

Climate and Disaster Risk Screening - Sector Screening Guidance Note Water Global Practice

This Sector Screening Guidance Note provides an end-to-end roadmap of the climate and disaster risk screening process.

Climate and disaster risk screening applies to:

- All IDA operations
- All IBRD operations starting July 1, 2017

Why screen for climate and disaster risk?

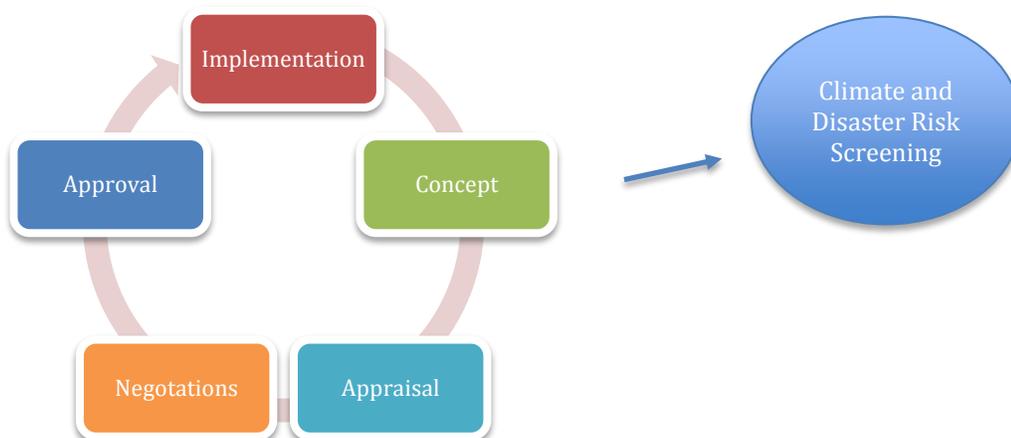
- Meeting the corporate climate commitment (WBG Climate Change Action Plan (CCAP) commits to increasing the climate related share of the portfolio to 28% by 2020)
- Complying with the screening requirement (IDA-17 policy commitment to screen operations since July 1, 2014; commitment will continue under IDA-18; screening requirement extended to IBRD operations starting July 1, 2017 as per CCAP commitment)

What is climate and disaster risk screening?

- A **proactive approach to managing short- and long-term climate and disaster risks** with the final aim of integrating appropriate resilience measures in development policies, programs and projects

When to screen operations?

- Climate and disaster screening is carried out at an **early concept stage** of the project cycle



What information is required for screening?

- An initial understanding of project components and location
- Some knowledge of the project's country context including the water sector context and the political, social and economic context
- No specialized knowledge of climate change and disasters is required

Where to get screening support?

- Visit the [Country Adaptation Profiles](#) and [Climate Change Knowledge Portal \(CCKP\)](#) for information on climate and disaster risks
- Watch the training videos for [screening](#) and the [CCKP](#)

- Follow an [e-learning course](#)
- Join a [face to face training session](#)
- Contact the Climate Help Desk at climatescreeninghelpdesk@worldbankgroup.org

What screening tools are available?

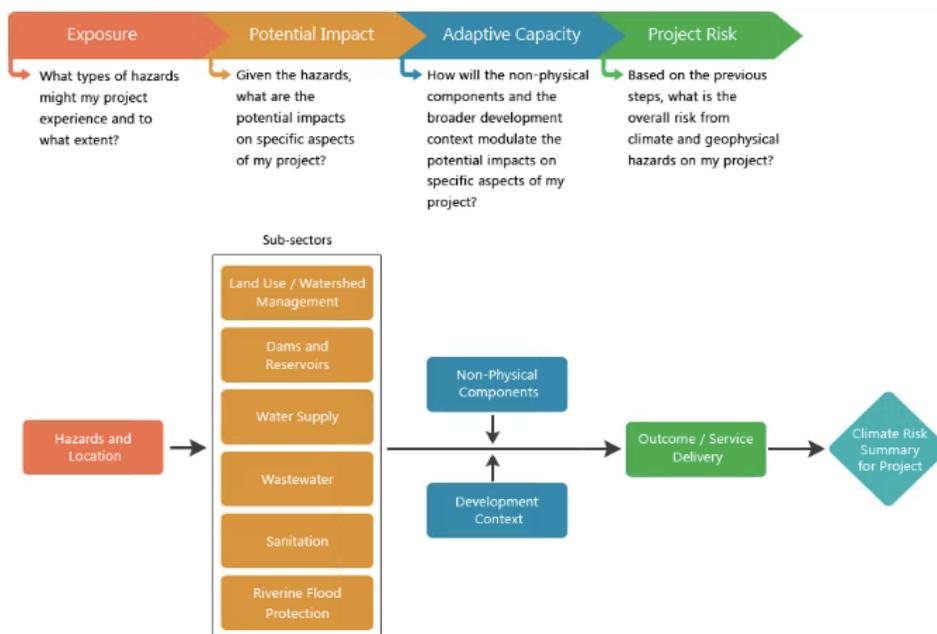
- Two screening tools are available: one **Rapid Screening Assessment** and one **In-Depth Screening Assessment**
- The tools can be used for all WBG lending and financing instruments
- **Note:** These tools provide high-level screening at an early stage of project and/or program development. They **do not** provide a detailed risk analysis, nor do they suggest specific options for increasing the project’s resilience. They are intended to help determine the need for further studies, consultation and/or dialogue in the course of project and/or program design.

Tool	Description	Completion Time	Outputs
Rapid Screening Assessment	<ul style="list-style-type: none"> • Provides a lightweight, rapid assessment of current and future climate and disaster risks. • A good option for users who already have knowledge on the climate and disaster risks that may impact their project/program. 	Around 30 minutes	Downloadable summary report of selected risk ratings to be included in project and/or program documents
In-Depth Screening Assessment	<ul style="list-style-type: none"> • Provides a more in-depth assessment of current and future climate and disaster risks. • A good option for users who may need additional guidance on the climate and disaster risks that may impact their project/program. 	Around 2 hours	Downloadable detailed project risk report to be included in project and/or program documents

What screening steps do the tools follow?

The screening tools follow four main steps:

1. Exposure
2. Potential Impact
3. Adaptive Capacity
4. Risks to the Project Outcome/Service Delivery



STEP 1: EXPOSURE OF THE PROJECT LOCATION

- This step assesses the current and future exposure of the project location to relevant climate and geophysical hazards
- This is based on climate information drawing on global, quality controlled data sets from the [Climate Change Knowledge Portal](#)
- Understanding the trends of hazards is important as they act individually and collectively on project components

Climate and geophysical hazards	Guiding questions for water projects
Extreme temperature	<ul style="list-style-type: none"> • Is annual and monthly temperature (i.e. seasonality) projected to change? • Is the frequency, intensity and duration of extreme temperatures projected to change? • Is the average annual basin temperature projected to change? • Is potential evapotranspiration projected to change?
Extreme precipitation and flooding	<ul style="list-style-type: none"> • Are annual and monthly (i.e. seasonality) precipitation patterns projected to change? • Is the frequency, intensity and duration of extreme precipitation projected to change? • Is runoff projected to change in the basin? • Is the annual base flow projected to change in the basin? • Is storage (basin yield) projected to change in the basin? • Is the annual high flow projected to change in the basin?
Drought	<ul style="list-style-type: none"> • Is the frequency, intensity and duration of droughts projected to change? • Is the annual low flow projected to change in the basin?
Strong winds	<ul style="list-style-type: none"> • Is the project location exposed to winds from tropical cyclones, such as hurricanes or typhoons?
Sea level rise	<ul style="list-style-type: none"> • Is local sea level projected to change by the end of the project lifetime?
Storm surge	<ul style="list-style-type: none"> • Does the project location include areas that have experienced storm surge in the past?
Geophysical hazards (earthquakes, tsunamis, volcanic eruptions, and landslides)	<ul style="list-style-type: none"> • Is the project located in an area with high, medium, or low seismic hazard? • Have there been historical earthquakes? • Is the project located in a tsunami zone area? • Is the project located near an active volcano (i.e., one that might have erupted in the last 10,000 years)? • Has the location of the project ever experienced landslides of any nature in the past? • Has the location of the project ever experienced wildfires in the past?

STEP 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
- Understanding where risks may exist within one or multiple components 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

Water subsectors	Potential impacts from climate and geophysical hazards
Land Use / Watershed Management	<ul style="list-style-type: none"> Water flows can be altered by increased evapotranspiration or shifts in the amount and timing of snow-fed stream flow Heavy rainfall events can reduce the effectiveness of erosion control measures in the watershed
Dams and Reservoirs	<ul style="list-style-type: none"> Heavy precipitation can cause erosion and sedimentation to occur in waterways, reducing reservoir capacity Strong winds can lead to the overtopping of dams and reservoirs
Water Supply	<ul style="list-style-type: none"> High temperatures and drought can increase water demand for industrial use, cooling in energy generation or irrigation Extreme precipitation can increase runoff due and introduce new contaminants into the water supply, increasing the pollutant load, while low water levels as a result of drought can lead to higher concentrations of contaminants Droughts can reduce recharge to surface and ground water supplies, thereby impacting water pumping needs
Wastewater	<ul style="list-style-type: none"> High temperatures may increase algal blooms and pathogens and decrease dissolved oxygen, necessitating enhanced wastewater treatment Heavy rainfall events can cause sewers to overflow and can result in flooding in combined sewer systems Strong winds can disrupt electricity supply, impacting pumping and treatment systems
Sanitation	<ul style="list-style-type: none"> Extreme precipitation can inundate latrines and cause overflow
Riverine Flood Protection	<ul style="list-style-type: none"> Earthquakes can damage the structure integrity of embankments, levees, and dikes

STEP 3: MODULATING EFFECT OF THE PROJECT'S ADAPTIVE CAPACITY

- This step assesses how potential impacts on key components/subsectors due to exposure to hazards is modulated by the project's soft components and broader development context
- The right kind of soft components can increase preparedness and long-term resilience and reduce risk

	Modulating effect of adaptive capacity
Soft components: Policy development, Long-term strategic planning, Capacity building, Training and Outreach, Emergency Planning, Data gathering, monitoring and Information Management System, Maintenance and Operations	<ul style="list-style-type: none"> Developing water resource policies and strategic planning that consider future climate impacts on water quality and quantity Establishing information systems that can collect and monitor information on future climate and disaster risks Establishing water users' associations to govern local water systems
Sector context: Water	<ul style="list-style-type: none"> Strong legal enforcement of water pricing policies can support monitoring water use and associated fees, thereby increasing revenues for maintenance and upgrades
Social, economic and political factors: Access to technology, Prices (food and energy), Financial resources, Conflict, Political instability, Legal enforcement, Population growth, Urbanization, Land ownership issues, Land and soil quality, Nutrition, Education, Gender	<ul style="list-style-type: none"> Having the capacity and systems in place to identify and respond to disruptions from climate and natural hazards can lessen their duration and severity Weak institutional capacity of a managing agency can inappropriately limit the budget, reducing funds available for operations, maintenance and repairs

- This step also takes into account particularly vulnerable groups including **women, migrants and displaced populations**

Women, migrants and displaced populations	Adaptive capacity elements that help alleviate risks
Soft components	<ul style="list-style-type: none"> Capacity building that enables women to serve as decision makers and effective agents for community preparedness for flooding and other extreme events. This can improve their standing in the public sphere as leaders and reduce disproportionately high mortality rates among women in such disasters Ensuring women’s access to and decision making power over competing water resources (e.g. women’s participation in water user associations) Monitoring water scarcity impacts on women’s livelihoods (e.g. domestic water use, irrigation), and impacts on incidence of conflict. Incorporating changing climate and migration patterns in population projections when estimating the population to be served by a water supply and sewage system
Development context	<ul style="list-style-type: none"> Equal access to information and communication technologies (ICT) including radio, TV, and mobile devices to easily access weather forecasts can reduce the impacts of water scarcity and extreme events on women Developing and enforcing urban planning and zoning for slums and refugee camps can facilitate local governments to provide water, wastewater, and sewage services in the future

- Annex 1 provides additional information on climate and disaster risks to women

STEP 4: RISK TO THE PROJECT OUTCOME/SERVICE DELIVERY

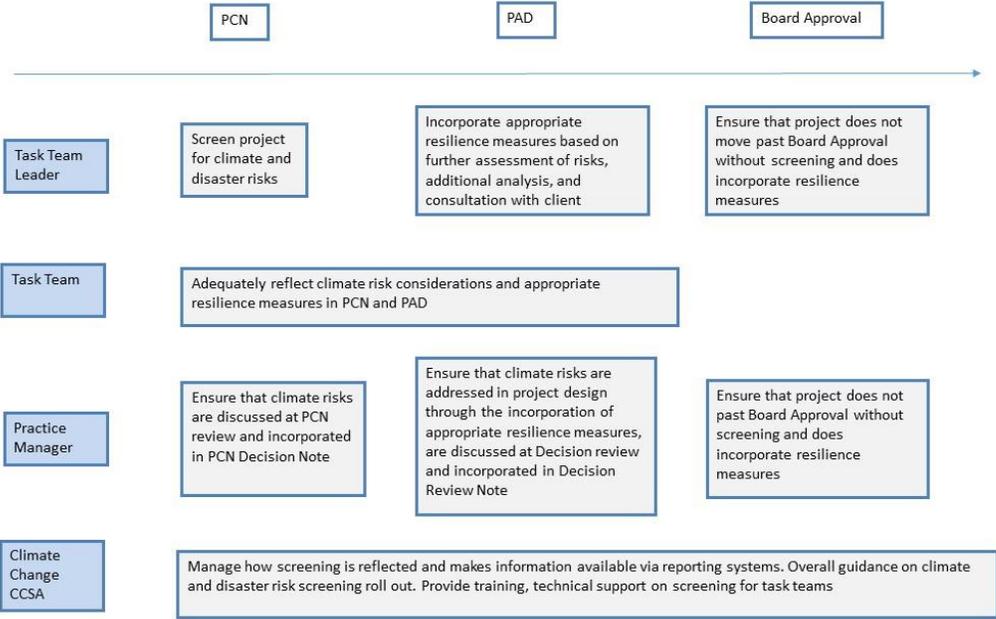
- This step assesses the level of risk to the outcome/service delivery that the project is aiming to provide
- Both screening tools will provide guidance on next steps to take and on how to use your risk assessment based on the level of risk identified for your project
- The table below provides some general guidance based on risk ratings for project outcome/service delivery:

HIGH RISK	<ul style="list-style-type: none"> For areas of <i>High Risk</i>, you are strongly encouraged to conduct a more detailed risk assessment and to explore measures to manage or reduce those risks.
MODERATE RISK	<ul style="list-style-type: none"> For areas of <i>Moderate Risk</i>, 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.
LOW/NO RISK	<ul style="list-style-type: none"> If you are confident that climate and geophysical hazards pose <i>no or low risk</i> 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.
INSUFFICIENT UNDERSTANDING	<ul style="list-style-type: none"> Gather more information to improve your understanding of climate and geophysical hazards and their relationship to your project

- Annex 2 lists some climate risk management measures for typical water projects for your consideration.

Who does what and when?

- The figure below depicts clear roles and responsibilities for the TTL, task team, relevant Manager, and Climate Change CCSA at key points in the project cycle, as related to screening.



- Task teams should be able to do the following at project concept and appraisal stage:

Project concept stage	Project appraisal stage
<ul style="list-style-type: none"> Identify the climate change and disaster risks that could potentially impact project outcomes Determine, based on available knowledge, the level of risk to project outcomes Discuss screening results at the project concept note review meeting and record decision on potential level of risk to project outcomes in the review minutes 	<ul style="list-style-type: none"> Demonstrate how the project components can be better designed. As appropriate, understand how to integrate resilience measures into project design Discuss key climate and disaster risks and resilience considerations at the PAD review meeting and record decisions in the decision meeting minutes

How to reflect screening in project documents?

- Summarize potential climate and disaster risks in the ‘Introduction and Context’ and the ‘Overall Risk and Explanation’ sections of the PCN document.
- Where risks exist, identify potential resilience-enhancing measures in appropriate sections.
- If risks and resilience-enhancing measures have not been identified at PCN stage, these must be considered by appraisal stage and reflected in the appropriate sections of the PAD.

Additional Resources

For more information on climate change impacts on general water resources and management:

- [*High and Dry: Climate Change, Water, and the Economy*](#), is a flagship report by the World Bank. It finds that water scarcity, exacerbated by climate change, could hinder economic growth, spur migration, and spark conflict. However, most countries can neutralize the adverse impacts of water scarcity by taking action to allocate and use water resources more efficiently.
- The [*IPCC Technical Paper on Climate Change and Water*](#) provides an in-depth analysis of observed and projected changes in climate as they relate to water. The paper evaluates regional impacts on water supply.
- [*Water and Climate Change Adaptation: Policies to Navigate Uncharted Waters*](#) is a report by the OECD that highlights the range of expected changes in the water cycle and the challenge of making practical, on-site adaptation decisions for water. It offers policymakers a risk-based approach to better “know”, “target” and “manage” water risks and proposes policy guidelines to prioritize action and improve the efficiency, timeliness and equity of adaptation responses. The report also highlights the benefits of well-designed economic instruments (e.g. insurance schemes, water trading, water pricing), ecosystem-based approaches and ‘real options’ approaches to financing.
- [*Securing Water Sustaining Growth - Report of the GWP/OECD Task Force on Water Security and Sustainable Growth*](#) promotes sustainable growth and well-being, by providing empirical evidence to guide investment in water security. It seeks to: analyze the dynamics of water security and growth; quantify water-related risks and opportunities and their trajectories; and assess the experience of past pathways of investment toward water security.
- [*Adaptation to Climate Change in Water, Sanitation and Hygiene: Assessing Risks, Appraising Options in Africa*](#), is a report by ODI that presents the findings of research into the risks to delivery of WASH results posed by climate change in Africa, drawing on rapid case study reviews of WASH programming in Malawi, Sierra Leone and Tanzania.
- [*Climate Variability and Change: A Basin Scale Indicator Approach to Understanding the Risk to Water Resources Development and Management*](#) is a study by the World Bank intended to help bridge the gap between high-level climate change predictions and the needs of water resource decision-makers.
- [*Water and Climate Change: Understanding the Risks and Making Climate-Smart Investment Decisions*](#), by the World Bank, illustrates how climate change will affect hydrology and the resulting stress on and vulnerability of the water systems. The climate change dimension is also placed within the context of the impact of other stressors outside the water sector. The analysis is intended to inform the World Bank water sector investments on climate issues and climate-smart adaptation options.
- [*Addressing Climate Change in Long-Term Water Resources Planning and Management*](#) presents eight technical steps to incorporate climate change information into water resources planning, including assessing natural systems response, assessing socioeconomic and institutional response, and assessing system risks.
- [*The Handbook of Current and Next Generation Vulnerability and Adaptation Assessment Tools*](#) by the European Commission-funded BASIC project, identifies models that can be used for impact and vulnerability assessments in the water resources sector, and evaluates their strengths and weaknesses

- [*Mainstreaming Water Resources Management in Urban Projects: Taking an Integrated Urban Water Management Approach*](#), by the World Bank, is a guidance note for cities in developing countries for managing the urban water cycle in a sustainable manner by using an Integrated Urban Water Management (IUWM) approach.

For more information on climate change impacts on built water supply and sanitation systems:

- [*Addressing Climate Change Impacts on Infrastructure: Preparing for Change*](#) by USAID, comprises nine fact sheets, including for potable water, sanitation systems, and flood control structures, that summarize strategies that can be employed to prepare for and adapt to potential climate change impacts.
- [*Incorporating Climate Change Adaptation in Infrastructure Planning and Design*](#) series for [Sanitation](#), [Flood Management](#) and [Potable Water](#) by USAID, describes best practices to incorporate climate adaptation in the planning and engineering design of infrastructure activities.
- [*Climate Change Impacts on Water Resources and Adaptation in the Rural Water Supply and Sanitation Sector in Nicaragua*](#), by the World Bank is a paper that reviews the historic data on temperature and precipitation trends in Central America and particularly at the regional level in Nicaragua and examines the impacts and implications of potential climate change on water resources in Nicaragua. The paper makes key recommendations to integrate climate change and rural water supply and sanitation policies and programs in a way that increase resilience to current and future climate conditions.
- [*Climate Change and Urban Water Utilities: Challenges & Opportunities*](#) by the World Bank, aims to help improve understanding of climate change on the provision of water and wastewater services by urban utilities; establish an analytical framework to identify and prioritize potential climate change adaptation measures; and assess the feasibility of implementing adaptation measures.
- [*Guidelines for Climate Proofing Investment in the Water Sector: Water Supply and Sanitation*](#), by the ADB is a methodological approach that assists project teams in managing climate change risk in the context of water supply and sanitation investment projects.
- USAID's "[Addressing Climate Change Impacts on Infrastructure: Sanitation Systems, Potable Water Systems](#)" are factsheets that summarize climate stressors on sanitation and drinking water services.
- [*Managing Climate Risk in Water Supply Systems*](#) by The International Research Institute for Climate and Society is a technical manual designed to help water resources professionals understand how to use climate information and forecasts to manage hydroclimatic risk and take advantage of opportunities.
- [*Climate Risk Screening of the WSP Portfolio in India: Identifying Key Risk Areas and Potential Opportunities*](#), a World Bank field note, identifies the risks of climate change on rural and urban water supply and sanitation in India.

For additional tools that are relevant to water:

- [*Think Hazard!*](#) is a web-based tool enabling non-specialists to consider the impacts of disasters on new development projects. Users can quickly and robustly assess the level of river flood,

earthquake, drought, cyclone, coastal flood, tsunami, volcano, and landslide hazard within their project area to assist with project planning and design.

- [The Water Decision Tree Framework](#), by the World Bank, is meant to provide a consistent, credible, and repeatable process for project managers to use to assess climate risks in such a way that effort expended remains proportional to the climate sensitivity of each project. Phases 1 through 3 (climate screening, climate risk assessment, and climate risk reporting) provide elements of risk assessment, while Phase 4 shifts to risk management (Climate Risk Management Plan). Each phase specifies a product demonstrating that climate risks have met assessment according to an approved procedure. In each analytical phase, either the process ends because the climate risks have proved adequately addressed or the process proceeds to the next phase to address remaining concerns.
- [Water Security for All: The Next Wave of Tools](#), is a 2013/14 Annual Report by the Water Partnership Program, which includes the World Bank and the governments of the Netherlands, the United Kingdom, Denmark, and Austria. Chapter 2 covers innovative solutions and tools related to disaster risk management, remote sensing, cold weather sanitation, and results-based financing.
- [USAID Climate Risk and Management Tools](#) including a [Water Supply and Sanitation Annex](#). These tools are meant to support climate risk screening and management in strategy, project and activity design. Excel templates enable the user to record results.
- [Aqueduct Water Risk Atlas](#) by the World Resources Institute is a global water risk mapping tool that helps companies, investors, governments, and other users understand where and how water risks and opportunities are emerging worldwide. The Atlas uses a robust, peer reviewed methodology and the best-available data to create high-resolution, customizable global maps of water risk.
- [Flood Management in a Changing Climate - WMO and GWP Tool](#). The central theme of this tool is to bring the different aspects of climate variability and climate change as it affects flood risks with the aim to show possibilities of how they can be managed successfully. It addresses the needs of practitioners and allows them to easily access relevant guidance materials.
- [The SIASAR Initiative: An Information System for More Sustainable Rural Water and Sanitation Services](#), by the World Bank, is an innovative platform designed to monitor the development and performance of rural Water Supply and Sanitation services. Through this simple tool, data collection and analysis becomes more accessible, more precise, and comparable across countries. The system generates performance indicators that are aggregated at several geographic levels. SIASAR automatically produces rankings and summary reports that detail the performance of communities, infrastructure systems, service providers, and technical assistance providers.
- [The Thirsty Energy Initiative](#), by the World Bank, is meant to help countries integrate water constraints into the energy sector and better address water and energy challenges. It does so by preparing countries for an uncertain future by: (i) Identifying synergies and quantifying tradeoffs between energy development plans and water use; (ii) Piloting cross-sectoral planning to ensure sustainability of energy and water investments; (iii) Designing assessment tools and resource management frameworks to help governments coordinate decision-making and enhance sustainable development; and (iv) Providing capacity building and knowledge transfer.

For more information on climate change impacts, the water sector and gender:

- [*Empowering Women in Irrigation Management: the Sierra in Peru*](#), by the World Bank is a summary document on the Sierra Irrigation Subsector Project in Peru, which has focused on gender inclusion into WUA and overall activities.
- [*Gender Sensitive Planning, Monitoring and Evaluation in Agricultural Water Management \(2016\)*](#)
- [*Checklist for integrating gender-related issues into Agriculture Water Management \(2013\)*](#)
- [*Gender Mainstreaming in Water Resources Management \(2005\)*](#)
- [*Mainstreaming Gender in Water Resources Management*](#)

For more information on climate change and migration:

- [*Environmental Change and Human Mobility: Reducing Vulnerability & Increasing Resilience*](#) is a policy brief by the KNOWMAD Thematic Working Group on Environmental Change and Migration summarizes major findings and policy implications of papers commissioned to examine vulnerability and resilience, with particular focus on developing countries.
- The [*IDMC's Global Internal Displacement Database*](#) is an interactive platform designed for policy makers, NGOs, researchers, journalists and the general public for data and analysis on internal displacement.
- IOM's [*Environmental Migration Portal / Country Profiles*](#)

Help Desks:

- **AskWater is the helpdesk for the Water GP.** It is meant to be a simple interface between Task Teams and a complex network of experts, databases and resources addressing operational questions. **Task Team should send their operational questions to askwater@worldbank.org** where a small team led by Global Leads is coordinating responses, typically within a week for complex, multipart questions, within a couple of days for simpler ones.
- **The Climate Screening Help Desk can be reached at climatescreeninghelpdesk@worldbankgroup.org.** The Help Desk can provide support in the following areas:
 - IT assistance: Support with IT problems and glitches in the WB screening tools.
 - Assistance with risk screening: Assistance with the use of the tools for risk screening; guidance on use of the Climate Change Knowledge Portal (CCKP); links to World Bank regional or sector experts to obtain additional information to help screen for risks to your projects and additional information on in-person trainings.
 - Climate and disaster risk management: Guidance on how to address climate and disaster risks beyond completing the risk screening tools (e.g., incorporating climate and disaster risks into feasibility studies, terms of reference, consultations, and project design).
 - Feedback: Provide your feedback on the tools.

Trust Funds:

- [*Water GP just-in-time support to task teams*](#). The Water GP has allocated funds to provide “Just in Time” support to Task Teams allowing them to address issues which can be considered “added value” and beyond routine project or ASA preparation/ implementation.
- Global Facility for Disaster Reduction and Recovery (GFDRR) – Just in time Resilience Grants

- [Adaptation Fund](#)
- [BioCarbonFund Initiative for Sustainable Forest Landscapes \(ISFL\)](#)
- [Carbon Partnership Facility \(CPF\)](#)
- [Climate Investment Funds and the Pilot Program for Climate Resilience \(PPCR\)](#)
- [Forest Carbon Partnership Facility \(FCPF\)](#)
- [Global Environment Facility \(GEF\)](#)
- [Green Climate Fund \(GCF\)](#)
- [Korea Green Growth Partnership](#)
- [Least Developed Countries Fund](#)
- [Program on Forests \(PROFOR\)](#)
- [Transformative Carbon Asset Facility \(TCAF\)](#)

Annex 1 – Climate and Disaster Risks to Women in the Water Sector

Overview and key considerations: Women and men face different vulnerabilities and risks from climate change, and have varied opportunities and resources upon which to draw in their adaptation strategies. Due to gender and social exclusion, women often face barriers in benefitting from opportunities of green growth, and in taking best advantage of new resources, leadership opportunities, and assets created through climate investments. Gender-responsive climate programming requires an understanding of the roles and responsibilities of women and men in diverse sectors and country contexts, along with their rights and entitlements to relevant resources, assets and networks that aid in reducing vulnerability to the impacts of climate change.

A number of gender gaps lie at the heart of the gender and climate challenge. These include: i) the difference in women and men's mortality rates in extreme events (stemming in part from gendered norms around mobility, skills, and other factors); ii) women's particular vulnerability in the context of climate-induced migration (including furtherance of tenure insecurity; potential for gender-based violence; loss of social networks and place-specific livelihood skills, such as specialization in particular forms of agriculture or livestock management); iii. women's disproportionate vulnerability to climate-induced shocks at the household level (especially important in regions facing multiple hazards or increasing frequency of extreme events), due to reliance on natural resource-based livelihoods (as compared to male movement into the non-farm economy and services employment); iv) increased risk of women using negative coping strategies, due to prevailing gender norms, and the gender division of labor around household reproductive and care activities.

Below are probing questions in order to encourage analysis of impacts from exposure to climate change, and second-order effects related to the gender-climate-water sector nexus.

Water sector, gender and exposure to climate change

Climate change will lead to changes in drought, flood, basin run-off levels, evapotranspiration and many other elements of water resource systems. These phenomena can interact with gender in the following ways.

- Flooding and other extreme events can disproportionately impact women's health and safety, though women can also serve effectively as agents for community preparedness which improves their standing in the public sphere as leaders, and reduce disproportionately high mortality rates among women in such disasters.
- Water scarcity can directly impact women's and girls' time poverty as they must travel further to collect water for domestic use. It can also affect their vulnerability to gender-based violence if they are walking further, particularly at night, for toilet activities.

Water sector, gender impacts from climate change

- What are the **longer-term productions** for water availability in the project area? (Resource scarcity can lead to conflicts, which disproportionately put women at risk of tenure insecurity and experience of gender-based violence, including during displacement).
- How are water sector allocations being determined in the context of water scarcity? Are women's needs for multiple use water service delivery (i.e., irrigation plus domestic water use) being considered in longer-term planning?
- Are women participating in water user associations set up in this context?

Online data sources on gender:

- World Bank: [Gender Equality Data and Statistics](#). This gender data portal is a one-stop shop for gender information, catering to a wide range of users and providing data from a variety of sources. The portal has indicators related to five dimensions of gender equality: economic structures and access to resources; education; health and related services; public life and decision-making; and human rights of women and girl children.
- FAO: [Gender and Land Rights Database](#). This portal highlights the major political, legal, and cultural factors that influence women's ability to claim their land rights throughout the world. It includes 84 country profiles, land tenure statistics disaggregated by gender, and a Legislation Assessment Tool for gender-equitable land tenure.
- FAO: [Agri-gender Statistics Toolkit](#). This toolkit supports increased collection and analysis of sex-disaggregated agricultural data. It includes a compilation of gender-sensitive questions, questionnaire components, and tables. The database is structured around nine items related to agriculture: agricultural population and households; access to productive resources; production and productivity; destination of agricultural produce; labor and time use; income and expenditures; membership in agricultural or farmer organizations; and food security poverty indicators.
- World Economic Forum: [Annual Global Gender Gap Report](#). The Global Gender Gap Index 2015 ranks 145 economies according to how well they are leveraging their female talent pool, based on economic, educational, health-based, and political indicators.
- World Bank: [Women, Business and the Law](#). Getting to Equal measures legal and regulatory barriers to women's entrepreneurship and employment in 173 economies. It provides quantitative measures of laws and regulations that affect women's economic opportunities in seven areas: accessing institutions, using property, getting a job, providing incentives to work, going to court, building credit, and protecting women from violence.
- UNDP: [International Human Development Indicators](#). The Human Development Report Office releases five indices each year: the Human Development Index (HDI), the Inequality-Adjusted Human Development Index, the Gender Development Index (GDI), the Gender Inequality Index (GII), and the Multidimensional Poverty Index (MPI).
- UN Statistics: [The World's Women](#). This portal highlights differences in the status of women and men in eight areas: population and families; health; education; work; power and decision making; violence against women; environment; and poverty.

Annex 2 – Types of Climate Risk Management Measures for Typical Water Projects

Increase water availability	<ul style="list-style-type: none"> • Develop redundant services to increase water capture and storage options, including rainwater harvesting and storage • Explore natural resource management approaches to increase storage in the watershed or break waves, such as establishment of mangroves • Develop new sources of water including reclaimed water • Integrate infrastructure for multiple uses at the household level to improve resilience to decreased rainfall from climate change and variability • Improve water-use efficiency by recycling water • Develop water conservation programs • Expand use of economic incentives including metering and pricing to encourage water conservation • Expand use of water markets to reallocate water to highly valued uses
Secure water quality	<ul style="list-style-type: none"> • Develop a source water protection strategy/plan that accounts for the impacts of low flow on the ability of natural systems to dilute and absorb pollutants • Investigate land use and waste management policies to improve source water quality • Develop a coastal aquifer protection strategy <p>Evaluate treatment options to improve water quality</p>
Accommodate/ Manage	<ul style="list-style-type: none"> • Develop redundant structures or services that can be relied upon if structures fail • Plan back-up power systems for treatment and pumping facilities • Increase inspection frequency to ensure structures are enduring climate change pressures <p>Design food risk-management plans with both ecosystem- and construction-based adaptation options</p>
Protect/ Harden	<ul style="list-style-type: none"> • Update design standards to integrate projected sea level rise and storm surge • Improve distribution system infrastructure <p>Update zoning codes for coastal land to establish natural buffer zones</p>
Retreat/ Relocate	<ul style="list-style-type: none"> • Evaluate improving, elevating, or moving treatment facilities to prevent overflows and inundation • Plan for community relocation
Build information collection and management systems	<ul style="list-style-type: none"> • Strengthen climate information systems, building on existing regional and national networks • Build capacity of national governments to harmonize data across regions • Build relevant national and/or regional research programs on the links between climate and water supply and sanitation (e.g., vulnerability index)
Strengthen policies, planning and systems	<ul style="list-style-type: none"> • Integrate climate information into system planning • Improve coordination of policies and programs across government agencies to address the additional pressures imposed by climate change • Foster integrated resource management with agriculture and energy • Improve finance for water systems that are more adaptive and better designed for a changing climate, including through private sector investment and incentives; ensure consideration of climate risk in financing approaches • Strengthen disaster planning and response for water infrastructure and water services • Improve training, education and outreach efforts and programs related to watershed protection, water demand, water sanitation, and other factors relevant to water-related climate impacts and adaptation

Sources: [USAID Climate Risk Screening and Management Tools: Water Supply and Sanitation Annex](#); [USAID Addressing Climate Impacts on Infrastructure](#); [IPCC Technical Paper on Climate Change and Water](#)