, capacity building needs to implement sustainable land management techniques, legal/policy frameworks that support the interventions, and time frames to implement such work.

**Task 5. Environmental and social management plan**

This part should include information on how the project has been designed to avoid and minimize adverse impacts to wetland areas and water consideration. It should discuss how to manage the project in order to minimize environmental and social impacts, and provide guidelines for long-term environmental and social monitoring to ensure adequate implementation of agreed recommendations. Monitoring should use the findings of the baseline surveys to measure progress regularly. Also measures for capacity-building and institutional strengthening should be included in the plan.

**Report**

The ESIA report/statement should be concise and limited to significant environmental and social issues; this should include emerging issues. The main text should focus on findings, conclusions and recommended actions, supported by summaries of the data collected and citations for any references used in interpreting those data. Unpublished documents used in the assessment may not be readily available and should also be assembled in an appendix. The ESIA report/statement should be organized according to the outlines in FECO Environmental and Social Safeguards Standards -ESIA.

1. Contents taken reference of IFAD Environmental and Social Assessment Procedures [↑](#footnote-ref-1)