United Nations
Educational, Scientific and
Cultural Organization

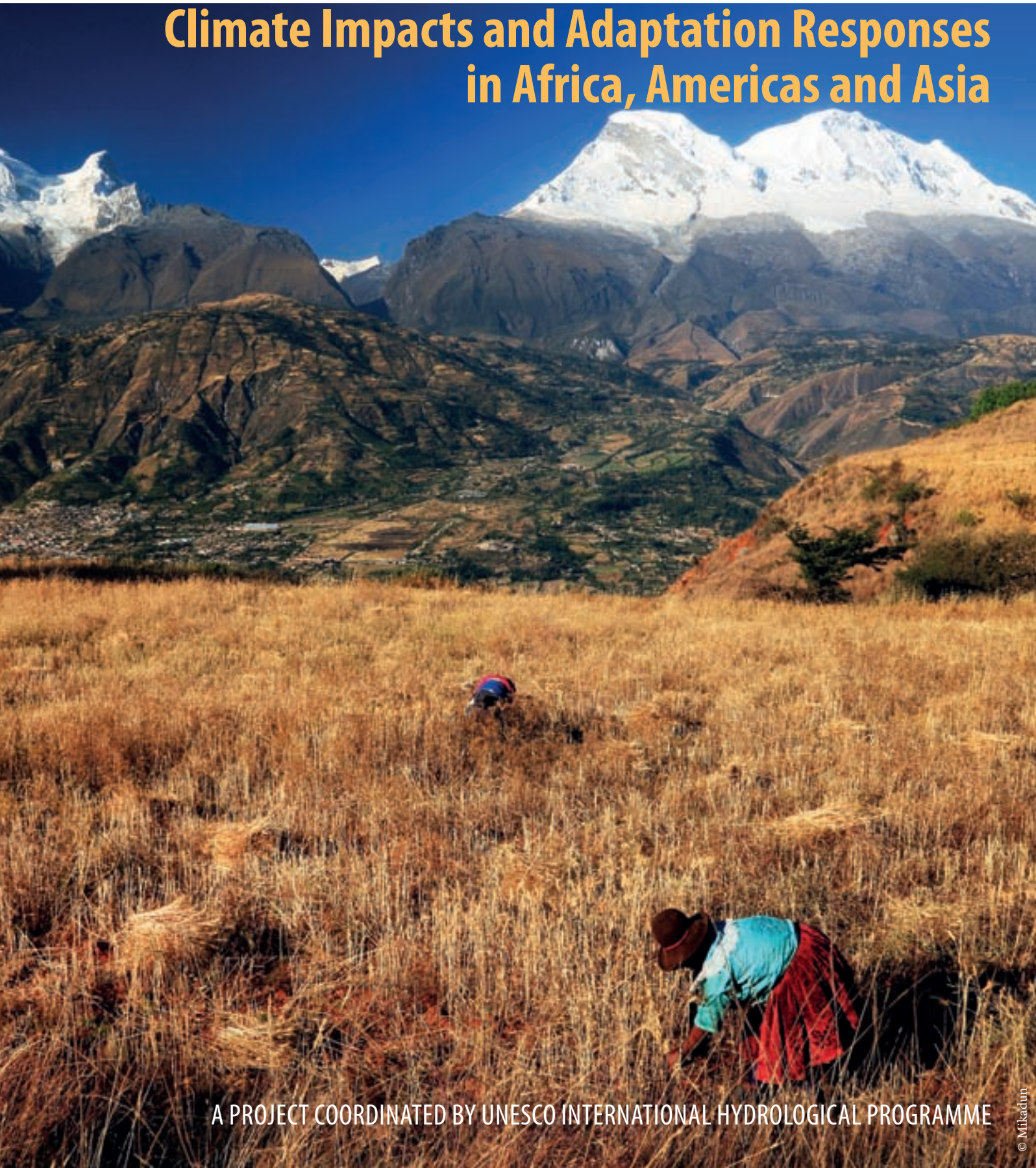
International
Hydrological
Programme

Flanders
State of the Art

KEY OUTCOMES OF THE INCEPTION WORKSHOP:

ADDRESSING WATER SECURITY

Climate Impacts and Adaptation Responses in Africa, Americas and Asia



A PROJECT COORDINATED BY UNESCO INTERNATIONAL HYDROLOGICAL PROGRAMME

Key outcomes of the inception workshop:

Addressing Water Security

Climate Impacts and Adaptation Responses in Africa, Americas and Asia

Editorial team: Magdalena A.K. Muir, Bárbara Ávila, Anil Mishra, Koen Verbist.

A PROJECT COORDINATED BY UNESCO INTERNATIONAL HYDROLOGICAL PROGRAMME

SC-2015/WS/31

Introduction

Achieving water security is important for climate hotspots such as mountains and arid regions. Climate change is intrinsically linked to water security. In particular, there is the need for science based understanding of and communication for climate impacts and vulnerability, mitigation, and adaptation. Water security is defined as availability for societal needs and resilient ecosystems, in the context of current and future global change. For mountainous and arid regions, water security involves snow, ice, and annual and seasonal precipitation; surface and ground waters; water infrastructure and treatment, allocation and decision making; national, local and transboundary implications; ecosystems and social vulnerability and resilience; rural and urban zones; agriculture and food security; and the role of communities and indigenous and local knowledge.

Within mountain catchments and arid zones, there are many research gaps, vulnerabilities, challenges and opportunities for water security. It is important to consider science frontiers and opportunities in the context of climate change and adaptation to meet water security challenges.

This includes gaps in research and scientific uncertainties. Scientific frontiers and opportunities may be greater in some regions, due to more restricted climate science; less scientific human capacity, and lower levels of scientific literacy, although there may be valuable indigenous and traditional knowledge. These challenges provide opportunities for partnerships within and between regions, allowing the transfer of best practices, technologies, adaptation strategies and communication approaches.

Within this framework, UNESCO International Hydrological Programme (IHP) organized the Inception Workshop on Addressing Water Security from February 9-10, 2015 that included broad coverage of projects and partners in mountainous catchments and arid regions around the world. Existing partnerships for the water security project include the UNESCO-IHP undertaken programmes and activities such as current projects funded by the Flanders-UNESCO Trust Fund: Managing Water Resources in Arid and Semi-Arid Regions of Latin America and the Caribbean (MWAR-LAC) and the Andean Glacier project. The water security project is also linked to UNESCO-IHP Water and Development Information for Arid Lands – A Global Network (G-WADI) activities. Similarly, a partnership has been established with: the Global Energy and Water Exchanges (GEWEX) –International Network for Alpine Research Catchment Hydrology (INARCH) project and the World Glacier Monitoring Service (WGMS).

Other collaborations are under development with:

- Alliance for Global Water Adaptation (AGWA),
- Institute de Recherche pour le Developpement (IRD),
- Inter-American Institute for Global Change Research (IAI),
- Albertine Rift Conservation Society (ARCOS),
- United Nations Environmental Programme (UNEP),
- GRID-Arendal,
- European Commission Joint Research Centre (JRC)'s Network of Centres of Excellence,
- Consortium for the Sustainable Development of the Andean Ecoregion (CONDESAN),
- International Center for Integrated Water Resources Management (ICIWARM) UNESCO-Category 2 Centre, and
- UNESCO-IHP International Sediment Initiative.

Other invited partners include:

- International Water Security Network (IWSN) and Center of Excellence for Water Security in the Arid Americas (AQUASEC),
- International Atomic Energy Agency (IAEA),
- United Nations Development Programme/Global Environment Fund (UNDP-GEF),
- National Autonomous University of Mexico (UNAM),
- International Commission for the Protection of the Danube River (ICPDR),
- Third Pole Environment (TPE),
- Himalayan Climate Change Adaptation Programme (HICAP),
- UNESCO Chair on Integrated River Research and Management, and
- International Centre for Water Resources and Global Change.

Proposed Global Knowledge Forum on Water Security to Enhance Dialogue among Scientists and Policy and Decision-Makers

The Inception Workshop on Addressing Water Security launched a discussion on the development of a global knowledge forum on water security that would build on established networks, knowledge and experience. It is intended to develop partnership mechanisms and projects that would contribute to the assessment of vulnerability and map adaptation strategies in vulnerable regions.

In so doing, dialogue and further research would be enhanced for climate change impacts in mountain regions, with emphasis on integrating all activities. Awareness of the impacts of climate change on water scarcity would increase through expert engagement and case studies.

At the Inception Workshop, partners indicated a willingness to share efforts and research among each other, and with policy and decision makers. Consistent with UNESCO's mandate, science was recognized as important to support capacity building and increase resilience, particularly in developing countries. Climate adaptation would be proactive through vulnerability assessment; mapping and implementation on adaptation strategies; raising awareness of potential impacts through outreach activities; and integrating case studies.

Stakeholders, science and policy and decision-makers would promote innovative solutions for sustainable water resources management, particularly for mountain catchments and arid regions. Developing a global knowledge forum was a shared priority for partners.

The forum would build on established UNESCO-IHP programmes and networks, centres and chairs, and contribute to the implementation of the water security within the framework of IHP VIII (2014-2021) phase.

The Inception Workshop discussed:

- Developing a set of benchmarks on vulnerabilities and adaptive capacities in the context of climate change, particularly for the mountainous regions;
- Generating evidence-based knowledge for adaptation strategies to address water security;
- Raising awareness and enhancing capacities to assess, monitor and communicate the impacts of and responses to climate change on natural and socio-economic environments at local, national and regional levels;
- Developing strategies and policy guidelines considering vulnerabilities, opportunities and potentials for adaptation, strengthening the role of indigenous and local communities;
- Facilitating, strengthening and developing coordination with the on-going research activities in the different regions;
- Generating and sharing information and knowledge about the environment in mountain societies, promoting a policy dialogue with local stakeholders, national governments and regional bodies, and strengthening human and institutional capital for leadership training on sustainable development of water resources impacted by climate change.

Recommendations from Panel Discussions at the Inception Workshop to be Included in the Proposed Global Knowledge Forum on Water Security

In conjunction with participants, the vulnerability assessment panel made the following recommendations:

1) **Improving data by assuring credibility of the data methodologies, creating a knowledge base on vulnerability assessment, increasing data sharing and avoiding duplication.**
2) **Adjust vulnerability assessment according to the local scale, continuous monitoring, and strengthening local capacities including governments and communities and traditional knowledge.**
3) **Implementing multi-sectoral and multi-hazard vulnerability assessment focusing not only on climate change but also considering land use and demographic change.**
4) **Prioritizing integrated assessment approaches, recognizing human and societal characteristics, but also opportunities to strengthen the adaptive capacity of communities.**
5) **Strengthening international collaboration for awareness raising.**

In conjunction with participants, the panel on science-policy for adaptation and awareness raising made the following recommendations:

1) **Scientific advice addressing all policy and decision-making.**
2) **Adapting research questions to address the most urgent challenges and political and societal needs, improving local communication and better identifying audiences.**
3) **The scientific community increasing its role in the decision-making, including possible participation in political discussions.**
4) **Politicians and decision-makers better formulating their needs and recognizing the role of science in providing multiple options for multiple scenarios.**
5) **Increased coherence and clearness for decision-making and science, and greater interactions and trust between scientists and policy and decision-makers.**

In conjunction with participants, the panel on improving communications between multi-stakeholders made the following recommendations:

1) **Better communication between scientists and the public to ensure proper investment in research and actions to effectively address climate challenges. There may need to be incentives for the scientists to communicate to the public, and to increase the influence of science on policy and decision-making.**
2) **Science and research questions should be early communicated to all stakeholders, including decision-makers and local communities; to allow multi-disciplinary approaches and knowledge and avoid non-science based policy and decisions.**
3) **Communication should be improved institutionally, with engagement of communications professionals to develop strategies that communicate using different tools for different audiences and social media. Successful communication strategies are bilateral, involving appropriate messaging and audience feedback.**
4) **Uncertainty is not a barrier to clear scientific communication. Consolidated and consensual questions should be communicated, including ranges and possible outcomes.**
5) **Arrangements should involve multiple stakeholders underpinned by political commitments, and should include local and indigenous communities in the communication and policy and decision-making processes.**

Scientific Frontiers and Opportunities, Gaps in Research and Scientific Uncertainties

As illustrated by the recommendations of the Inception Workshop, there are research gaps, vulnerabilities, challenges and opportunities for water security within mountain catchments and arid zones. Science frontiers and opportunities need to be considered in the context of climate change and adaptation to meet water security challenges.

One knowledge gap is the linkage between mountain catchments, arid regions and hydrological systems, including climate impact and adaptation strategies for rivers and ground waters. Another knowledge gap may be the science of climate communications, and how approaches to communicating with policy and decision-makers and the public should vary with the audience's knowledge, values and beliefs.

Scientific frontiers and opportunities may differ for some regions, due to the more restricted role for and generation of science and research, and varying societal levels of scientific literacy and indigenous and traditional knowledge.

These challenges provide opportunities for partnerships within and between regions, allowing for the transfer of best practices, technologies and adaptation strategies and the development of the global knowledge forum.

FOR MORE INFORMATION:
UNESCO Division of Water Sciences
International Hydrological Programme (IHP)
UNESCO
http://www.unesco.org/new/en/ihp

February 2016