Mozambican Dam Safety Regulation

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1. Location
2. Main River Basins in Mozambique
3. Main Legal Instruments and Policies
4. Dam Safety Regulations (DSR)
5. DSR Implementation Challenges

Location

FIGURE 1. MAP OF AFRICA

- Mozambique is located in the south of the African continent, bordering South Africa and Eswatini to the south; Tanzania to the north; Zimbabwe, Zambia and Malawi to the west; and the Indian Ocean to the east.
- The country has a total area of approx. 800,000 km^2, comprised of 98% land and 2% water, a coastline of approx. 2800 km, and a total population of approx. 28 million (INE 2017).

Main River Basins

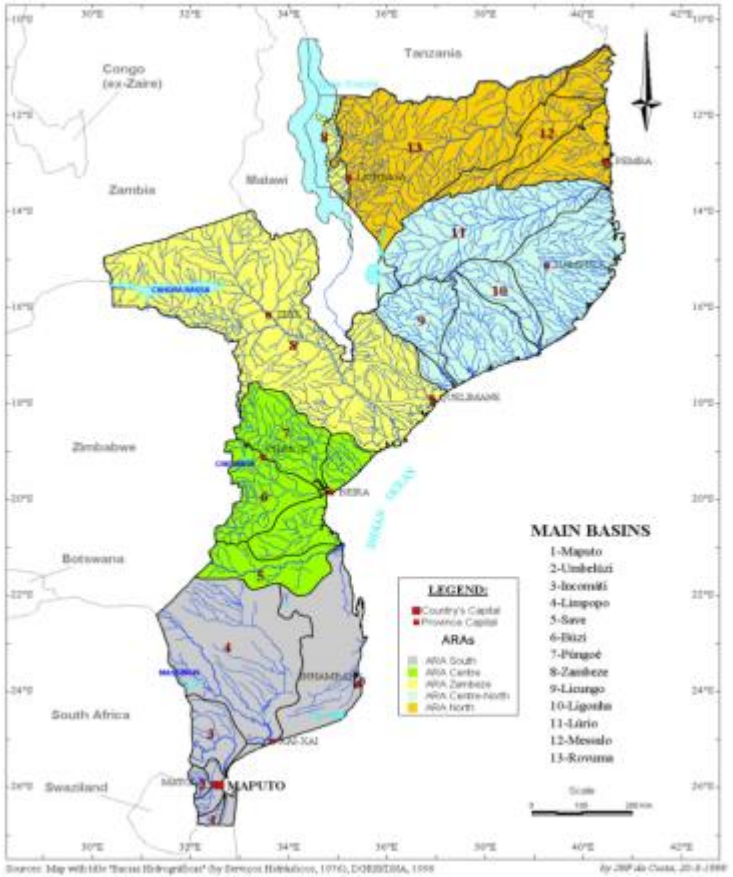

FIGURE 2. ADMINISTRATIVE DIVISION

River Basins	Countries
Buzi	Mozambique, Zimbabwe
Incomati	Mozambique, South Africa, Eswatini
Limpopo	Mozambique, Botswana, South Africa, Eswatini
Maputo	Mozambique, South Africa, Eswatini
Púnguè	Mozambique, Zimbabwe
Rovuma	Mozambique, Malawi, Tanzania
Save	Mozambique, Zimbabwe
Umbeluzi	Mozambique, Eswatini
Zambezi	Mozambique, Angola, Botswana, Malawi, Namibia, Tanzania, Zambia, Zimbabwe

TABLE 1. BASINS SHARED BETWEEN MOZAMBIQUE AND SADC COUNTRIES

Main Dams in Mozambique

Name	River	Nearest urban	Type	Height (m)	Live sto-rage(Mm3)	MAR (Mm3)	Main Purposes
Peq.Libombos	Umbeluzi	Maputo	Earth	46	360	240	Urban supply, irrig
Corumana	Sabié	Moamba	Earth	45	1230	630	Irrig., hydropower
Macarretane	Limpopo	Chokwé	Weir	12	3.6	5510	Irrigation
Massingir	Elephants	Chokwé	Earth	48	2260	1800	Irrig., hydropower
Mavúzi	Revué	Chimoio	Weir	8	1.2	1400	Hydropower
Chicamba	Revué	Chimoio	Concr.arch	75	1820	680	Hydrp.,urban supply
Chimoio	Mezingaze	Chimoio	Earth	15	0.3		Urban supply
Cahora Bassa	Zambezi	Tete	Concr.arch	171	39200	80000	Hydropower
Nampula	Monapo	Nampula	Concr.grav	17.5	4	2350	Urban supply
Nacala	Muecula	Nacala	Earth	17.4	4.4	16	Urban supply
Chipembe	Montepuez	Montepuez	Earth	15.6	24	115	Irrigation
Locumué	Lucheringo	Lichinga	Earth	17.5	1.9	3	Urban supply

TABLE 2. MAIN MOZAMBICAN DAMS

Main Legal Instruments and Policies

- Law No. 16/91 - Water Law
- Decree No. 47/2009 Small Dam Regulation
- Resolution No. 42/2016 Water Policy
- **Decree No. 33/2017 Dam Safety Regulation**
- **Decree No. 50/2017 Safety Regulation for Tailings Dams**
- Resolution No. 11/2019 National Water Resource Plan
- Decree No. 78/2019 Regulation on Overflow and Flood Protection Dykes.

Law No. 16/91 - Water Law

- The Water Law provides the basis for reforms within the water sector by outlining the institutional framework, principles and policies for water management in Mozambique.

Main Legal Instruments and Policies

It advocates for

- Protection and conservation, inventory, use and exploitation, control and supervision of water resources; and
- Improved management of hydraulic infrastructures.

Resolution No. 42/2016 Water Policy

The National Water Policy outlines specific strategies for the management of water resources, dams and hydroelectric power stations.

Dam safety regulations

The major motivations for the development of dam safety regulations include:

- The number of dams in the country;
- The growing interest in building new dams, given the conditions that the country presents in terms of water potential;
- Ensuring the integrity and safety of dams.

Objectives

- To ensure the reliability of construction so as to reduce the possibility of accidents and incidents and reduce the risk to life, health and property and the environment, as well as to define civil liability mechanisms;

Scope

It applies to

a) Dams with a height equal to or greater than 15 m;

b) Dams with a height of 10 m or more and a reservoir with a capacity exceeding 1 hm^3;

c) Dams with a design flow rate of the discharge organs exceeding 2000 m^3/s.

Dam Classification

Dams are classified according to the following criteria:

a) **Vulnerability index (Low, Medium and High)**

Associated with technical characteristics;

Associated with state of repair;

Associated with the implementation of safety control measures;

b) **Potential damage (Low, Medium and High)**

c) **Risk class**

Determined by cross-referencing the vulnerability and potential damage classifications;

Class I, Class II and Class III, from most to least severe.

Entities Involved in Dam Safety and their Responsibilities

The main entities responsible for dam safety are defined in Article 6 of the RSB:

1. Safety Control;

a) National Dam Safety Entity (DNGRH);

b) Regional Dam Safety Entities (ARAs);

c) National Disaster Management Entity (INGC);

Entities Involved in Dam Safety and their Responsibilities

b) Quality Control Entity (LEM);

c) Owner;

2. Advisory Committee on Dam Safety

3. Emergency or Enquiry Committee

Dam safety regulations

Safety Control Mechanisms

Art. 16 of the DSR defines the main safety control mechanisms:

- Database of dams;
- Computer archive and results of observation systems;
- Dam plan, including the safety plan;
- Construction records;
- Dam classification;
- External emergency plan;
- First impoundment plan;
- Safety inspections;
- Behaviour reports and opinions;
- Professional competence of the construction manager and operations manager;

DSR Implementation Challenges

Challenges

- Prior to the existence of the regulations, different dam developers adopted and applied varied and non-harmonised standards and procedures;
- Developing technical standards for design, construction, operation and closure is one of the major challenges;
- Adapting all existing dams to the new regulatory requirements.

DSR Implementation Challenges

- Building the capacity of the entities involved in dam safety
- Correct application of the regulations, which is one of the main limitations of the authorities;
- MozCOD played an important role in drafting the regulations. Integration into ICOLD and the advisory committee allowed for better scoping and inclusion of tailings dams in the regulatory package;

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