

Protecting Public Investments & Services

Climate Resilience of the Metolong Dam System

24th - 25th of August 2022

Thaba-Bosiu, Lesotho



GI:DRM
Global Initiative on
Disaster Risk Management

1. Background

The Mountain Kingdom of Lesotho is the water tower for the Southern African region. Not only must Lesotho protect its water resources and critical water sector infrastructures for its own domestic water, food and energy security, but also to meet its transboundary agreements with riparian states. The purpose of the Metolong dam and reservoir in Lesotho is to increase access to water and improve the reliability of water supply to urban and peri-urban areas in Maseru and the neighbouring towns and support continued economic growth. The construction of the 83-meter-high dam started in 2013 and came online 2016. It provides water to two-thirds of Lesotho's population and its serviceability is a key element of broader economic development.

Though, climate change might provide a risk to the structural integrity and the service reliability of the dam. Next to threats associated with up-stream land use change leading to erodible soils resulting in increased sediment loads, the dam and its functional systems, as well as water availability is threatened by climate change that result in warming with increasing hot extremes, decreasing number of cold days, increasing catchment erosion & reservoir sedimentation, increasing frequency & intensity of storms, increasing drought conditions, changes in the hydrology, an increase in periods of heavy precipitation, as well as an increase in wildfire.

Investigations of the feasibility and design documents of the dam revealed that the potential impacts of climate change on the structure itself as well as on the ability to deliver services as envisioned were only addressed in a very limited way. The design of the structure as well as the operational rules and procedures do not adequately consider climate and disaster risks. Further study of climate change impacts is considered to be necessary to ensure the sustainability of the dam in the long-term and to increase climate resilience at up-stream catchment levels.

2. Infrastructure Climate Risk Assessments

Hence, the Government of Lesotho in cooperation with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH has launched a process under the umbrella of the national Integrated Catchment Management (ICM) programme – RENOKA – to assess the vulnerability of the Metolong Dam Infrastructure system and relevant upstream and downstream components to better understand the service reliability of the dam system under current and future climate conditions. The climate risk assessment will not only provide a better understanding of the service reliability of the dam system; but will also assess the potential consequences of variable or reduced services levels for key user groups and will evaluate implications for sustainable development in the catchment and the water sector in Lesotho from a risk-informed development perspective.

The process is supported by the Global Initiative on Disaster Risk Management (GIDRM) commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). The risk assessment itself is being carried out in partnership with the Climate Risk Institute (CRI) in Canada together with their specialized associates using the assessment protocol of the Public Infrastructure Engineering Vulnerability Committee (PIEVC). PIEVC is hosted and promoted by an alliance of CRI, GIZ and ICLR, the Institute for Catastrophic Risk Reduction.

3. Objectives of the Inception Workshop

The inception workshop aims at kickstarting the risk assessment process together with the relevant stakeholders. The specific objectives are:

- Assemble and engage stakeholders relevant to the upcoming climate risk assessment process for critical infrastructure in Lesotho;
- Foster a systemic understanding of risks in Lesotho and entry points for risk-informed decision-making
- Create awareness about climate change, climate risk assessment, and the climate-infrastructure-disaster risk management nexus;
- Share experiences of climate-related impacts and risk-reduction activities;
- Introduce the PIEVC assessment methodology;
- Validate the scope of the upcoming PIEVC-based assessment;
- Discuss data requirements for the assessment.

4. Programme of the Training 24th - 25th of August 2022

Wednesday, 24 th of August 22	Thursday, 25 th of August 22
Risk-informed Development in Lesotho	Getting into Climate Risk Assessments
<p>MORNING</p> <p>Session 1: Opening and Introduction</p> <p>Session 2a: Climate Change Impacts in Lesotho and Entry Points for Risk-Informed Development</p> <ul style="list-style-type: none"> • Systemic understanding of risks in Lesotho and entry points for risk-informed decision-making • Climate change in Lesotho <p>AFTERNOON</p> <p>Session 2b: Climate Proofing of Infrastructure Investments</p> <ul style="list-style-type: none"> • Role Game: The value of climate resilient investment decisions • Adaptation options for resilient infrastructure investments <p>Session 3: Climate Change and Water Infrastructure Services</p> <ul style="list-style-type: none"> • Impact models 	<p>MORNING</p> <p>Session 4: Climate Risk Assessments (PIEVC)</p> <ul style="list-style-type: none"> • Introduction into climate risk assessment (PIEVC) methodology – Phases, Structure, Outputs and Stakeholders • International good practices <p>Session 5: Presentation of Metolong dam scoping report</p> <p>Session 6: Deep dive - Data requirements</p> <p>AFTERNOON</p> <p>Session 7: Outlook next steps in PIEVC assessment</p> <ul style="list-style-type: none"> • Establishing working group for stakeholder engagement <p>Session 8: Capacity Development</p> <ul style="list-style-type: none"> • Introduction to e-learning environments <p>Session 9: Closure</p>

Info ReNOKA

‘ReNOKA – We are a river’ is an active citizenry movement that aims to engage, unify and inspire all communities living and working within the Orange-Senqu River Basin to act together to protect and restore land and water for the shared prosperity of the catchment and its people. The goal of ReNOKA is to use the tools of Integrated Catchment Management to facilitate stronger economic growth and climate resilience for Lesotho. We define Integrated Catchment Management as a multi-stakeholder process, which promotes the integrated, sustainable, and risk-informed development and management of water, land, and related resources in Lesotho’s catchment areas.

www.renoka.org

Info GIDRM

Against the backdrop of rising global challenges from disaster risks, the German Federal Ministry for Economic Cooperation and Development (BMZ) has set up the Global Initiative on Disaster Risk Management (GIDRM) in 2013. The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) is implementing the project. GIDRM aims to strengthen the German contribution to improve disaster risk management worldwide and to support the implementation of the Sendai Framework for Disaster Risk Reduction (SFDRR). To address the complex nature of risks and safeguard development, the Global Initiative on Disaster Risk Management (GIDRM Phase III, 2020- 2023) aims at strengthening risk governance and risk-informed development. In doing so, GIDRM has the objective of strengthening the capacities and skills of selected decision-makers, regional organisations and initiatives in Southern Africa, Asia and Latin America in mainstreaming risk-informed development principles and key messages by considering context-specific fragility factors.

www.gidrm.net

Info CRI

The Climate Risk Institute (CRI) is a Canadian not-for-profit, academically affiliate organization focused on advancing practice and delivering services related to climate change risk assessment, adaptation planning, policy and program evaluation, and resiliency. They work closely with many partners across Canada and internationally and leverage the knowledge and skills of a strong group of associates.

CRI works with all levels of government, Indigenous communities, and private sector organizations to support the consideration of climate change in various planning and management processes, including enterprise risk management, disaster risk management, hazard identification and risk assessment, corporate planning, infrastructure renewal and official plan development.

CRI delivers programs and projects to mobilize knowledge, improve capacity, and deliver results for climate resiliency and they work closely with many partners across Canada and

internationally. Flagship programs include the Infrastructure Resilience Professional (IRP) Training and Credentialling Program, Climate Change Impacts and Adaptation Training for Professional Planners, the Climate Change Adaptation Community of Practice (CCACoP), and the PIEVC Program. The IRP Program provides training on the PIEVC Protocol among other things.

www.climateriskinstitute.ca

Maseru, Lesotho - August 2022

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GIDRM Lesotho (GIZ)