

Climate and Disaster Risk Screening Report for Natural Resources in Maldives

Table 1: Project Information

Project Title:	Natural Resources
Project Number:	NR-001
Assessment completed by:	Neelima
Estimated timeline for PCN Year:	2018
Estimated timeline for PCN Quarter:	Q3
Screening Tool Used:	Rapid Screening Assessment

The Climate and Disaster Risk Screening Tool provides high-level screening to help consider short- and long-term climate and disaster risks at an early stage of project design. The tool applies an Exposure-Impact-Adaptive capacity framework to characterize risks. Potential risks are identified by connecting information on climate and geophysical hazards with users' subject matter expertise of project components (both physical and non-physical) and understanding of the broader sector and development context.

The tool does not provide a detailed risk analysis. Rather, it is intended to help inform the need for further consultations, dialogue with local and other experts and analytical work at the project location to strengthen resilience measures in the course of project design.

¹ This is the output report from applying the World Bank Group's Climate and Disaster Risk Screening Project Level Tool (Global website: climatescreeningtools.worldbank.org; World Bank users: wbclimatescreeningtools.worldbank.org). The findings, interpretations, and conclusions expressed from applying this tool are those of the individual that applied the tool and should be in no way attributed to the World Bank, to its affiliated institutions, to the Executive Directors of The World Bank or the governments they represent. The World Bank does not guarantee the accuracy of the information included in the screening and this associated output report and accepts no liability for any consequence of its use.

Summary Climate and Disaster Risk Screening Report

1. Exposure of the Project Location: This step assesses the current and future exposure of the project location to relevant climate and geophysical hazards as an aggregate.

Exposure Rating

High

Climate and geophysical hazards that are likely to be relevant to the project location both in present and in the future

Extreme Temperature

Extreme Precipitation and
Flooding

Sea Level Rise

Geophysical Hazards

2. Impacts on the Project's Physical Infrastructure and Assets: This step assesses the current and future impacts of identified climate and geophysical hazards on the project's physical infrastructure and assets as currently designed.

Impact Rating

High

Relevant project subsectors

Biodiversity

Forestry

Fisheries / aquaculture

Coastal Flood Protection

3. Modulation of risks by the project's soft components and development context: This step assesses how the project's soft components as currently designed, together with the project's broader development context, modulate the risk from climate and geophysical hazards. This step also considers particularly vulnerable groups, namely women, migrants and displaced populations.

Modulation of risks by the project's soft components



Reduce Risk

Selected soft components

Policy Development

Long-term Strategic Planning

Capacity Building, Training and
Outreach

Emergency Planning

Maintenance and Operations

Data Gathering, Monitoring and
Information Management Systems

Modulation of risks by the project's development context



Increase Risk

Women identified as particularly vulnerable to impacts from climate and geophysical hazards



**Components designed to help
alleviate the risks to women from
climate and geophysical hazards**



4. Risk to the outcome/service delivery of the project: This step assesses the level of risk to the outcome/service delivery that the project is aiming to provide based on previous ratings.

Outcome / Service Delivery Rating

Insufficient
Understanding

Notes from the Screening Process

1. Exposure of the Project Location

Exposure Rating

High

This step provides information on exposure to climate and geophysical hazards at the project location. **The Exposure rating is High. The project location has experienced climate and geophysical hazards in the past and is expected to experience these in the future with high intensity, frequency, or duration.** The rating is based on climate information drawing on global, quality controlled data sets from the [Climate Change Knowledge Portal](#). It is useful, for example to understand the temperature range and the rate of annual or decadal increase in a region; or precipitation patterns for historical and future time frames and seasonality shifts. Understanding the trends of hazards is important as they act individually and collectively on project components/subsectors.

The following guiding questions are used to assess exposure:

- What have been the historical trends in temperature, precipitation and drought conditions?
- How are these trends projected to change in the future in terms of intensity, frequency and duration?
- Has the location experienced strong winds, sea level rise, storm surge, and/or geophysical hazards in the past that may occur again in the future?

User Notes: No notes added

2. Impacts on the Project's Physical Infrastructure and Assets

Impact Rating

High

This step provides an indication of the potential impacts of climate and geophysical hazards on the project's physical infrastructure and assets as currently designed under relevant subsectors. **The Impact rating is High. Climate and geophysical hazards are likely to significantly impact the structural integrity, materials, siting, longevity and overall effectiveness of your investments.** The impact rating is based on the exposure rating and the understanding of the project's sensitivity by the user. Please note that for this step the tool is helping judge the effect these impacts may have on the investment, and the ability of the project to sustain and enhance physical infrastructures and assets under a changing climate. Understanding where risks may exist and identifying where further work may be required to reduce or manage these risks can help inform the process of dialogue, consultation and analysis during project design.

The following guiding questions are used to assess potential impacts:

- Does the project design take into account recent trends and future projected changes in identified climate and geophysical hazards?
- Does the project design consider how the structural integrity, materials, siting, longevity and overall effectiveness of investments may be impacted?
- Does the project consider how future operation and maintenance costs may be affected?
- In particular, does the design "lock in" certain decisions for the future?


User Notes: "Sample Text: Biodiversity. In recent decades, dry conditions have reduced ecosystem productivity to some extent. There have been several episodes of drought, which have decreased crop yields and led more people to engage in illegal logging and poaching activities. Projections indicate an increase in average and extreme temperature and a decrease in average precipitation. There is likely to be an increase in the frequency, duration, and intensity of droughts. The level of potential impact is therefore rated as High. Coastal Flood Protection – Built Infrastructure. In the past, heavy rainfall during the rainy season has eroded embankments along the coast. This history has been incorporated in the preliminary designs for the embankment structures to be built under this project. In addition, the design of the sea wall to be rehabilitated under this project is based on a previous feasibility study, which considered current high tides, future sea level rise and local subsidence, as well as storm surge. The height and width of the sea wall have been determined with sea level rise and storm surges in mind, making its sensitivity to these impacts low. For the embankment structures, future projections indicate that the proportion of rainfall that falls in heavy rains is likely to increase and that total annual precipitation is also likely to increase. Further, design decisions concerning this built infrastructure are long-lasting and costly to modify. The embankment structures may therefore still be sensitive to impacts from heavy rains. The design of the sea wall has a built-in safety margin to account for sea level rise in the future, so its sensitivity to sea level rise is low. Because of the remaining sensitivity of the embankment structures, the level of potential impact is rated as Moderate. Coastal Flood Protection – Coastal Ecosystems. The location has low exposure to extreme precipitation and riverine flooding, and the mangrove ecosystems along the coast may benefit from increased rainfall. However, heavier downpours may slightly increase erosion. In addition, increasing sea level rise in future decades will increase impact on mangrove ecosystems. These ecosystems have also experienced some damage from salinity due to storm surges and from high winds due to hurricanes, which may intensify in the future. Because of the severity of potential impacts from sea level rise, storm surge and high winds, a High Potential Impact rating is

selected. Fisheries. In the past, heavy rainfall events have slightly increased nutrient runoff and modestly increased eutrophication. This was accompanied by warmer temperatures than average, which further reduced water quality. Fish yields were moderately reduced as a result. Projections indicate an increase in average and extreme temperature as well as potential increases in the frequency and intensity of extreme precipitation events. Because of projected changes in average and extreme temperature and precipitation, the level of potential impact is rated High. Forestry. In the past, dry and hot conditions have led to wildfires. Drought has also weakened trees and made them susceptible to insect outbreaks, which have damaged large areas of the forest. Climate projections indicate an increase in average and extreme temperature and a decrease in average precipitation. Because dry and hot conditions are projected to increase, the level of potential impact is rated High."

3. Modulation of risks by the project’s soft components and development context

This step provides information on how the potential impact on key components/subsectors due to exposure from hazards is modulated by the project’s soft components and broader development context. This step also takes into account particularly vulnerable groups including women, migrants and displaced populations.

Modulation of risks by the project’s soft components




Reduce Risk

This rating reflects how the project's soft components (enabling and capacity building activities) can modulate risks. The right kind of capacity building measures could increase preparedness and long-term resilience and reduce risk.

User Notes: No notes added

Modulation of risks by the project's development context



Increase Risk

This rating reflects how the larger development context, including sector context and other social, economic and political factors can modulate risks.

User Notes: No notes added

4. Risk to the outcome/service delivery of the project	Outcome/Service Delivery Rating	Insufficient Understanding
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This step provides an indication of the level of risk to the outcome/service delivery that the project is aiming to provide. **The risk to the outcome/service delivery of your project is Insufficient Understanding.** This rating is derived from hazard information, subject matter expertise, contextual understanding of the project, and modulated on the basis of the project’s soft components and broader development context. Keep in mind that in considering resilience measures for risk management, each element of risk should be taken into account, not just the collective risk rating at the outcome/service delivery level.

User Notes: No notes added

5/7

Guidance on Managing Climate Risks through Enhanced Project Design

By understanding which of your project components are most at risk from climate change and other natural hazards through initial screening, you can begin to take measures to avoid impacts by:

- Enhancing the consideration of climate and disaster risks early in project design.
- Using your risk screening analysis to inform follow-up feasibility studies and technical assessments.
- Encouraging local stakeholder consultations and dialogue to enhance resilience measures and overall success of the project.

Table 1 provides some general guidance based on the risk ratings for Outcome/Service Delivery, and Table 2 lists some climate risk management measures for your consideration. Visit the "Screening Resources" page of the tool for additional guidance and a list of useful resources

Note: Please recall that that this is a high-level screening tool, and that the characterization of risks should be complemented with more detailed work.

Table 1: General Guidance Based on Risk Ratings for Outcome/Service Delivery

Insufficient Understanding	Gather more information to improve your understanding of climate and geophysical hazards and their relationship to your project.
No/Low Risk	If you are confident that climate and geophysical hazards pose no or low risk to the project, continue with project development. However, keep in mind that this is a high-level risk screening at an early stage of project development. Therefore, you are encouraged to monitor the level of climate and geophysical risks to the project as it is developed and implemented.
Moderate Risk	For areas of Moderate Risk, you are encouraged to build on this screening through additional studies, consultation, and dialogue. This initial screening may be supplemented with a more detailed risk assessment to better understand the nature of the risk to the project.
High Risk	For areas of High Risk, you are strongly encouraged to conduct a more detailed risk assessment and to explore measures to manage or reduce those risks.

Table 2: Types of Climate Risk Management Measures for Typical Natural Resources Projects

OBJECTIVE	EXAMPLES
Support new livelihood opportunities	<ul style="list-style-type: none">• Develop alternative livelihoods where existing climate-sensitive livelihoods may no longer be viable.• Ensure new livelihood opportunities are available for women and other marginalized populations, and look out for unintended consequences, such as increasing women's unpaid work burden and/or increasing the length of their work day.• Encourage fishing communities to take advantage of fish species that are becoming more abundant due to climate change.• Explore opportunities for payment for ecosystem services that support the conservation or restoration of areas that provide key services.• Ensure that women-led businesses have access to financing opportunities.

Promote ecosystem-based approaches to adaptation	<ul style="list-style-type: none"> • Reduce the vulnerability of related sectors, such as agriculture and water, to climate impacts through support for conservation efforts, which provide co-benefits for ecosystems and their services. • Protect ecosystems that buffer or mitigate climate impacts for stakeholders in related sectors. • Promote climate-smart agricultural practices, including agro-forestry systems. • Support the use of green infrastructure for flood management or coastal protection. • Explore opportunities to increase water security through protecting and restoring watersheds. • Maintain and expand large intact landscapes and seascapes. • Protect key, representative habitats within landscapes and seascapes. • Conserve biodiversity and manage natural resources in ways that maintain their long-term viability. • Increase connectivity between protected areas. • Increase conservation outside of protected areas, and incorporate mixed natural systems (e.g. agroforests). • Protect areas that are likely to become refugia as temperatures increase and sea levels rise. • Achieve co-benefits for ecosystems and climate change mitigation through sustainable land and forest management.
Build information collection and management systems	<ul style="list-style-type: none"> • Support research that assesses future potential impacts of climate change on biodiversity. • Incorporate climate information into landscape-level conservation, land-use planning, and protected area management. • Seek information from women, indigenous peoples, and other marginalized populations who are often the custodians of local knowledge about wild plants, seeds, and other elements of biodiversity.
Reduce Other Human Stressors that Exacerbate Climate Change Impacts	<ul style="list-style-type: none"> • Reduce the effects of non-climate stressors, such as pollution, overexploitation, land use change, urbanization, and invasive species. • Account for predicted changes in demand for ecosystem services that may exacerbate climate impacts. • Consider whether human adaptation to climate risks is going to increase or create new stresses on ecosystems and biodiversity.
Strengthen policies, planning and systems	<ul style="list-style-type: none"> • Strengthen institutions that are responsible for conservation and management of ecosystems and natural resources, including their ability to incorporate climate change into their activities. • Support conservation efforts in related sectors, such as agriculture and water. • Support the use of carbon finance to monetize future cash flows from the advanced sale of carbon credits, as means to finance conservation costs. • Encourage partnerships between governments and private business to protect forests and promote climate change mitigation (e.g., manufacture and distribute fuel-efficient cook stoves, which reduce emissions while also providing an alternative to burning fuel wood). • Promote zoning restrictions on coastal development to allow coastal wetlands to migrate inland as sea levels rise, protecting the goods and services they provide. • Support REDD+ to help achieve climate change mitigation goals while also providing conservation-based, income-generating opportunities. • Work with governments to design gender-informed policies that address climate impacts that affect women and men differently, encourage women's participation and leadership, leverage women's knowledge and perspectives, and reduce risk of further gender inequality caused by climate change.

Sources: [USAID Climate Risk Screening and Management Tools: Environment and Biodiversity Annex](#); [IPCC Technical Paper on Climate Change and Biodiversity](#)