Environmental and Social Safeguard Standards

Of Foreign Environmental Cooperation Center

Safety of Dams

Chapter I Policy

1. FECO will not implement projects or programs that would involve the construction or rehabilitation of large dams[1] or complex dams[2] with GEF funding.

2. If a project involves dam safety, qualified institutions shall be assigned to supervise the planning, design and construction of the dam. Necessary dam safety measures shall be adopted and implemented in the process of design, bidding, construction, operation and maintenance of the dam and related structures.

3. For a large dam, an independent external panel is required and a separate dam safety plan is to be prepared. For a small dam[3] with height between 10 and 15 meters which do not have serious safety issues, the dam safety plan should be part of the environmental and social management plan (ESMP).

4. Where a project relies or may rely on the performance of an existing dam or a dam under construction (DUC), the safety status of the existing dam or DUC (and its appurtenances) should be inspected and evaluated in the ESA. The proposed project should include safety-related measures or remedial work to upgrade the existing dams or DUC when necessary.

5. Construction activities of the project shall be undertaken by selected contractors with relevant qualification and experiences.

6. Periodic safety investigation of new and repaired dams shall be made after completion. All the detailed plans shall be reviewed, and appropriate remedial actions shall be taken as necessary.

7. Dam safety report should be submitted for public consultation and disclosure prior to appraisal.

Chapter II Institutional Structures

FECO has designated a staff person as the institutional focal point for dam safety. This staff will be responsible for the coordination, implementation and oversight of FECO's standard on dam safety.

FECO maintains a pool of external specialists in the area of dam safety who will perform specialized functions in the implementation of FECO's standard on dam safety.

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[1] Large dams are defined as dams with a height of 15 meters or greater from the lowest foundation to crest or dams between 5 meters and 15 meters impounding more than 3 million cubic meters.

[2] Complex dams are defined as dams that (i) could cause safety risks, such as an unusually large flood-handling requirement, location in a zone of high seismicity, foundations that are complex and difficult to prepare, retention of toxic materials, or potential for significant downstream impacts.

[3] Small dams are normally less than 15 meters in height. This category includes, for example, farm ponds, local silt retention dams, and low embankment tanks.

Chapter III Guidelines

Section I Classification of Dams and Requirements of Environmental and Social Assessment on Dam Safety

Dams can be divided into new dams, existing dams and dams under construction according to construction sequence; new dams can be divided into small dams and large dams according to their complexity and height. The environmental impact assessment for all types of dams should be carried out in accordance with the requirements of the "Technical guidelines for environmental impact assessment of hydraulic and hydropower engineering".

1. Small dams

Small dams are normally less than 15 meters in height. This category includes, for example, farm ponds, local silt retention dams, and low embankment tanks.

2. Large dams

Large dams are 15 meters or higher in height or the dams with a reservoir capacity of more than one million cubic meters. Dams that are between 10 and 15 meters in height or have a reservoir capacity of less than one million cubic meters are treated as large dams if they pose potential safety threats to important cities and towns, trunk transportation lines, important military facilities, industrial and mining areas. The construction and management of dams should be strictly implemented in accordance with the requirements of the "Regulations on Reservoir Dam Safety Management".

3. Existing dams and dams under construction

Some projects do not include a new dam but will rely on the performance of one or more existing dams or dams under construction (DUC). For example, power stations or water supply systems that draw directly from a reservoir controlled by an existing dam or a DUC; new diversion dams or hydraulic structures located downstream from an existing dam or a DUC, where failure of the upstream dam could cause extensive damage to or failure of the new structure; and irrigation or water supply projects that will depend on the storage and operation of an existing dam or a DUC for their supply of water and could not function if the dam fails. Projects in this category also include operations that increase in the capacity of an existing dam, or change in the characteristics of the impounded materials, where failure of the existing dam could cause extensive damage to or failure of the facilities.

If such a project, as described above, involves an existing dam or DUC, the safety status of the existing dam or DUC (and its appurtenances) should be inspected and evaluated in the ESA. The proposed project should include safety-related measures or remedial work to upgrade dams when necessary. For high-risk cases involving significant and complex remedial work, the environmental assessment should be required on the same basis as for a new dam.

Section II Dam Safety Plan

Dam safety plan should contain the following:

1. Plan for construction supervision and quality assurance

This plan covers the organization, staffing levels, procedures, equipment, and qualifications for supervision of the construction of a new dam or of remedial work on an existing dam. For a dam other than a water storage dam, this plan takes into account the usually long construction period, covering the supervision requirements as the dam grows in height—with any accompanying changes in construction materials or the characteristics of the impounded material—over a period of years.

2. Safety monitoring plan

This is a detailed plan for the installation of instruments to monitor and record dam operation and the related hydro-meteorological, structural, and seismic factors.

3. Operation and maintenance (O&M) plan

This detailed plan covers: organizational structure, staffing, technical expertise, and training required to operate and maintain the dam; equipment and facilities needed to operate and maintain the dam; O&M procedures; and arrangements for funding O&M, including long-term maintenance and safety inspections. The O&M plan for a dam other than a water storage dam should reflect the changes in the dam's structure or in the nature of the impounded material that may be occurred over a period of years. The plan could be improved and completed during project implementation; the final plan shall be due no more than six months prior to the initial filling of the reservoir.

4. Emergency preparedness plan

Emergency preparedness plan is a precautious plan that aims to avoid or reduce losses in cases of safety emergencies concerning reservoir dams, and it is an important non-structural measure for the reservoir management departments and other competent authorities to enhance the capacity of coping with the unexpected incidents and reducing dam risks. It includes the following items: introduction, general conditions of reservoir dams, analysis of incidents, system of emergency organizations, mechanism of plan implementation, emergency support, publicity, training, exercise (drill) and annex. Emergency preparedness plan should be prepared in accordance with the requirements of the “Guide to the Drafting of Emergency Preparedness Plan for Reservoir Dam Safety Management (for trial implementation)”.

5. Safety assessment of the existing dam

For the existing dams higher than 15 meters or with a storage capacity in excess of one million cubic meters, the identification of the dam safety shall be implemented as per the requirements of “Methods of Safety Identification for Reservoir Dam”, and the safety assessment report and the identification report needs to be provided.

Chapter IV Procedures

I. Stage of Eligibility Assessment

Project proponents need to explain if the proposed project involves or potentially

impacts dam safety. This information will be used by the institutional focal point for dam safety to determine whether the standard on the safety of dams is triggered in the proposed project.

II. Stage of the Project Document Assessment

For a large dam, an independent external panel is required and a separate dam safety plan is to be prepared. For a small dam with height between 10 and 15 meters which do not have serious safety issues, the dam safety plan should be part of the environmental and social management plan (ESMP).

The separate dam safety plan or the plan included in the ESMP should be available for public consultation, with specialists available to responsible to queries and explain project details to the public, local and national government, owners of dam and other interest parties.