Republic of Yemen

Directive
on Environmental Impact Assessment (EIA) of Dam Projects

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Contents

PART I: GENERAL PROVISIONS

Article 1

Purpose of the Directive

The purpose of this Directive is to further the assessment of likely environmental impact of public and private projects concerning the construction and operation of dams, in order to prevent damages on the environment and on human health.

Article 2

Legal Framework

This Directive contains implementation regulations to the Arts. 35 – 43 (Part 3, Chapter 3) of the Environment Protection Law No. (26) of 1995 for dam projects.

Article 3

Objectives of the Directive

The objectives of this Directive are

(a) to ensure that, before consent is granted for a dam project, the impacts on the environment of the project are identified, described and assessed comprehensively and in good time;

(b) to encourage responsible authorities to take actions that promote sustainable development and thereby achieve or maintain a healthy environment and a healthy economy;

(c) to ensure that results of the EIA are taken into account as early as possible in all cases in which authorities decide upon the admissibility of projects;

(d) to acquaint the public with information on the environmental impact of a project which may involve significant environmental effects and on mitigating measures to deal with them and give the public the opportunity to comment and contribute information before a ruling on the EIA of a project is issued.

Article 4

Definition of Terms

Additionally to the terms defined in Art. 2 of the Environment Protection Law the following definitions shall be used

(1) Environmental impact means the changes in the environment caused by human activities, direct and indirect effects of a dam project on

  (a) Human health, living conditions and welfare;

  (b) Soil, water, air, climate, organisms and biological diversity;

  (c) The community structure, buildings, landscape, townscape and cultural heritage;

  (d) The utilisation of natural resources and

  (e) Interaction between the factors referred to in subparagraphs a-d.

(2) Environmental impact assessment means the study in accordance with Art. 4 of this Directive, which evaluates, analyses and assesses the planned activities to secure and ensure environmentally safe development and sustainable development as well as to forecast and foresee all the possible consequences and results and measures that to be proposed in order to reduce and mitigate such effects or to avoid and annul its effects.

(3) Dam project means the construction and operation of a dam with the purpose of producing electricity, water supply, irrigation and flood control.

(4) Dam is a barrier which impounds or stores water.

(5) Dam height is defined as the vertical distance from the top of the dam to the natural bed of the stream or watercourse measured at the downstream toe of the dam or to the lowest elevation of the outside limit of the dam if it is not across a watercourse.

(6) Competent authority means the licensing authority according to the respective dam regulations. The EIA procedure shall be carried out in cooperation with EPA according to the provisions of this Directive.

(7) Developer is a person or a public body who proposes a project and intends to carry it out.

(8) Expert means a person holding an appropriate activity licence in respect to EIA. Details shall be regulated in an ordinance.

(9) Granters of consent are those authorities whose responsibility is potentially affected by the project and other parties doing civil services, in particular public transport, energy supply, postal and telecommunication services etc., potentially affected by the project.

Article 5

Obligatory Steps in the EIA Procedure

(1) The environmental impact assessment (EIA) procedure is a study, which includes a

a) Screening which aims to determine which class of EIA is required for the proposed dam project;

b) Scoping which aims to decide on the coverage of the EIA;

c) Preparation of the EIS with a description of the project and the environment and the prediction and significance of the impacts;

d) Reviewing the EIS to check its adequacy;

e) Making a decision on the proposal by using the EIS and opinions expressed about it;

f) Monitoring the impacts of the project or activity if it is implemented (Monitoring);

g) Consultation of public, the concerned authorities and NGOs.

(2) In the EIA procedure the competent authority shall prepare the following documents:

a) a screening decision according to Art. 11 para 1 S. 1 of this Directive;

b) a scoping document according to Art. 11 para 2 of this Directive;

c) an assessment report, including a monitoring report, according to Art. 14 para 1 of this Directive.

(3) In the EIA procedure the developer prepares the following documents:

a) a project description according to Art. 9 para 1 S. 1 of this Directive;

b) a scoping proposal according to Art. 9 para 2, 3 of this Directive;

c) an EIS according to Art. 9 para 4 of this Directive.

Article 6

Screening

(1) The EIA shall be applied to all projects concerning the construction and operation of dams.

(2) Based on a project description submitted by the developer according to Art. 9 para. 1 and Annex 1 of this Directive, the competent authority in cooperation with the Environmental Protection Agency (EPA) shall decide which class of EIA is required for the proposed dam project. Depending on its type and size, the dam project may require comprehensive EIA, general EIA or site-related EIA.

(3) All projects independent of their type and size, which are located in the areas approved by EPA and the Ministry of Water and Environment as environmentally sensitive and listed in Annex 2, are subject to comprehensive EIA.

PART II: ADMINISTRATIVE PROCEDURE AND RESPONSIBILITY

Article 7

Involvement of EPA, Other Authorities and Granters of Consent

(1) The Ministry of Water and Environment shall have supreme control for issues covered by this Directive.

(2) EPA shall advise the Ministry and carry out supervision of the implementation of this Directive and provide guidelines in accordance with it.

(3) The competent authority shall make screening decision in cooperation with EPA.

(4) The competent authority shall cooperate with EPA in the scoping procedure and in the assessment of the EIS.

(5) The competent authority shall involve other authorities and granters of consent, if the projects have significant impacts within their responsibility. They shall provide the competent authority with a statement. The competent authority shall inform them about the results of the scoping procedure and assessment of the EIS.

Article 8

Obligations of the Competent Authority

(1) The environmental impact of a dam project must be investigated in an assessment procedure in accordance with this Directive before any action relevant in terms of environmental impact is taken to implement the project.

(2) The competent authority shall document the EIA procedure, in particular the screening decision, the scoping document, and the assessment report. All relevant information, in particular statements of EPA, other authorities and the granters of consent, and the results of public consultation, has to be filed together with the considerations and reasons for the respective decision.

Article 9

Obligations of the Developer

(1) The developer shall submit a project description to the competent authority and to EPA in order to enable them to screen what class of EIA is required for the proposed dam project accordant to Art. 6 and Annex 1 of this Directive. The project description shall include at least the location, dam type, dam height and projected surface and volume of impoundment, as well as planned capacity for hydropower dam projects and irrigated area for irrigation dam projects.

(2) For dam projects, which have been classified by the competent authority in cooperation with EPA as requiring comprehensive EIA, the developer shall submit a scoping proposal using both basic and extended scoping criteria listed in Annex 4 as early as possible. In the scoping proposal the developer shall describe the project, the project site and alternatives. The scoping proposal shall also suggest which aspects of the project and of the environment should be emphasised, describe what data is already available and how information will be made available for public consultation.

(3) For dam projects which have been classified by the competent authority in cooperation with EPA as requiring general EIA or site-related EIA, the developer shall submit a scoping proposal using basic scoping criteria and those extended criteria, which are

relevant specifically for these projects and have been selected using case-by-case approach based on selection criteria listed in Annex 3.

(4) Pursuant to the approved scoping document the developer is responsible that an EIS is developed and presented to the competent authority.

Article 10

EIS Requirements

The EIS shall contain all relevant information necessary for making decision by the competent authority concerning the proposed project as well as for involvement of other authorities, granters of consent and public consultation. The EIS shall be prepared by an expert. Detailed requirements for EIS are listed in Annex 5 of the Directive.

Article 11

Assessments by the Competent Authority and Right to Object

(1) The competent authority shall assess the project description (Art. 9 para. 1) within one month from the date of the submission. If the project description does not contain sufficient information and data, the authority may ask for additional information. If the project description is accepted, the competent authority in cooperation with EPA shall carry out the screening decision and inform the developer about the result.

(2) On the basis of the accepted scoping proposal the competent authority in cooperation with EPA shall identify significant impacts and mitigation measures in order to determine the geographic boundary, the time constraints and time horizons and the expertise and human resources needed for the EIS. The scoping document has to be made within a month after the submission and completion of public consultation, involvement of other authorities and granters of consent. The developer needs to be informed immediately thereafter.

(3) If the developer fails to submit an EIS to the competent authority within two years after approval of the scoping document, the scoping document expires.

(4) The competent authority in cooperation with EPA shall assess the EIS (Art. 9 para. 4, Art. 10) within three months from the date of the submission taking into consideration the statements of other authorities and granters of consent and the results of public consultation. If the EIS does not fulfil the requirements of Article 10, the authority may ask for additional information.

(5) The developer shall be notified of the result of the assessment of the project description, the assessment of the scoping proposal and the assessment of the EIS, either of their approvals or rejections. In case of rejection the applicant shall be given the reasons for it.

(6) The decision about the approval or rejection shall be made under consideration of the following:

   (a) The present state of the environment in which the project or the proposed activity will be established.

   (b) The environmental impact that may occur due to the project or establishment.

   (c) Any other development that may be reasonably expected in the area where the project or establishment is proposed to be carried out and which is considered important from an environmental point of view.

   (d) The objections which may arise from the project.

(7) In case of rejection the developer may object before the competent authority within sixty days starting from the date of his notification. The developer shall be notified about the decision.

(8) An appeal before the competent court of first instance may be submitted within sixty days as a maximum from the date of notification about the decision. The court of first instance shall principally decide the subject matter of the appeal within six months as a maximum. Its decision shall be considered as final.

Article 12

Access to Environmental Information

(1) Persons or agencies holding environmental information concerning the likely environmental impact of the dam project or the status of the environment at a site shall make such information available free of charge to the developer, expert and competent authority.

(2) Everyone has the right to obtain information concerning the likely environmental impact of the dam project from the competent authority, submit written and oral questions or make proposals and obtain responses thereto.

Article 13

Public Consultation

(1) The competent authority shall consult the public concerning the project based on the scoping proposal. A public consultation is also carried out during assessment of the EIS. The scoping proposal and the EIS shall be made easily accessible at the respective local authority, at the competent authority for six weeks. Within this time limit, anyone may submit written comments to the competent authority.

(2) The competent authority shall provide the public with project description, scoping proposal, EIS, assessment report and the decision on the approval or rejection of the project, together with the reasons given.

Article 14

Concluding the Assessment Procedure

(1) The competent authority shall prepare an assessment report on the EIS and its adequacy in cooperation with EPA. A summary of monitoring measures and their reporting, other statements and opinions shall be included.

(2) The assessment procedure shall be concluded when the competent authority hands over the assessment report to the developer. The assessment report shall be submitted to other authorities and/or granters of consent.

(3) The competent authority shall submit the assessment report according to Art. 40 para. 2 of Environmental Protection Law to the Council.

Article 15

Monitoring

(4) EPA is responsible for carrying out monitoring measures during the construction and operation phase and filing the monitoring report. EPA shall submit annually a copy of the monitoring report to the competent authority and developer.

Article 16

Consideration of the Assessment

According to Art. 36 of the Environmental Protection Law, a permit for implementation of a project shall not be granted before an assessment report has been obtained. A permit or comparable decision on a project shall state in what way the assessment report has been taken into account. In granting permits the results of the environmental impact assessment and the environmental requirements annexed to the EIS should taken into consideration.

Article 17

Secrecy and Data Protection

The legal provisions on secrecy and data protection shall not be affected by this Act.

PART III: TRANSBOUNDARY ENVIRONMENTAL IMPACT

Article 18

Assessment of the Transboundary Environmental Impact

Should a project be deemed likely to have significant negative environmental effects in another country or in other countries, the competent authority shall inform the responsible Ministry. The responsible Ministry shall provide this country or these countries with the project description together with available information on its conceivable transboundary effects within bilateral agreements.

PART IV: MISCELLANEOUS PROVISIONS

Article 19

Control, Supervision and Monitoring

(1) The Minister of Water and Environment shall be responsible for the general guidance and supervision on proper implementation of this Directive.

(2) The competent local and regional authorities shall control and supervise implementation of this Directive in their remits.

(3) National, regional and local authorities shall cooperate in carrying out the assessment procedure provided in this Directive and in coordinating it with procedures in accordance with other legislation affecting the project.

Article 20

Cost Liability

The developer shall pay the costs for reviewing, investigating and publishing information on environmental impact and the related hearings.

Article 21

Entry into Force

This Directive comes into force on XXX XX, 200X.

ANNEX 1 – LIST OF DAM PROJECTS REQUIRING EIA

In accordance with Article 5 the following projects shall fall within the scope of this Directive.

Legend:

No. = Project number
Project = type of project
X in column 1 = project requires comprehensive EIA
G in column 2 = project requires general EIA
S in column 2 = project requires site-related EIA

No.	Project	Col. 1	Col. 2
1.	**Hydropower dams:**		
1.1	Construction and operation of impoundment (storage) hydropower facilities, having a generating capacity of		
1.1.1	more than 30 MW	**X**	
1.1.2	1 MW to 30 MW		**G**
1.1.3	less than 1 MW		**S**
1.2	Construction and operation of diversion hydropower facilities, having a generating capacity of		
1.2.1	more than 20 MW	**X**	
1.2.2	1 MW to 20 MW		**G**
1.2.3	less than 1 MW		**S**
1.3	Construction and operation of pumped storage hydropower facilities, having a generating capacity of		
1.3.1	more than 30 MW	**X**	
1.3.2	1 MW to 30 MW		**G**
1.3.3	less than 1 MW		**S**
1.4	Construction and operation of run-of-river hydropower facilities		**S**
2.	**Irrigation dams:**		
2.1	Construction and operation of dams for irrigation purposes		
2.1.1	for 6 000 ha or more of irrigated area, or with storage surface of 5 km^2 or more	**X**	
2.1.2	for 100 ha to less than 6 000 ha of irrigated area, or with storage surface of 0,5 km^2 to less then 5 km^2		**G**
2.1.3	for less than 100 ha of irrigated area, or with storage surface of less than 0,5 km^2		**S**
3.	**Water supply dams:**		
3.1	Construction and operation of dams for water supply purposes with		
3.1.1	storage volume of 20 000 000 m^3 or more, or storage surface of 5 km^2 or more	**X**	
3.1.2	storage volume of 5 000 000 to less then 20 000 000 m^3, or storage surface of 0,5 km^2 to less then 5 km^2		**G**
3.1.3	storage volume of less tan 5 000 000 m^3, or storage surface of less than 0,5 km^2		**S**
4.	**Flood control dams:**		
4.1	Construction and operation of dams for reducing peak flood levels		
4.1.1	able to store 50 000 000 m^3 or more of water, or having storage surface of 10 km^2 or more	**X**	
4.1.2	able to store 10 000 000 to less then 50 000 000 m^3 of water, or having storage surface of 5 km^2 to less then10 km^2		**G**
4.1.3	able to store les than 10 000 000 m^3 of water, or having storage surface less than 5 km^2		**S**

5.	**Groundwater recharge dams**		
5.1	Construction and operation of dams for recharging the groundwater with storage capacity of water		
5.1.1	250 000 m^3 or more	**X**	
5.1.2	25 000 m^3 to 250 000 m^3		**G**
5.1.3	Less than 25 000 m^3		**S**

ANNEX 2 – LIST OF AREAS IN YEMEN APPROVED BY THE ENVIRONMENTAL PROTECTION AGENCY OF AND THE MINISTRY OF WATER AND ENVIRONMENT AS ENVIRONMENTALLY SENSITIVE

Nr.	**Name of the protected area**	**Governorates**
1.	Belhaf area	Hadramut
2.	Hawf area	Al-Mahrra
3.	Jabel Iraf area	Taiz
4.	Jabel Al-Lawz	Sana'a
5.	Jabel Bura'a	Al-Hodida
6.	Soqatra island	Hadramut
7.	Otma	Dhamar
8.	Beer Ali	Shabuah
9.	Ras-Sharma	Hdramut
10.	Al-Luhaia	Al-Hodida
11.	Kamaran Island	Al-Hodida
12.	Al-Zobair, Zoqar and Honaish	Al-Hodida
13.	Waddea'a	Amran
14.	Bani Omar	Taiz
15.	Hlamlam	Haja
16.	Bani Gaber and Bani Seham	Sana'a
17.	Chain of Koor mountains	Abyan
18.	Wetland	Aden
19.	Gashan beach	Al-Muhrra
20.	Wadi Thaher	Sana'a
21.	Al-Ahger	Sana'a
22.	Waraf	Ibb
23.	Tarim	Hadramut
24.	Al-Areg	Al-Hodida
25.	Hamel, Bit Boos	Sana'a
26.	Al-Ryadi	Al-Mahwit
27.	Kashma	Al-Hodida
28.	Rima	Al-Hodida
29.	Al-Aer	(Al-Hima) Sana'a
30.	Kataba	Tihama
31.	Al-Wahija	Tihama
32.	Al-Ghorira	Tihama
33.	Bab al-Mandab	Taiz

ANNEX 3 – CHECK-LIST FOR THE IDENTIFICATION OF THE RELEVANT EXTENDED CRITERIA FOR SCOPING

The following check-list shall be applied insofar as reference to Annex 2 is made in Art. 9 para. 3.

No.		Yes	No	N/A
1. Characteristics of projects				
1.1	Is the considerable interference with aquatic or riparian ecosystems awaited during construction and operation phases of the project?			
1.2	Will the natural geomorphology of a water body by considerably altered due to realisation of the project?			
1.3	Will the significant amounts of waste be produced during the construction phase?			
1.4	Will the project be the source of considerable environmental pollution and nuisances during its operation phase?			
1.5	Will the project be concerned with the high risk of accidents, having regard in particular to substances or technologies used?			
2. Location of projects				
2.1	Will the project be located in areas, which are already being used, in particular for settlement and recreation, for agricultural, forestry or fisheries uses, for other commercial or public uses, transport, supply and disposal?			
2.2	Will the project be located in areas ecosystems of which can be characterised as especially rich or having high quality and regeneration capacity of water, soil and landscape?			
2.3	Is the project site located within or near the territory of a national park?			
2.4	Is the project site situated within or near the territory of a biosphere or landscape reserve?			
2.5	Does the biotope within the project site enjoy statutory protection?			
2.6	Are the areas of bird sanctuaries located within the project site?			
2.7	Is the project site located within water conservation areas or medicinal spring conservation areas?			
2.8	Is the project located near or within densely populated areas, especially central cities and settlement concentrations in densely settled areas?			
2.9	Are there any monuments, monument complexes, earthwork monuments or areas classified as archaeologically important landscapes by the historic monument authority, specified in official lists or maps within the project site?			
2.10	Is there a scarcity of water in the region where the project site is located?			
3. Characteristics of the potential impact				
3.1	Will the project impacts have a large extent (geographical area and size of the affected population)?			
3.2	Is the resettlement of large number of people will be caused by the project?			
3.3	Will the project have transboundary impacts?			
3.4	Will the project impacts be of high magnitude and complexity?			
3.5	Will the project impact be of high probability?			
3.6	Will there be any irreversible impacts?			
3.7	Will the project impact be of long duration and high frequency?			

ANNEX 4 – LIST OF SCOPING CRITERIA FOR DAM PROJECTS

Legend:

B in column 5 = basic scoping criteria: see Art. 9 para. 2
E in column 5 = extended scoping criteria: see Art. 9 para. 3

Issues	Source of Impact	Effect	Indicator (unit of measurement, if applicable)	Type of scoping criteria	Potential Impacts
1. Physical effects					
1.1 Surface water hydrology/ hydraulics	Impoundment	Changed flow velocity	Flow speed (m/s)	B	Sedimentation Siltation Decreased solubility of oxygen Change of temperature
		Disturbances to riparian areas	Affected riparian area (km^2)	B	Erosion and deposition Changes in riparian drainage Changes in water budget Disturbance of natural riparian corridors Disturbance of wetlands Changed riparian habitat
		Changed surface water runoff	Water level (m)	E	Decrease of fresh water inputs to a water body Changes in water budget Loss of habitats Affected nutrient cycles
	Release regime	Changed flow regime	Fluctuations of water levels (m) and flow speed (m/s)	B	Reduced frequency, velocities and volumes Changed channel width Changed plant and animal diversity Increased erosion and salinity Disturbance of wetlands and riparian areas Changes in downstream water quality

		Changed frequency and duration of flooding	Frequency of flooding (floods/year) Duration of flooding (day)	E	Reduction of wetland, riparian and floodplain biodiversity Changes in water budget
		Changed magnitude of flooding	Area of flooding (km^2)	E	Disturbance of wetlands and riparian areas Changed plant and animal diversity Sedimentation Erosion
		Changed flow velocities	Flow speed (m/s)	B	Sedimentation Siltation Increased turbidity Decreased solubility of oxygen Change of temperature Algal blooms
1.2 Chanel morphology/ sediments	Impoundment and release regime	Sedimentation of reservoirs	Sedimentation rate (percent/year)	E	Loss of storage capacity Backwater effects Flooding and water logging upstream Deficiencies of nutrients downstream Release of captured sediments (e.g. heavy metals)
		Altered sediment load	Sediment load* (g/cm^2 per day) *Can be measured using sediment traps	E	Scouring of river bed below dam Hungry water effect Degradation/erosion of bed and/or banks Changed bank/bed stability Change of stream depth and width Changed plant and animal diversity
		Changed channel size	Area of channel (km^2)	B	Loss of habitats Sedimentation Erosion Changed plant and animal diversity
		Loss of original river section	Assessment using historical aerial photography and mapping	B	Change of bed slope Change of planform/pattern Changed plant and animal diversity Affected wetlands and riparian areas

1.3 Groundwater hydraulics	Impoundment	Change in water-table	Water table level (m)	E	Impacts on riparian vegetation Changes in water budget Impacts on a basin ecosystem
2. Environmental effects					
2.1 Surface water quality	Impoundment	Change in oxygen content	Concentration of oxygen (mg/l)	B	Changed plant and animal diversity
		Nutrient enrichment	Concentration of nutrients (mg/l) Visual identification (green-blue algae etc.)	E	Organic pollution Eutrophication Nuisance plant growth Algal blooms Changed plant and animal diversity
		Proliferation of aquatic weeds	Visual identification	E	Clogging Impairing navigation Impacted recreation, fisheries and irrigation
		Thermal stratification	Temperature differences within reservoir (°C)	B	Low temperature water released Oxygen depleted, nutrient rich water released Affected aquatic species
	Release regime	Salinization of water	Concentration of dissolved salts (mg/l)	B	Impacts on wetlands Impacts on aquatic species
2.2 Aquatic ecology	Impoundment and release regime	Altered habitat	Change in number of species (in percent)	E	Effect on fish behaviour Effect on fish spawning Loss of sensitive species Loss of rheophilic flora and fauna Loss of zoobenthos species Changed species diversity
		Changed fish biomass	Number of fish species	B	Disturbed aquatic ecosystems Food chains disturbed
		Changed invertebrate biomass	Number of invertebrate species	E	Disturbed aquatic ecosystems Food chains disturbed
	Dam wall	Barrier to fish migration	Number of fish species	B	Effect on fish behaviour Effect on fish spawning

					Changed fish species diversity
		Barrier to mammals	Number of mammal species	E	Effect on behaviour of mammal species Effect on spawning of mammal species Changed mammal species diversity
		Changed invertebrate biomass	Number of invertebrate species	E	Disturbed aquatic ecosystems Food chains disturbed
	Release structure	Altered habitat	Change in number of species (in percent)	E	Loss of sensitive species Effect on fish behaviour Changed species diversity
		Change in fish community	Number of fish species	B	Disturbed aquatic ecosystems Food chains disturbed
		Changed invertebrate biomass	Number of invertebrate species	E	Disturbed aquatic ecosystems Food chains disturbed
		Changed plant biomass	Number of plant species	E	Disturbed aquatic ecosystems Deoxygenation of water
2.3 Terrestrial ecology	Impoundment	Wetland changes	Number of grass species	B	Disturbance of sensitive species Changed species diversity
		Changed habitat	Number of lost terrestrial species	E	Migration of animals to new areas, where new equilibrium may favour some species over others Changed species diversity Loss of terrestrial species
	Associated pipelines	Changed habitat	Change in number of species (in percent)	E	Disturbance of sensitive species Changed species diversity
3. Socio-economic effects					
3.1 Human-related	Impoundment	Resettlement of people living in the inundation zone	Number of people	B	Disruption of livelihood of private lives Destruction of lifestyles and customs Migration of displaced people

					from rural to urban areas Social disruption and decrease in standard of living of resettled people
		Health risk	Registered number of disease cases	E	Increase water-borne and water related diseases Creation of habitats for parasites
3.2 Land use change	Impoundment	Restriction to future development	Area restricted to future development (km^2)	B	Loss of land through inundation Loss of grazing land Decrease of floodplain agriculture Loss of riparian soils
		Land degradation	Area of degraded land (km^2)	E	Soil erosion Salinization of floodplains Loss of soil productivity Soil pollution Deforestation
3.3 Visual amenity	Impoundment	Altered aesthetic value	Visual identification Interviews	B	Loss of aesthetic values and scenic beauty Altered landscape
3.4 Recreation related	Impoundment	Alteration or loss of areas traditionally used for recreation purposes	Area of altered or lost territories (km^2)	B	Alteration to access Change in angling quality Disruption to users of the water environment Altered facilities Changed water resource Adverse odour Nuisances Affected tourism
3.5 Heritage and archaeology	Impoundment	Change to historic landscape	Area of changed historic landscapes (km^2) Number of lost historic or cultural monuments or landmarks	B	Loss of local land marks, historic, cultural or aesthetic features

ANNEX 5 – REQUIREMENTS FOR THE EIS FOR DAM PROJECTS

Section of an EIS	Checklist of EIS contents	EIS contents are basic (B) or extended (E)
1. Cover sheet	The title of the proposed project and its location	B
	The name(s), address(es), and telephone number(s) of a person (or persons) to contact for further information	B
	The EIS designation as draft, final, or supplemental.	B
	A one-paragraph abstract of the EIS	B
	For a draft EIS, the date by which comments must be received	B
2. Presentation of the developer and expert	Full name and function of the developer, his situation of responsibility for the sector and the subject matter of the EIS, his full address, telephone and other communication links	B
	The expert entrusted with the elaboration of the EIA and EIS, by identification of his name, function, full address, telephone and other communication links. Evidence regarding the professional qualification of the expert, his specialised experience in the field related to the present particular study undertaking, and for his status of independence	B
3. Summary	The underlying purpose and need for project	B
	The proposed action	B
	Each of the alternatives and key differences among the alternatives	E
	The preferred alternative, if any	E
	The principal environmental issues analysed and results	B
	The comparison of the impact with established norms and standards	B
	The extent to which areas outside the national sovereignty may be affected by the proposed activity	E
4. Project description		
4.1 Construction	Site evaluation/testing	B
	Time of year, duration and phasing	B
	Site preparation works	E
	Employment, accommodation an working hours	E
	Acquisition of lands and management prior to development	B
	Dredging/excavation and spoil deposition	B
	Construction techniques	B
	Watercourse diversions (temporary)	E
	Pipe laying	E
	Materials (including sourcing, transportation and storage)	E
	Infrastructural extensions (water, power, roads etc)	E

	Access	E
	Traffic, noise, dust and vibration	E
	Fencing	E
4.2 Operation (including relevant alternatives)	Operational range of water levels	B
	Operational range of flows	B
	Seasonal/daily variations of operations	E
	Monitoring and control procedures	E
	Maintenance systems	E
	Principal structures including impoundment structures, access, pipelines, power lines, diversion, channels, control mechanism, buildings and fences	B
	Maintenance	B
4.3 Decommissioning (if applicable)	Safety	E
	Reversibility	E
	Alternative uses	E
4.4 Growth	Future extensions to scheme	E
4.5 Associated developments	Intensification of or new landuses	E
	Rehousing of displaced residences	E
	Power transmission lines	E
	Water pipes	E
	Adjustment of affected infrastructure	E
5. Environmental effects (also see Annex 4 for list of potential environmental effects of a dam project)		
5.1 Typical significant impacts likely to affect human beings	Displacement	E
	Creation/loss of amenity	B
	Community severance	B
	Changes to land use and settlement patterns	B
5.2 Fauna	Changes due to attend habitat	B
	Disturbance during construction	B
	Effects of changes in water quality and flow regime	B
	Effects due to changes in flora	B
5.3 Flora	Alterations to habitats due to flooding/drainage	B
	Indirect impacts due to altered land-use practices	E
	Aquatic and terrestrial species should be considered	B
5.4 Soils and geology	Erosion and siltation	E
	Excavation/deposition of soil	E
	Drainage	E
	Loss of/changes to soil	E
5.5 Water	Changes to the physical, chemical and biotic characteristics of water bodies	B
	Effects on the groundwater and surface water flow regimes and quality	B
5.6 Air	Dust generation (particularly during construction)	E
5.7 Climate	Drainage of wetlands may reduce occurrence of mist and fog due to drainage of wetlands	E
	Local climatic effects, particularly regarding temperature and evaporation, due to creation of an impoundment	E
5.8 The landscape	Direct impacts can arise due to spoil deposition, dam construction and machinery presence during construction	B
	Indirect inputs can occur due to factors such as power lines, water mains and treatment works and changes in land usage	E

5.9 Material assets	Roads	E
	Power supply networks	E
	Water supply	E
	Potential uses of water resources	B
5.10 Cultural heritage	Flooding of monuments, artifacts and settlements	E
	Disturbance of items of historical importance such as bridges and weirs	B
	Significant changes in long established land use patterns	E
5.11 The interaction of the foregoing effects		E
6. Possible mitigation options	Siting and design alternatives	B
	Water usage rates	E
	Routing of infrastructure	E
	Bank protection	B
	Habitat creation	
7. Annexes	All reference documents and data	B
	Additional information and sources	B
	Analyses reports	B
	Reports of drilling campaigns and surveys	E
	Maps	B
	Photographs	E
	Photo-interpretation	E
	Simulation out-prints and modelling results	E
	Bibliographical references (publications, documents, studies, research reports etc.)	B