



## NAP REGIONAL TRAINING WORKSHOP FOR ASIA

MAINSTREAMING CLIMATE CHANGE ADAPTATION INTO WATER RESOURCE  
SEOUL 13-16 SEPTEMBER 2017

## PARTICIPANTS MANUAL







# CONTENTS

## **PART I – INTRODUCTION TO THE TRAINING** **5**

---

|                            |           |
|----------------------------|-----------|
| Background                 | <b>6</b>  |
| Objectives of the training | <b>6</b>  |
| Resource persons           | <b>7</b>  |
| Training Methodology       | <b>12</b> |
| Agenda                     | <b>13</b> |

## **PART II – LEARNING JOURNAL** **15**

---

|  |           |
|--|-----------|
| Session 1 - Understanding climate change and the international context           | <b>16</b> |
| Session 2 - Climate Information and Services                                     | <b>18</b> |
| Session 3 - Scenario-building and vulnerability assessments for decision-making  | <b>20</b> |
| Session 4 - Stakeholder participation institutional arrangements and partnership | <b>22</b> |
| Session 5 - Cross-sectoral linkages  | <b>24</b> |
| Session 6 - Mainstreaming climate change adaptation in water resource management | <b>26</b> |
| Session 7 - Interactive workshop   | <b>28</b> |



# PART I INTRODUCTION TO THE TRAINING





# BACKGROUND

The National Adaptation Plan (NAP) Regional Training Workshop for Asia on “Mainstreaming Climate Change Adaptation into Water Resources” will take place from the 13th to 16th of September 2017 in Seoul, Korea, back to back with the NAP Regional Expo. The training is targeted to governments in the Asian region. Participants attending this workshop are representatives from the Ministries of Environment, Ministries of Water, Ministries of Agriculture, Ministries of Local Government, Ministries of Foreign Affairs, Ministries of Energy and Ministries of Planning Development and Finance of Asian developing countries (LDCs and non-LDCs), as well as key resource people from partner organizations.

The workshop is being co-organized by the National Adaptation Plan Global Support Programme (NAP-GSP), a joint United Nations Environment Programme (UN Environment) and United Nations Development Programme (UNDP) led initiative, financed by the Special Climate Change Fund (SCCF) and the Least Developed Countries Fund (LDCF), the United Nations Office for Sustainable Development (UNOSD), and the Korean Environment Institute (KEI)-Korea Adaptation Center for Climate Change (KACCC). The workshop will be facilitated by the United Nations Institute for Training and Research (UNITAR).

The NAP-GSP provides a global support mechanism to enable developing countries (including Least Developed Countries, LDCs) to identify, finance, and implement appropriate medium to long term adaptation actions at national, sub-national and local levels. The NAP-GSP is a collaborative effort of more than ten international organizations supporting countries in the following areas: i) Institutional support; ii) Technical support; and iii) Knowledge brokering.

## OBJECTIVES OF THE TRAINING

The overall objective of this training is to increase the capacity of policy makers and technical people for effective decision-making by tackling climate change adaptation for sustainable management and development of water resources. As a key natural resource, and a connected resource to various economic social and economic sectors, water is a multi-sectorial issue and provides an entry-point for mainstreaming climate risks through the NAP process. This includes a focus on extreme events and other slow onset aspects related to water (such as droughts, floods, sea level rise, salinity, etc.).

The workshop aims to:

- Enhance the understanding of participants of the importance of water resources and the cross sectoral linkages with other priority sectors (agriculture, infrastructure, health, etc.), ensuring the successful alignment with the international development and climate agenda, including the Sustainable Development Goals (SDGs) and the implementation of the Paris Agreement;
- Take stock of existing guidance, tools and methods of tracking climate change risks related to water and improving understanding of climate information linkages with other sectors;
- Take stock of approaches for decision making including incorporating uncertainty in planning and examining policies and laws conducive to CCA mainstreaming; and
- Exchange lessons learnt based on country experiences on mainstreaming Climate Change Adaptation (CCA) into development planning.

The workshop will also highlight support available through NAP-GSP and partners to accompany countries in advancing their NAP processes.

# RESOURCE PERSONS



## **MRS. AGNES BALOTA**

Ms. Balota has a Bachelor and Master's degree in Geology with more than two decades of development work experience in the field of participatory natural resources management, community development, and development policy and resource governance. She facilitates multi-stakeholder collaborative processes and has practical experience in capacity development related to water resources management, gender mainstreaming, climate change adaptation and disaster risk reduction.

She currently works at the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in the Philippines under the Support to the Philippines in Shaping and Implementing the International Climate Change Regime (SupportCCC II) Project.

Email: [agnes.balota@giz.de](mailto:agnes.balota@giz.de)



## **MR. AMIR DELJU**

Amir Delju started his work in meteorological service at national level since 1984. His background includes operational meteorology, climatology, and international activities relevant to WMO. Mr Delju holds MSc. degree in physical geography and climatology. He is also a PhD. candidate in climate change and human migration.

Mr. Delju joined WMO in 2004 as Senior Scientific Coordinator in Climate Prediction and Adaptation Branch. During his career, he has produced many publications on the role and operation of National Meteorological and Hydrological Services in adaptation to climate change.

Email: [adelju@wmo.int](mailto:adelju@wmo.int)



## **MR. ARMAND HOUANYE**

Mr. Armand Houanye is a Programme Officer at the Global Water Partnership (GWP) for the Water Climate and Development Programme in Africa (WACDEP Africa). His role is to coordinate and implement projects and activities focusing on Institutional and Technical Development, Stakeholders engagement, Investment Planning, Project Preparation and Financing to advancing Integrated Water Resources Management, Climate Change Adaptation, Water Security and Climate Resilience Development at local, national, transboundary, regional and continental levels in Africa.

He holds a Master's degree in Environmental Sciences - Climate Risks Management, with a Diploma of Agricultural Engineering in Development and Management of Natural Resources (Water and Forestry, Fisheries and Aquaculture, Rural Engineering).

Email: [A.Houanye@cgiar.org](mailto:A.Houanye@cgiar.org)



#### **MR. BEAU DAMEN**

Beau is a natural resource management specialist focused on promoting equitable, climate resilient and low emissions development in Asia and the Pacific. Over the past 12 years Beau has worked as a senior policy analyst for the Australian Government's Department of Resources and Energy and as a Climate Change specialist for the International Centre for Environmental Management in Hanoi and the FAO Regional Office for Asia and the Pacific in Bangkok.

He has experience delivering policy and field-level technical assistance programs on climate change adaptation and mitigation and renewable energy development in over 15 countries in South and Southeast Asia.

Email: [Beau.Damen@fao.org](mailto:Beau.Damen@fao.org)



#### **MRS. EUNHAE JEONG**

Eunhae Jeong is a Senior Development Management Expert in United Nations Office for Sustainable Development (UNOSD). UNOSD, located at Incheon, Republic of Korea, is a part of United Nations Department of Economic and Social Affairs. Its main mission is to assist Member Countries' transition toward sustainability by knowledge sharing and capacity development.

She worked for the Ministry of Environment of the Republic of Korea for 20 years before joining UNOSD. During her time in the Korean government, she established and implemented various policies to achieve Sustainable development in the field of water, climate change, biodiversity conservation.

Email: [jeonge@un.org](mailto:jeonge@un.org)



#### **MRS. HANA SHIN**

Hana Shin has worked on climate change adaptation at Korea Environment Institute (KEI), which is a public research institute under the Prime Minister's Secretariat. In particular, she has participated in various projects which support the adaptation of major infrastructures, fosters the adaptation industry and promote international cooperation on adaptation.

Email: [shinhana@kei.re.kr](mailto:shinhana@kei.re.kr)





#### **DR. JONGSOO YOON**

Dr. Jong-Soo Yoon is Head of the United Nations Office for Sustainable Development, under the Department of Economic and Social Affairs (DESA). Dr. Yoon is the former Vice-Minister of Environment of the Republic of Korea, and an environmental expert in sustainable development.

Previous roles include Assistant Minister of the Environmental Policy Department, Director General of Water Supply and Sewerage Bureau, Director General of the Waste Circulation Bureau, and Director General of Air and Climate Change Bureau, among many others. Dr. Yoon has also contributed at the international platform on environment as an Environmental Counsellor at the Permanent Mission of the Republic of Korea to the United Nations. He has also played a pivotal role for the successful establishment of the second National Strategy for Sustainable Development (2011-2015).



#### **MRS. JU YOUN KANG**

Ju Youn Kang is a researcher at Korea Adaptation Center for Climate Change (KACCC) in Korea Environment Institute (KEI). Over 10 years of her experiences on climate change, she has conducted various international cooperation projects especially on adaptation to climate change.

She is currently the national delegation to United Nations Framework Convention on Climate Change (UNFCCC) as an adaptation expert. She has a master degree in public policy from the National University of Singapore.

Email: [jykang@kei.re.kr](mailto:jykang@kei.re.kr)



#### **MR. MOTSOMI MALETJANE**

Motsomi is a team leader in the NAP and Policy Subprogramme, in the Adaptation Programme of the UNFCCC Secretariat. His responsibilities include: supporting the intergovernmental process and national efforts on adaptation to climate change, with specific focus on National Adaptation Plans (NAPs) and the national adaptation programmes of action; the support to the least developed countries under the Convention; and related adaptation aspects under the Paris Agreement. Prior to joining the UNFCCC Secretariat, Motsomi worked for the Government of Lesotho with leading roles on climate and climate change policy and implementation. He led work on national climate risk assessment and engaged in the development and implementation of national climate change adaptation projects and programmes. He has rich experience in working with various regional and international organizations on climate change adaptation related matters.



#### **MR. MOZAHARUL ALAM**

Mr. Mozaharul Alam is the regional coordinator of climate change sub-programme for Asia and the Pacific of Office of United Nations Environment Programme (UN Environment). He provides leadership and coordinates implementation, facilitate and lead resource mobilisation, and support implementation of start-up phase of implementation of UN Environment CC sub-programme in AP Region. He also provides political guidance, policy advice and technical inputs to climate change team in Asia and the Pacific Office including NAP-NGS, and Least Developed Countries Negotiators' Capacity Building. He has also worked for Ministry of Environment and Forests, Government of Bangladesh as National Project Coordinator to formulate National Adaptation Programme of Action (NAPA). He has worked as Lead Author for Chapter 16 "Adaptation Opportunities, Constraints, and Limits" of Working Group II of the Intergovernmental Panel on Climate Change (IPCC) IPCC Fifth Assessment Report (AR5).

Email: alam31@un.org



#### **MS. SARWAT CHOWDHURY**

Ms Sarwat Chowdhury is a policy Specialist (Green Economy, Natural Capital & Productive Capacities) at UNDP Seoul Policy Centre. The UNDP Seoul Policy Centre for Global Development Partnerships is part of the United Nations' global development and knowledge network. It is the new form of cooperation between the Republic of Korea and UNDP to promote global development and knowledge for poverty reduction and sustainable human development.

Previously she was technical adviser on climate change and mitigation at UNDP Vietnam, climate change specialist at UNDP Bangladesh and Climate change expert at UNDP headquarters in NY.

Email: sarwat.chowdhury@undp.org



#### **MRS. SONAM L. KHANDU**

Sonam Lhaden Khandu is a Deputy Chief Environment Officer under the Climate Change Division of the National Environment Commission Secretariat (NECS), Bhutan. She has a Bachelor in Environmental Engineering from Thammasat University in Thailand and a Masters in Climate Change from The Australian National University, Australia.

She is the coordinator of activities pertaining to climate change adaptation in Bhutan. She is also currently serving as the Vice Chair of the Least Developed Countries Expert Group (LEG).

Email: sonamlk@nec.gov.bt





#### **MR. SEUNG HEE KIM**

Seung Hee Kim has twenty-two years of experience in developing, coordinating and implementing a variety of environmental policies and projects, with a focus on sustainable development strategies, national environmental plans, ecosystem management and biodiversity protection, air pollution and climate change action. Before joining UNDP, he has worked in the Ministry of Environment, Republic of Korea from 1995.

He also worked as environmental attache at the Korean Mission to the UN Office in Geneva during 2007-2010. From 2016 onwards, he has worked as president, National Institute of Environmental Human Resources, for the national/international environmental education and training programs.

Email: seung.hee.kim@undp.org



#### **MR. YOUNG-HOON KIM**

Young-hoon Kim has successively filled various posts in the Ministry of Environment for the past 14 years. He was the spokesperson for the Minister and worked on the water in several positions. He is now the Director General of Climate and Future Policy Bureau of the Ministry of Environment. He received his master degree in public policy from Seoul National University.



#### **MRS. YUN RA CHOI**

Yun Ra Choi has worked for climate change at KPC which is a public organization founded in 1957 under MOTIE. In particular, she has focused on climate adaptation for national infrastructures such as power generation, port, airport and renewable energy etc.

She majored in Green Business Policy at KAIST and 8 years of climate change working experience.



# TRAINING METHODOLOGY

During the workshop, you will be regularly taking part in various activities designed to help you develop your understanding of the different topics that will be covered.

These activities are based on well-established adult learning principles, which include:

- seeing how to apply the topic under consideration to your own situation,
- focusing on aspects which are of particular relevance to you,
- discussing the subject with a small number of other professionals so that you develop a shared understanding.

You will be supported in this by experts and facilitators in both learning and the specific climate change adaptation subjects being covered in the workshop.





# AGENDA

| DAY 1  | DAY 2   | DAY 3   | DAY 4   |
|--|---|---|---|
| Setting the scene: what is mainstreaming CCA and what information do we need for decision making?  | Setting the scene: what do we need to know and do to support mainstreaming adaptation into water resources management?  | Setting the scene: approaches for integrating CCA into water resources  | Setting the scene: designing an indicative roadmap for mainstreaming CCA  |
| MORNING SESSION  |   |   |   |
| <p>09:00 – 10:00</p> <p><b>Welcome and introduction</b></p> <ul style="list-style-type: none"> <li>Opening Remarks: <ul style="list-style-type: none"> <li><i>Armand Houanye (GWP/UNITAR)</i></li> <li><i>Dr. Jongsoo Yoon, (Head of UNOSD)</i></li> <li><i>Mozaharul Alam, (UNE &amp; NAPGSP)</i></li> <li><i>Young-hoon Kim, (Director General of Climate and Future Policy Bureau)</i></li> <li><i>Sarwat Chowdhury, (UNDP Seoul Policy Center)</i></li> </ul> </li> <li>Tour de Table</li> <li>Pre-training self-assessment</li> <li>Overview of the regional programme</li> <li>Introduction to the workshop objectives, methodology and outcomes</li> </ul> <p>10:00 – 11:00</p> <p><b>Session 1: Understanding climate change and the international context</b></p> | <p>09:00 – 09:15</p> <p>Reflections on Day 1 and objectives of Day 2</p> <p>09:15 – 09:45</p> <p><b>Session 3: Scenario-building and vulnerability assessments for decision making</b></p> <ul style="list-style-type: none"> <li>Presentation 3.1 Definition of vulnerability (in context of water resources management), the two-level and detailed vulnerability assessments <ul style="list-style-type: none"> <li><i>Speaker: Agnes Balota (GIZ PHI office)</i></li> </ul> </li> </ul> <p>09:45 – 11:00</p> <p><b>Session 3 - Exercise:</b> Do a vulnerability assessment/matrix for country X.<br/><i>Facilitators: GIZ, UNITAR</i></p> | <p>09:00 – 09:15</p> <p>Reflections on Day 2 and objectives of Day 3</p> <p>09:15 – 10:00</p> <p><b>Session 6a: CCA in water resource management</b></p> <ul style="list-style-type: none"> <li>Presentation 6.1</li> <li>Mainstreaming water security and climate resilience into policy processes, Scenario-based approaches to planning, Adaptive Management <ul style="list-style-type: none"> <li><b>Speaker: Armand Houanye (GWP)</b></li> </ul> </li> </ul> <p>10:00 – 10:45</p> <p><b>Session 6a - Activity: Part 1 – Presentation of country case studies</b></p> <ul style="list-style-type: none"> <li><i>Yun Ra Choi (Korea Productivity Center) - A step forward on climate change adaptation</i></li> <li>Country case study 2 (Participant tbd)</li> <li>Country case study 3 (Participant tbd)</li> </ul> | <p>09:00 – 09:15</p> <p>Reflections on Day 3 and objectives of Day 4</p> <p>09:15 – 11:00</p> <p><b>Session 7: Interactive workshop</b></p> <p>Application of informed decision making in priority sectors. Participants will draft an indicative roadmap on climate change adaptation mainstreaming into a specific water related sector according to national priorities (defined in exercise session 1).<br/><i>Facilitators: UNITAR</i></p> <p>11:00 – 11:15 – Coffee break<br/>11:15 – 12:30</p> <p><b>Session 7 – continuation</b><br/>12:30 – 13:00<br/>Wrap-up, reflection on key messages from Day 4 and Quizz</p> |

|   |  |   |  |
|---|--|---|--|
| <ul style="list-style-type: none"> <li>• Presentation 1.1<br/>Overview of the process to formulate and implement NAPs: objectives, building blocks, sample process and outputs<br/><i>Speaker: Sonam L. Khandu (LEG vice chair)</i></li> <li>• Presentation 1.2<br/>Adaptation under the UNFCCC<br/><i>Speaker: Motsomi Maletjane, (UNFCCC)</i></li> <li>• Presentation 1.3<br/>Water-related Sustainable Development Goals and Policy Support System<br/><i>Speaker: Eunhae Jeong (UNOSD)</i></li> </ul> <p>11:00 – 11:15 – Coffee break<br/>11:15 – 13:00<br/><b>Session 1 - Exercise: National priorities and mentor matching</b><br/><i>Facilitators: WMO, UNOSD, UNITAR, UNE</i></p> | <p>11:00 – 11:15 – Coffee break<br/>11:15 – 11:45<br/><b>Session 4: Stakeholder participation, institutional arrangements and partnerships</b></p> <ul style="list-style-type: none"> <li>• Presentation 4.1<br/>Stakeholder participation<br/><i>Speaker: Seung Hee Kim (UNDP)</i></li> <li>• Presentation 4.2<br/>Institutional arrangements and water governance<br/><i>Speaker: Seung Hee Kim (UNDP)</i></li> </ul> <p>11:45 – 13:00<br/><b>Session 4 – Exercise</b><br/><i>Facilitators: UNDP, UNITAR</i></p> | <p>10:45 – 11:15 – Coffee break<br/>11:15-12:30<br/><b>Session 6a – Activity: Part 2 – Open discussion in plenary on “mainstreaming climate resilience into water related development planning processes”</b></p> |  |
|---|--|---|--|

## AFTERNOON SESSION

|   |  |  |  |
|---|--|--|--|
| <p>14:00 – 14:45<br/><b>Session 2: Climate Information and Services</b></p> <ul style="list-style-type: none"> <li>• Presentation 2.1</li> <li>• Climate Information &amp; Services, Climate info in adaptation planning, use of climate info in flood/drought-risk evaluations<br/><i>Speaker: Amir Delju (WMO)</i></li> </ul> <p>14:45 – 16:00<br/><b>Session 2- Exercise: Risk Mapping</b><br/><i>Lead Facilitators: Ju Youn Kang (KACCC), Hana Shin (KACCC)</i><br/><i>Facilitators: UNITAR, WMO, UNOSD, UNE</i></p> <p>16:00 – 16:15 – Coffee break<br/>16:15 – 17:15<br/><b>Session 2 - Exercise – continuation</b><br/>17:15 – 17:45<br/>Wrap-up, reflection on key messages from Day 1, Quizz</p> | <p>14:00 – 15:00<br/><b>Session 5: Cross-sectoral linkages</b></p> <ul style="list-style-type: none"> <li>• Presentation 5.1</li> <li>• Understanding the food-water-energy nexus in the context of NAPs: processes, success stories and challenges<br/><i>Speaker: Mr. Beau Damen (FAO)</i></li> <li>• Presentation 5.2<br/>Opportunities for climate change adaptation in cities: water related considerations<br/><i>Speaker: UN-Habitat (tbc)</i></li> <li>• Presentation 5.3<br/>Policy challenges: Water, health and sanitation<br/><i>Speaker: WHO (tbc)</i></li> </ul> <p>15:00 – 16:00<br/><b>Session 5 - Exercise: Analytical tool exercise on how climate change impacts sectors</b><br/><i>Facilitators: FAO, UN-Habitat, UNITAR</i></p> <p>16:00 – 16:15 – Coffee break<br/>16:15-17:15<br/><b>Session 5 – Exercise: Continuation</b></p> <p>17:15 – 17:45<br/>Wrap-up, reflection on key messages from Day 2 and Quizz</p> | <p>14:00 – 14:45<br/><b>Session 6b: Mainstreaming CCA in water resource management</b></p> <ul style="list-style-type: none"> <li>• Presentation 6.2<br/>Integrated Water Resource Management (IWRM), Ecosystem-based Adaptation (EbA)<br/><i>Speakers: Armand Houany (GWP), UNE or GIZ</i></li> </ul> <p>14:45 – 15:45<br/><b>Session 6b – Exercise: water security and IWRM</b><br/><i>Facilitators: UNITAR, GIZ, UNE, KEI</i></p> <p>15:45– 16:15 – Coffee break<br/>16:15 – 17h00</p> <p><b>Session 6b – Exercise - Continuation</b></p> <p>17:00 – 17:30<br/>Wrap-up, reflection on key messages from Day 3 and Quizz</p> | <p>14:00 – 15:30<br/><b>Workshop wrap-up</b><br/><i>Heesun Choi (Director, KACCC)</i><br/>Lessons and recommendations from the workshop</p> <ul style="list-style-type: none"> <li>• Discussion of next steps</li> <li>• Participants feedback (plenary statements and questionnaire)</li> <li>• Post-training self-assessment or knowledge test</li> <li>• Certificate ceremony</li> </ul> <p>Closure</p> |
|---|--|--|--|



# PART II

# LEARNING JOURNAL





## SESSION 1 - UNDERSTANDING CLIMATE CHANGE AND THE INTERNATIONAL CONTEXT

*Human-caused climate change represents one of the great environmental challenges of our time. To understand its societal, environmental, and economic implications, it is important to have a basic understanding of the underlying science. This session will lay the fundamental principles behind climate change and specifically look at climate change impacts. With a firm grounding in the basic science, it will link the impacts to various socio-economic sectors and link up with the international policies that are driving actions to climate change on the international arena e.g. the 2030 Agenda for Sustainable Development with water and climate related SDGs, the Paris Agreement with NDCs and NAPs, etc. This session will help the participants to understand the importance of climate change adaptation, with a focus on long-term planning, and present the international context.*

### LEARNING OBJECTIVES

- Explain human-caused climate change;
- Describe the general climate change impacts and link them to key socio-economic sectors;
- Distinguish the key international climate policies / drivers of climate change action e.g. SDGs, Paris Agreement with NDCs and NAPs.

### KEY MESSAGES

- Weather and climate are the results of complex interactions between anthropogenic and natural factors.
- Evidence of global climate change include higher average temperatures, changes in precipitation, ocean warming, ocean acidification, sea level rise, decreasing sea ice, and changes in physical and biological systems. Observed climate change can be linked with the increase of GHG concentrations in the atmosphere since the industrial revolution.
- If no further climate change action will be undertaken, it is projected that changes in crop yields and labour productivity will have the largest negative consequences. Net economic consequences are projected to be negative in most regions of the world. They will be especially large in Africa and Asia, where the regional economies are vulnerable to a range of different climate impacts, such as heat stress and crop yields losses.
- The main platform where international negotiations on climate change take place is the UN Framework Convention on Climate Change (UNFCCC).
- In 2010, the UNFCCC adopted the Cancun Adaptation Framework and initiated a process to formulate and implement National Adaptation Plans (NAP). The NAP process helps countries conduct comprehensive medium- and long-term climate adaptation planning. It is a flexible process that builds on each country's existing adaptation activities and helps integrate climate change adaptation into development planning and decision-making processes at national sub-national and local levels.
- As a universal agreement, the Paris Agreement aims to keep a global temperature rise for this century well below 2 degrees Celsius. It will drive efforts to limit the temperature increase further down to 1.5 degrees Celsius, above pre-industrial levels.
- In the 2030 Agenda for Sustainable Development, Member States expressed their commitment to protect the planet from degradation and take urgent action on climate change. There is growing acknowledgement of the deep interdependency between SDGs and the Paris Agreement. Sustainable development cannot be achieved if climate change reaches catastrophic levels, and effective adaptation cannot progress in a context of unsustainable national policies and governance structures. Member States can implement SDGs and Paris Agreement in a more integrated way, focusing on the features of climate change adaptation, increasing resilience in various sectors such as agriculture, infrastructure, water and the ecosystem.
- Water scarcity affects more than 40 percent of people around the world, an alarming figure that is projected to increase with the rise of global temperatures as a result of climate change. In 2011, 41 countries experienced water stress – 10 of which are close to depleting their supply of renewable freshwater and must now rely on alternative sources. Increasing drought and desertification is already worsening these trends. By 2050, it is projected that at least one in four people will be affected by recurring water shortages.
- SDG 6 is dedicated to Water and sanitation: “Ensure availability and sustainable management of water and sanitation for all”.
- The NAP process aims to: (i) to reduce vulnerability to the impacts of climate change, by building adaptive capacity and resilience; and (ii) to facilitate the integration of climate change adaptation, in a coherent manner, into relevant new and existing policies, programmes and activities, in particular development planning processes and strategies, within all relevant sectors and at different levels, as appropriate.



## USEFUL LINKS

- Global Framework for Climate Services: <http://www.gfcs-climate.org/>
- IPCC - Climate Change Impacts, Adaptation and Vulnerability: Summary for policymakers [http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/ar5\\_wgII\\_spm\\_en.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/ar5_wgII_spm_en.pdf)
- OECD, The Economic consequences of Climate Change, 2015: <http://www.oecd.org/env/the-economic-consequences-of-climate-change-9789264235410-en.htm>
- Sustainable Development Knowledge Platform: <https://sustainabledevelopment.un.org/?menu=1300>
- UN eCC:Learn, "Introductory e-course on Climate Change": <https://unccelearn.org>
- World Bank Climate Change Knowledge Portal: <http://sdwebx.worldbank.org/climateportal/index.cfm>

## NOTES

## SESSION 2 – CLIMATE INFORMATION AND SERVICES

*With the projected impacts of climate change, many countries are exposed to climate variability and extremes at frequencies which exceeds normal thresholds. These climate related events could significantly set back efforts in poverty reduction, national economic growth, and sustainable development. Climate Information & Services are key resources for policy-makers and decision-makers to prepare for these changes and when well-integrated into policy (e.g. through NAP) and practice, they can help reverse this trend and enhance cross-sectoral climate resilient development. This session will highlight key concepts and practical examples to increase awareness of decision-makers (from various sectors) about the importance of climate information & services.*

### LEARNING OBJECTIVES

- Demonstrate an understanding of climate information & services and how to link them to key sectors;
- Explain how to make available and use climate information and services in development planning and policy;
- Demonstrate an understanding of climate information & services for building scenarios in various socio-economic sectors.

### KEY MESSAGES

- CI is the collection and interpretation of weather and climate data that is credible, relevant and usable.
- CI is collected, assessed and assembled into products (by CI&S producers) that are disseminated to users and services. Some of the more common representations of climate information are forecasts, climate models and climate scenarios.
- Collecting weather and climate data requires a functioning network of international, national and local weather information infrastructure.
- CI&S are tools and processes that enable decision-makers and user communities to assess, prevent or prepare for potential impactful weather or climate events.
- CI can build resilience through informed decision-making across social, economic, political and ecological dimensions. It can guide adaptation planning and investments at various levels, and sectoral planning for key climate-sensitive sectors. Climate-smart development planning can reduce the impacts of climate-related disasters, improve food-security, enhance water resource

management as well as development and build resilience.

- CI&S are a key resource for national governments to be able to identify national circumstances and baselines, mitigation contributions and adaptation priorities.

### USEFUL LINKS

- GWP, Flood and Drought: <http://www.gwp.org/en/we-act/themesprogrammes/Climate-Resilience/Flood-and-Drought/>
- UN CC:Learn, Climate Information and Services e-course: <https://unccelearn.org/>
- UN CC: Learn. (2015). Resource Guide for Advanced Learning on the Scientific Fundamentals of Climate Change: [https://www.unccllearn.org/sites/default/files/guide\\_scientific\\_fundamentals.pdf](https://www.unccllearn.org/sites/default/files/guide_scientific_fundamentals.pdf)
- UNCC: Learn. (2015). Resource Guide for Advanced Learning on Predicting and Projecting Climate Change: [https://www.unccllearn.org/sites/default/files/guide\\_predicting\\_and\\_projecting.pdf](https://www.unccllearn.org/sites/default/files/guide_predicting_and_projecting.pdf)
- UNFCCC, Assessing Climate Change Impacts and Vulnerability – making informed adaptation decisions: [http://unfccc.int/files/adaptation/application/pdf/unfccc-nwpsummary\\_interim.pdf](http://unfccc.int/files/adaptation/application/pdf/unfccc-nwpsummary_interim.pdf)

## NOTES



## SESSION 3 – SCENARIO-BUILDING AND VULNERABILITY ASSESSMENTS FOR DECISION-MAKING

*This session will focus on how to make adaptation decisions given uncertainties. In order to deal with uncertainty policy makers need to get a sense of what the range of projections of future climate will look like. This is when participants will be able to use knowledge gained in previous sessions (session 1 and 2 - Impacts of climate change and climate information to conduct vulnerability assessments and build scenarios) to, in turn, make adaptation decisions.*

### LEARNING OBJECTIVES

- Understand the importance of vulnerability assessments for informed decision-making in the context of water resources management and development;
- Be aware of different approaches to vulnerability assessments;
- Know how to find and use available climate information studies and tools to perform vulnerability assessment.

### KEY MESSAGES

- Various components such as the exposure to climate-risk related factors, as well as the sensitivity, i.e. the degree to which a system is affected by a climate stimuli, and the adaptive capacity contribute to vulnerability to potential impacts of climate change.
- Vulnerability assessments are a pre-requisite for effective adaptation planning as they help to identify hot spots of risks, who and what is most vulnerable, where they are located, and what risks they face.
- Vulnerability assessments can assist in (1) determining the extent to which climate change can cause damage, or harm a system and (2) adapting to the impacts of climate change. Hence, they provide a basis for identifying the most appropriate adaptation options.
- Vulnerability assessments are also important as they can provide evidence of the linkages between climate and development, improve understanding of specific risks and vulnerabilities in different localities as well as economic sectors, provide the opportunity for enhancing adaptive capacity, and serve as a baseline analysis to monitor how risks may be influenced by a changing climate over time.
- Assessments of climate change vulnerability vary widely, depending on the scope, time frame and geographic coverage of the assessment. Consequently, a wide range of methods and tools have been developed and applied.

- Two levels of action/detail are recommended for using vulnerability and impact assessments to inform adaptation planning: (i) Level 1 – Rapid review of existing studies, expert elicitation and stakeholder engagement to provide a qualitative overview of the current climate impacts and vulnerabilities and (ii) Level 2 – Commissioning of detailed impact assessment studies at a sector, basin or district level using quantitative modelling where appropriate.
- Potential purposes for vulnerability and impact assessments include: (i) National or basin wide assessment of climate risks; (ii) Sector specific impacts of climate risks; (iii) Vulnerability and impact mapping and (iv) Community and livelihoods vulnerability assessments.
- Climate impact, vulnerability and adaptation assessments provide required data and information to make strong case for motivating decision makers about priority areas requiring adaptation related interventions.

### USEFUL LINKS

- Climate & Development Knowledge Network <https://cdkn.org/themes/climate-change-adaptation-2>
- GIZ (2013). Training Materials: Integrating climate change adaptation into development planning: <http://www.adaptationcommunity.net/trainings/training-materials-integrating-climate-change-adaptation-development-planning/>
- GIZ (2013). Tailor made training courses on climate change adaptation: [http://www.adaptationcommunity.net/?wpfb\\_dl=146](http://www.adaptationcommunity.net/?wpfb_dl=146)
- PROVIA (2013). Guidance on Assessing Vulnerability, Impacts and Adaptation to Climate Change: <http://www.adaptation-undp.org/resources/training-tools/provia-guidance-assessing-vulnerability-impacts-and-adaptation-climate>: <https://unccelearn.org/>
- UN e:CC Learn, Introductory e-course on climate change, Module 3 – Introduction to Climate Change Adaptation: <https://unccelearn.org/>
- UNISDR National Platforms for Disaster Risk Reduction: <http://www.unisdr.org/partners/countries>
- UNDP (2010). Designing Climate Change Adaptation Initiatives: A UNDP Toolkit for Practitioners: <https://www.unccelearn.org/learning-resources/library/2230>
- USAID: Designing climate vulnerability assessments for decision-making uptake: a conceptual framework and case examples: [http://pdf.usaid.gov/pdf\\_docs/PA00K689.pdf](http://pdf.usaid.gov/pdf_docs/PA00K689.pdf)
- World Bank Climate Risk and Adaptation Country Profiles: [http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country\\_profile](http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile)

## NOTES

## SESSION 4 – STAKEHOLDER PARTICIPATION, INSTITUTIONAL ARRANGEMENTS AND PARTNERSHIP

*This session will address the issues relating to governance in the context of water security, climate change adaptation and climate resilience. It also explains the linkages between governance and climate change and ends by giving a set of examples of how water governance can be strengthened at different levels. This session will also focus on defining why an enhanced level of engagement of stakeholders is vital in the context of water security, adaptation planning and climate resilient development. Stakeholder engagement is a key mechanism used in institutional and policy reform processes, which facilitates the incorporation of needs and interests of those who have a “stake” in a particular issue. It can be critical in ensuring compliance with regulations and buy-in from different actors of society, when certain activities are identified as strategically desirable or important.*

### LEARNING OBJECTIVES

- Highlight the importance of governance in ensuring effective water management and adaptation planning;
- Highlight linkages between water governance and climate resilience,
- Understand the importance of stakeholder engagement and partnership;
- Develop skills in the identification and analysis of key stakeholders, their roles and responsibilities;

### KEY MESSAGES

- Governance covers the manner in which power is balanced in the administration of a country and embraces the traditions and institutions by which authority is exercised. Applied to water, water governance refers to the range of political, social, economic and administrative systems that are in place to develop and manage water resources and the delivery of water services at different levels of society.
- If the step between international and national level is often manageable in terms of coherence on climate policies and needs assessment, the step from national to local (e.g. province and district) is often more cumbersome.
- While climate change is a global problem, the response, solutions and investments for increased resilience as well as adaptive capacity in most cases must be local. Thus, there is a huge pressure on local governments to stand up to the challenges provided by climate-driven water hazards. They can, for example, provide

- important information about local circumstances and thereby contribute to more effective planning.
- Stakeholders play an essential role in designing and implementing adaptation activities. In the context of water security, adaptation planning and climate resilient development, adequate engagement of stakeholders is particularly vital. Water is a resource with many uses and attributes, and consequently different groups of people allocate different meanings and levels of importance to this treasured resource.
- Effective stakeholder engagement is also likely to enhance the acceptance of decisions taken. Key stakeholders range from community members, policy-makers, researchers and experts to non-governmental organizations.
- Stakeholder analysis will contribute to understanding of the interests and influence of different stakeholders with regards to water security, adaptation planning and climate resilience in a particular country/ area.
- Institutional mapping can be used alongside stakeholder analysis to gain an understanding of the organizational framework that informs decision-making on water management and related investments.
- Building on partnerships across sectors/ levels yields benefits through coordinated planning and management of water resources and climate risks.

### USEFUL LINKS

- CAP-Net. Capacity development in sustainable water management: <http://www.cap-net.org/>
- GWP. Strategic framework document for water security and climate resilient development: [http://www.gwp.org/globalassets/documents/wacdep/sf\\_watersecurity\\_proof6new\\_web.pdf](http://www.gwp.org/globalassets/documents/wacdep/sf_watersecurity_proof6new_web.pdf)
- Stockholm Water Institute UNDP Water Governance Facility: [www.watergovernance.org/](http://www.watergovernance.org/)
- Water Resources Group. A Catalogue of Good Practices in Water Use Efficiency: [http://www.2030wrg.org/wp-content/uploads/2012/06/3.-Good-Practices-Catalogue\\_final\\_low-res.pdf](http://www.2030wrg.org/wp-content/uploads/2012/06/3.-Good-Practices-Catalogue_final_low-res.pdf)
- Water Integrity Network: <http://www.waterintegritynetwork.net/>



## NOTES

## SESSION 5 – CROSS-SECTORAL LINKAGES

*Effective adaptation planning is needed across all sectors in a way that recognizes sectoral interdependencies and relative country entry point. Indeed, the post-2015 development agenda recognizes the complexities associated with the prevailing sectoral approach to policymaking and emphasizes the importance of policy coherence in addressing cross-cutting challenges such as climate change. Coherent policy approaches can lead to more efficiency and reduce competition for budgets and resources. Water-related climate risks arise from too much water, too little water or polluted water. Water and agriculture management approaches could represent policy adaptations covering both extreme weather events (such as floods and droughts) and longer term climate change trends, using, for example, improved water management and projections of drier future climates. This session will look at the various cross-sectoral linkages with the water sector: i.e. water and agriculture; water and infrastructure; water and health; and water and energy.*

### LEARNING OBJECTIVES

- Define climate change cross-sectoral linkages;
- Understand how cross sector linkages for water relate to achieving Agenda 2030 for Sustainable Development and the implementation of the Paris Agreement focusing on NDCs and NAPs;
- Understand cross-sectoral linkages between climate change impacts and adaptation (on human health, agriculture and food, transport and cities, etc.);
- Explain the importance of cross-sectoral planning

### KEY MESSAGES

- The elimination of hunger and malnutrition is fundamental to all other forms of socio-economic development. The detrimental impacts of climate change on food security and nutrition will further undermine our ability to achieve these goals. Agriculture, forestry, fisheries and aquaculture can be transformational forces in the global response to climate change.
- To be effective, cross-cutting issues like climate change adaptation need to be mainstreamed across multiple sectors and for this, greater policy coherence is essential.
- Cities play a key role in global transition towards circular economy, climate resilient and low-carbon development. Cities are key contributors

to GHG emissions and how cities develop will have an important impact on emission levels.

- Climate change affects human health through direct and indirect pathways. It is key to build climate resilient health systems, which have the capacity to effectively and efficiently prepare for, cope with, and recover from a hazardous event or trend.

### USEFUL LINKS

- Compact of Mayors: [www.compactofmayors.org](http://www.compactofmayors.org)
- FAO. FAO's work on Climate Change: [www.fao.org/3/a-i5165e.pdf](http://www.fao.org/3/a-i5165e.pdf)
- GHG Protocol for Cities: <http://www.ghgprotocol.org/greenhouse-gas-protocol-accounting-reporting-standard-cities>
- IPCC, Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects, Chapter 10: Key economic sectors and services: [https://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap10\\_FINAL.pdf](https://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap10_FINAL.pdf)
- NAP. Guidelines for Agriculture, Forestry and Fisheries. Supplement to the LEG NAP Technical Guidelines: <http://www.fao.org/policy-support/resources/resources-details/en/c/888816/>
- OECD, Mainstreaming Adaptation in National Development Planning, OECD Development co-operation working paper 29, July 2016: [http://www.oecd-ilibrary.org/development/mainstreaming-adaptation-in-national-development-planning\\_5jlsv0689qs6-en;jsessionid=8b8ebrakpkhd3.x-oecd-live-03](http://www.oecd-ilibrary.org/development/mainstreaming-adaptation-in-national-development-planning_5jlsv0689qs6-en;jsessionid=8b8ebrakpkhd3.x-oecd-live-03)
- UN eCC: Learn, Cities and Climate Change: <https://unccelearn.org/>
- UN eCC: Learn, Human Health and Climate Change: <https://unccelearn.org/>
- UN-Habitat (2014). Planning for climate change: Guide: <https://unhabitat.org/books/planning-for-climate-change-a-strategic-values-based-approach-for-urban-planners-cities-and-climate-change-initiative/>

## NOTES



## SESSION 6 – MAINSTREAMING CLIMATE CHANGE ADAPTATION IN WATER RESOURCES

*Water is the key medium through which changes in human and physical systems affect atmospheric temperature rises. Climate change will alter the hydrological cycle in many ways. The trigger is the warming of the atmosphere and oceans, which will change major weather systems. This will alter temporal and spatial patterns of rainfall with consequences for runoff, surface and groundwater storage, river flow regimes and likelihood of extremes – droughts and floods – in different parts of the world. These changes will in turn affect major human livelihood systems, particularly those dependent on direct access to natural assets, e.g. Rain-fed agriculture, human settlement patterns and movement, water supplies, sanitation and irrigation. On the demand side, as populations grow and move and their income levels increase or decrease, their demand for water will change, both spatially and temporally. All these taken together, the net effect of these changes in supply and demand changes will present major challenges to future management of water resources for human and ecosystem development. This session will look at some of the approaches used in mainstreaming climate change adaptation in water resource management and development.*

### LEARNING OBJECTIVES

- Identify and define four approaches to climate change adaptation in water resource management;
- Identify how to use each of these tools in their different contexts.

### KEY MESSAGES

- In many sectors, the impact of climate change will result in an increase in the cost of water services and the cost of reliability in service delivery. These costs will arise from the need for infrastructure, information and systems, needed to cope with climate variability and future climate change.
- Mainstreaming involves improving or changing the policy and planning landscape so that climate resilient development for water security occurs as a matter of course, rather than requiring special efforts
- There are three main elements of adaptive planning: to prepare for a wide range of plausible future scenarios; to respond to change with robust and flexible actions; and to monitor critical changes so that plans can be reassessed accordingly.

- Scenarios in this context are neither predictions of socioeconomic development nor impact of changing climate. Rather, they are plausible descriptions of how the future might develop using current information and assumptions about future trends.
- Integrated Water Resource Management (IWRM) offers the opportunity to build resilience to current climate variability while building capacity to adapt to future climate. It allows balancing of equity, environmental and economic priorities, as well as soft and hard responses including both natural and man-made infrastructure at community, national and river basin levels.
- Implementing sustainable and integrated water resources management is important for adaptation to climate change. It provides mechanisms and approaches for managing changes to the quantity and quality of water, for capacitating organizations and communities to cope with climate variability and change, and for managing trade-offs and conflicts.
- Ecosystem-based approaches to adaptation, constitute the conservation of wetlands, sustainable management, and restoration of ecosystems including floodplains to help people adapt to the impacts of climate change. Such approaches include, for example, sustainable agriculture, integrated water resource management, and sustainable forest management interventions that use natural means to reduce vulnerability to climate change.
- Ecosystem-based approaches are increasingly made possible by the application of decision-support tools that enable comparison of the costs and benefits, including valuation for ecosystem services of alternatives options.

## USEFUL LINKS

- GWP, IWRM Toolbox: [http://www.gwp.org/en/learn/iwrm-toolbox/about\\_iwrm\\_toolbox/](http://www.gwp.org/en/learn/iwrm-toolbox/about_iwrm_toolbox/)
- GWP, Global Support Programme for NDCs, Water, Climate and Development: <http://www.gwp.org/en/we-act/themesprogrammes/Climate-Resilience/Global-Water-and-Climate-Programme/>
- GWP, WASH Climate Resilient Development – strategic Framework: <http://www.gwp.org/en/we-act/themesprogrammes/Climate-Resilience/WASH-Climate-Resilient-Development-a-GWP-UNICEF-Collaboration/>
- IUCN, Ecosystem-based Adaptation and Climate Change: <https://www.iucn.org/theme/ecosystem-management/our-work/ecosystem-based-adaptation-and-climate-change>
- OECD, Water and Climate Change Adaptation, Policies to navigate uncharted waters: [http://www.keepeek.com/Digital-Asset-Management/oecd/environment/water-and-climate-change-adaptation\\_9789264200449-en#.Wa6kndMjGu5](http://www.keepeek.com/Digital-Asset-Management/oecd/environment/water-and-climate-change-adaptation_9789264200449-en#.Wa6kndMjGu5)
- JICA, Handbook on Climate Change Adaptation in the Water sector: [https://www.jica.go.jp/english/our\\_work/thematic\\_issues/water/pdf/guideline\\_02.pdf](https://www.jica.go.jp/english/our_work/thematic_issues/water/pdf/guideline_02.pdf)
- SADC, Climate change Adaptation in SADC – A strategy for the water sector: [http://www.sadc.int/files/2213/5293/3544/SADC\\_Climate\\_Change\\_Adaptation\\_for\\_the\\_Water\\_Sector\\_booklet.pdf](http://www.sadc.int/files/2213/5293/3544/SADC_Climate_Change_Adaptation_for_the_Water_Sector_booklet.pdf)
- World Bank, High and Dry: Climate change, Water and the Economy: <http://www.worldbank.org/en/topic/water/publication/high-and-dry-climate-change-water-and-the-economy>

## NOTES

## SESSION 7 – INTERACTIVE WORKSHOP – DRAFTING AN INDICATIVE ROADMAP ON CLIMATE CHANGE ADAPTATION MAINSTREAMING

### EXERCISE INSTRUCTIONS

- This session will be an opportunity for participants to see how they could make use of the knowledge gained during the training to mainstream CCA into specific water related sectors according the national priorities in their home countries.
- Participants will come up with roadmaps based on their national priorities set in session 1. All the outputs from presentations, discussions, exchanges and exercises carried out on previous days will be incorporated here.

Participants will be grouped per country to:

- Brainstorm on identifying actions to mainstream CCA into specific water related sectors in their country;
- Categorize actions that can be undertaken with countries' own resources (technical and financial) and those that need external resources;
- Develop a timeframe that will serve as a guiding tool to mainstream CCA into specific water related sectors in their country by the end of 2018
- Present their work at the end of the session. In each country group a rapporteur will be identified. An action matrix template will be distributed for compilation; Rapporteurs or country representatives will present briefly their work in plenary at the end of the session and take questions and comments.

Proposed template: a roadmap design to mainstream CCA into specific water related sectors for each country:

- Country:
- Participants' names and position:
- Focus water related sectors:



| POTENTIAL DOMAINS  | IDENTIFIED ACTIONS | COUNTRY'S OWN RESOURCES FOR THE IMPLEMENTATION | REQUESTED EXTERNAL SUPPORTS | COUNTRY IMPLEMENTING PARTNERS | IMPLEMENTING TIME FRAME |    |    |    |    |  |
|--|--------------------|--|-----------------------------|-------------------------------|-------------------------|----|----|----|----|--|
|  |                    |  |                             |                               | Q1                      | Q2 | Q3 | Q4 | Q5 |  |
| Institutional and Technical Capacity development   |                    |  |                             |                               |                         |    |    |    |    |  |
| Enhancing climate change adaptation coordination and mainstreaming CCA into water related sectors  |                    |  |                             |                               |                         |    |    |    |    |  |
| Strengthening access and use of climate information & services                                     |                    |  |                             |                               |                         |    |    |    |    |  |
| Scenario-building and vulnerability assessments for decision-making                                |                    |  |                             |                               |                         |    |    |    |    |  |
| Understanding cross-sectoral linkages between climate change impacts and adaptation                |                    |  |                             |                               |                         |    |    |    |    |  |
| Identifying and appraising of adaptation options and project preparation to access climate finance |                    |  |                             |                               |                         |    |    |    |    |  |

**NOTES**

A large, empty rectangular box with a thin blue border, occupying most of the page. It is intended for participants to write their notes during the session.





## **CONTACT INFORMATION**

United Nations Institute for Training and Research (UNITAR)  
Chemin des Anémones 11, 1219 Châtelaine  
Switzerland