13 November 2014

English only

UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

Subsidiary Body for Scientific and Technological Advice
Forty-first session
Lima, 1–6 December 2014

Item 3 of the provisional agenda
Nairobi work programme on impacts, vulnerability and adaptation to climate change

Good practices in and lessons learned from national adaptation planning

Submissions from Parties and Nairobi work programme partner organizations

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), in response to the recommendations of the Adaptation Committee,[1] invited Parties and partner organizations of the Nairobi work programme on impacts, vulnerability and adaptation to climate change to submit to the secretariat, by 20 August 2014, information on good practices in and lessons learned from national adaptation planning.[2]

2. The SBSTA requested the secretariat to compile the submissions referred to in paragraph 1 above into an information document, to be made available by SBSTA 41.[3]

3. The SBSTA invited Parties and Nairobi work programme partner organizations, including regional centres and networks, to i nclude information on the following, as appropriate, in their submissions referred to in paragraph 1 above:[4]

(a) Available and implemented tools and methods for adaptation planning processes addressing the four issues of ecosystems, human settlements, water resources and health;

(b) Good practices and lessons learned in relation to adaptation planning processes, including on monitoring and evaluation, addressing the four issues of ecosystems, human settlements, water resources and health;

[1] FCCC/SB/2013/2.
[2] FCCC/SBSTA/2013/5, paragraph 13(b).
[3] FCCC/SBSTA/2013/5, paragraph 13(c).
[4] FCCC/SBSTA/2014/2, paragraph 20.

FCCC/SBSTA/2014/MISC.8
GE.14-21434

(c) Good practices and lessons learned related to processes and structures for linking national and local adaptation planning.

4. The secretariat has received 21 such submissions. In accordance with the procedure for miscellaneous documents, the three submissions from Parties[5] and the ten submissions from intergovernmental organizations[6] are attached and reproduced* in the language in which they were received and without formal editing. In line with established practice, the eight submissions from non-governmental organizations have been posted on the UNFCCC website.[7]

[5] Also available at <http://www4.unfccc.int/submissions/SitePages/sessions.aspx>.

[6] Also available at <http://unfccc.int/7482.php>.

* These submissions have been electronically imported in order to make them available on electronic systems, including the World Wide Web. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

[7] <http://unfccc.int/7482.php>.

Contents

* This submission is supported by Albania, Bosnia and Herzegovina, and Serbia.

Paper no. 1: Italy and the European Commission on behalf of
the European Union and its member States

SUBMISSION BY ITALY AND THE EUROPEAN COMMISSION ON BEHALF OF THE EUROPEAN UNION AND ITS MEMBER STATES

This submission is supported by Albania, Bosnia and Herzegovina and Serbia.

Rome, 26 August 2014

Subject: Nairobi Work Programme - information on tools and methods for adaptation planning process, good practices and lessons learned in relation to adaptation planning processes addressing water, health, human settlement and ecosystems, and processes and structures for linking national and local adaptation planning

Introduction

SBSTA 39, in response to the recommendations of the Adaptation Committee, invited Parties and NWP partner organizations to submit to the secretariat, by 20 August 2014, information on good practices in and lessons learned from national adaptation planning. In addition, SBSTA 40 invited Parties and Nairobi work programme partner organizations, including regional centres and networks, to include information on the following, as appropriate, in these submissions:

(a) Available and implemented tools and methods for adaptation planning processes addressing the four issues of ecosystems, human settlements, water resources and health;

(b) Good practices and lessons learned in relation to adaptation planning processes, including on monitoring and evaluation, addressing the four issues of ecosystems, human settlements, water resources and health;

(c) Good practices and lessons learned related to processes and structures for linking national and local adaptation planning.[1]

The EU and its Member States welcome this opportunity to share with others its experiences and lessons learned. The first part of the submission provides some insights at the European level, the second part – and the corresponding annex - provides insights by selected Member States and the third part summarizes the lessons learned from the perspective of the EU.

The EU hopes that this submission together with the follow-up activities by the secretariat will foster national adaptation planning in all Parties and strengthening the linkages not only among those participating at UNFCCC meetings but of practitioners being engaged in domestic adaptation activities at all levels. Therefore this submission provides electronic linkages in order to allow for convenient and quick direct communication if the information provided is accessible in one of the UN languages.

[1] This submission under the SBSTA is distinct from the submission under the SBI (document FCCC/SBI/2014/L.19, paragraphs 11 and 12) on information on experiences of Parties and relevant organizations with the application of the initial guidelines for the formulation of NAPs, as well as any other information relevant to the formulation and implementation of the NAP. See the EU NAP submission dated 25th August 2014.

1. The EU Adaptation Strategy

The EU is preparing itself for becoming more climate-resilient. In 2013 the European Commission adopted the Communication "An EU Strategy on adaptation to climate change"[2]. Its overall objective is to contribute to a more climate-resilient Europe by enhancing the preparedness and capacity responding to the impacts of climate change at local, regional, national and EU levels, developing a coherent approach and improving coordination.

The EU Adaptation Strategy is articulated around three objectives which are in line with basic principles of the initial guidelines developed for the National Adaptation Plan Process under the UNFCCC. First, Member States are encouraged to adopt comprehensive adaptation strategies, to achieve coordination and coherence at the various levels of planning and management. Second, the EU Adaptation Strategy promotes better informed decision-making by addressing gaps in knowledge about adaptation through the EU research and innovation programme[3] and further developing the European Climate Adaptation Platform[4] (Climate-ADAPT) as the 'one-stop shop' for adaptation information in Europe. Third, it promotes adaptation[5] in key vulnerable sectors by integrating its consideration in EU policies, programmes and funds[6]. It builds on the mainstreaming already addressed in policy areas such as inland water, biodiversity, marine waters, forestry, and transport. The strategy addresses agriculture and fisheries policies, aims to ensure that Europe's infrastructure is made more resilient and aims to involve private actors in adaptation by encouraging the use of insurance and financial products to increase resilience in investment and business decisions.

Further information on EU-level actions for adaptation to climate change is provided in the EU 6th National Communication to UNFCCC, including e.g. an overview of relevant research funded by the EU until 2013[7].

In order to help the EU Member States with national adaptation planning processes, the EU Adaptation Strategy provides guidelines[8]. These guidelines were prepared based on a comparative analysis of existing national adaptation strategies as well as on national adaptation efforts to develop policies for adaptation and on a consultation process. The guidelines include six steps: preparing the ground for adaptation; assessing risks and vulnerabilities to climate change; identifying adaptation options; assessing adaptation options; implementation and monitoring and evaluation[9].

[2] COM(2013) 216. Available at: http://ec.europa.eu/clima/policies/adaptation/what/docs/com_2013_216_en.pdf
See also: http://ec.europa.eu/clima/policies/adaptation/what/index_en.htm
[3] http://ec.europa.eu/programmes/horizon2020/en
[4] http://climate-adapt.eea.europa.eu/
[5] http://climate-adapt.eea.europa.eu/web/guest/eu-adaptation-policy/mainstreaming
[6] http://ec.europa.eu/clima/policies/adaptation/financing/funds/index_en.htm
[7] https://unfccc.int/files/national_reports/annex_i_natcom_/application/pdf/eu_nc6.pdf
[8] http://ec.europa.eu/clima/policies/adaptation/what/docs/swd_2013_134_en.pdf
[9] See also the related Climate-ADAPT adaptation support tool, http://adapt-test.eea.europa.eu/adaptation-support-tool

Current efforts in adaptation policy-making in the EU Member States

In order to share experiences in relation to adaptation planning we would like to share the following findings.

As of July 2014, 17 EU Member States have adopted a national adaptation strategy[10]: Austria, Belgium, Denmark, Finland, France, Germany, Hungary, Ireland, Lithuania, Malta, the Netherlands, Poland, Portugal, Slovakia, Spain, Sweden and the UK. Some of these Member States also have action plans in place. Others are in the process of developing strategies and/or action plans.

Most Member States have undertaken risk or vulnerability assessments as a basis for adaptation policy development, predominantly covering the national scale and with only some countries having assessed the sub-national, transnational and sectoral level.

As mentioned in the EU guidelines for national adaptation strategies, although there is no "one-size-fits-all" framework for adaptation in place, certain aspects of good adaptation are common. In particular:

- Mainstreaming: Integrating adaptation with existing national programmes and policies is central to all present adaptation strategies.
- Sectoral focus: All adaptation strategies, or their related action plan, have combined the need for cross government working groups to drive implementation with strong linkages into key sectors.
- Stakeholders' involvement: Varying approaches have been taken on stakeholder involvement in the development process of existing adaptation strategies, from centralised to relatively decentralised. Centralised approaches have involved a small core group of administrations only, while decentralised approaches have engaged a wide range of state and non-state stakeholders
- Communication and awareness-raising: All Member States acknowledge that without effective communication, capacity building and awareness-raising, implementation of the adaptation strategy and associated actions will be very challenging.
- An evolving process: All adaptation strategies appear to be intended as evolving documents which will be reviewed. Revision of adaptation strategies should be aligned with advancing climate change science, research and technology and enhanced capacity.

Some transnational regions within Europe have developed adaptation strategies, e.g. Danube river basin[11], the Baltic Sea Region[12], the Alps[13] and the Pyrenees[14]. Furthermore many transnational projects on climate change adaptation have been funded by the EU[15].

[10] http://climate-adapt.eea.europa.eu/countries
[11] http://www.icpdr.org/main/climate-adaptation-strategy-adopted
[12] http://www.balticsea-region-strategy.eu/communication/news/590661-the-eusbsr-action-plan-translated-into-the-languages-of-the-region
[13] http://www.alpconv.org/en/ClimatePortal/actionplan/default.html
[14] http://www.opcc-ctp.org/en/actions/climate
[15] http://climate-adapt.eea.europa.eu/transnational-regions

Implementation

In relation to implementation by EU Member States the EU guidelines mentioned above state that adaptation should not be performed in isolation from existing policies (e.g. legislation, funding systems), management structures (e.g. networks) and processes (e.g. in decision making). Thus, to allow synergies, instruments in place with relevance for adaptation should be reviewed and modified to cope with current and future impacts of climate, and including better considerations for disaster risk management practices. Integrating adaptation through reviewing and modifying existing instruments shall not be restricted to the environmental sector or to the public authority; it also refers to economic sectors and private organisations.

Key instruments to serve as entry points for integrating adaptation include, inter alia: legislation, regulations; existing strategies, standards, planning tools, assessment frameworks; research and development programmes; networks and working groups.

The following relevant information is included in a 2014 report prepared by the European Environment Agency (due to be published in autumn 2014[16]). Implementing adaptation is most often carried out in EU member states by applying "soft" measures (e.g. providing information or mainstreaming in other policy areas). Project-based support was the most important financing mechanism currently in place for implementing adaptation. Actual government budgets for implementing adaptation have been allocated most explicitly in the water and agriculture sectors. The water, agriculture and forestry sectors are reported to be the most advanced in terms of implementing portfolios of adaptation measures at all levels of administration. With regards to planning, the biodiversity sector is reported to be the most addressed.

Monitoring and evaluation

Successful implementation must be supported by appropriate arrangements to monitor and evaluate whether the adaptation policy is "on track" and is achieving its objectives and to learn how future adaptation efforts might be enhanced. It will be important to ensure that relevant stakeholders are engaged and emphasis is placed on a process of continuous learning.

Provisions to monitor and evaluate selected adaptation options need to focus on the outcomes of implemented adaptation activities, i.e. how effectively they respond in practice to reduce identified risks and enhance climate resilience. Monitoring and evaluating responses are also important to avoid potential maladaptive developments.

The forthcoming 2014 EEA report on national adaption policies mentions the following. Several EU Member States are currently implementing or developing a monitoring scheme, a reporting scheme or an evaluation scheme (MRE). The objectives of MRE vary from evaluating the preparedness of a country to evaluating a specific policy measure. Countries are using a variety of approaches for their MRE schemes, for example, a review by an independent body and self-assessment by actors in different sectors. Several countries have already developed, or are developing indicators on climate impacts, risks and adaptation. However regarding indicators there are many challenges such as the availability of data over the long time frames relevant for climate change.

[16] http://www.eea.europa.eu/themes/climate

2. Insights at the MS level

The following table provides an overview on the detailed information provided by Member States. The full information – including some links that provide even more detail - is included in the annex. Furthermore much additional information is available within the countries' National Communications to the UNFCCC.

Table: Overview of examples submitted by EU Member States[17]

Member State	Sector; adaptation activity
Austria	Monitoring & Evaluation; health (heat protection plans); methods and tools; water (flood risk management)
Belgium	National Adaptation Planning; water (flood risk management, drought management); coastal zone protection
Finland	National Adaptation Planning; water (flood risk management, land use planning); health; monitoring and evaluation
France	Website dealing with high resolution climate and impact projections (charts and data freely available) - http://www.drias-climat.fr/
Hungary	National Adaptation Planning; health; water; human settlement; ecosystems
Italy	Health (heat protection plans); early warning systems (heat waves, floods; landslides)
Spain	National Adaptation Planning; water; health
Sweden	Health (heat protection plans), water (flood risk management)

3. Lessons learned

This part summarizes the lessons learned in relation to the topics specified in the SBSTA invitation for submission. Those lessons build on the experience at the level of the EU as well as on the level of Member States.

[17] Further examples can be found in Climate-ADAPT at: http://climate-adapt.eea.europa.eu/sat

3.1 General information on good practices in and lessons learned from national adaptation planning

- Integrating and mainstreaming adaptation in sectoral and other policy areas is important within EU and national adaptation strategies and action plans.
- Effective coordination and clarity on roles and responsibilities, among environment and sectoral/other ministries and between various governance levels, is essential to achieve effective mainstreaming of adaptation; this can be supported through e.g. regular meetings of inter-ministerial and other working groups.
- Involvement of stakeholders is regarded important and various Member States have engaged a wide range of government and non-government stakeholders.
- Communication, capacity building and awareness-raising are essential to achieve effective implementation of strategies and action plans.
- Strategies and action plans should be regularly revised taking into account advancing climate change science, research and technology and societal developments.
- Monitoring and evaluation are regarded important to evaluate the effectiveness and efficiency of action plans and a few countries have implemented indicators to monitor progress.
- Knowledge gaps include e.g. information on costs and benefits of adaptation; risks and uncertainties; vulnerability at local level and availability of data for monitoring and evaluation.
- Such gaps should be addressed, e.g. through research, and available information and experiences should be better shared, e.g. through international, EU-wide or national adaptation platforms.

3.2 Available and implemented tools and methods and good practices and lessons learned, including on monitoring and evaluation for adaptation planning processes addressing the four issues of ecosystems, human settlements, water resources and health

Ecosystems

In 2012 the EU adopted the EU Biodiversity Strategy to 2020[18] that sets out a long-term (2050) EU vision on biodiversity policy and agreed a range of mid-term 2020 targets and actions, also addressing climate change. The main EU policy instrument on the long term protection of biodiversity is the Habitat and Bird Directive and the Natura 2000 network[19]. Guidelines[20] have been developed on dealing with the impact of climate change on the management of Natura 2000

[18] http://ec.europa.eu/environment/nature/biodiversity/comm2006/2020.htm
[19] http://ec.europa.eu/environment/nature/natura2000/index_en.htm
[20] http://ec.europa.eu/environment/nature/climatechange/pdf/Guidance%20document.pdf

sites. Green infrastructure[21] could contribute by improving the resilience of ecological networks to climate change.

Relevant further information is available from the European Commission[22], in BISE[23] and in Climate-ADAPT[24].

In the annex various examples are provided. For example in Hungary nature-friendly farming is implemented in sensitive nature protection areas (including Natura 2000) and forests are expanded with suitable tree species. Also development of Natura 2000 areas in the catchment area of the river Tisza took place with the aim of habitat reconstruction.

Human settlements

Climate change (heatwaves, droughts, urban drainage and river floods) has the potential to influence almost all components of the urban environment. Many kinds of technical infrastructure, including in cities, – e.g. transport, power grids, water supply, sewage, and buildings – need to be assessed for resilience to current and future risks due to climate change, and upgraded accordingly. Tools and methods have been developed by various organisations in Europe, e.g. on vulnerability and risk assessments[25]. Specifically for buildings, Eurocodes[26], a series of European Standards, will be revised taking into account climate change.

In Europe a range of cities have developed strategies and action plans, supported by various initiatives, including the Mayors Adapt project[27].

In the annex various examples are provided. For example Hungary will revise construction standards and regulations. In Sweden, in a part of the city of Malmö, the surface water system has been revised consisting of dams, canals and green roofs to address extreme precipitation events. This allows better storage of rain water, followed by slow discharge in a nearby stream. Urban drainage flooding in this area has thus been substantially reduced.

Water resources

Water resources are directly impacted by climate change, and the management of these resources affects the vulnerability of ecosystems, socio-economic activities and human health.

The main water related EU policy instrument in which climate adaptation is mainstreamed is the Water Framework Directive[28] (WFD). It is implemented with a 6-year review cycle, which will assist adaptation over time. The objective is to achieve good ecological and chemical status in all surface water bodies and good quantitative and chemical status in groundwater bodies by 2015. The second river basin management plans, due in 2015, should take into account the impacts of climate change, using guidance published in 2009[29]. Climate change must also be integrated in the

[21] http://ec.europa.eu/environment/nature/ecosystems/docs/green_infrastructures/1_EN_ACT_part1_v5.pdf
[22] http://ec.europa.eu/environment/nature/knowledge/index_en.htm
[23] http://biodiversity.europa.eu/countries/eu_country_profiles
[24] http://adapt-test.eea.europa.eu/web/guest/biodiversity
[25] http://climate-adapt.eea.europa.eu/cities
[26] http://eurocodes.jrc.ec.europa.eu/
[27] http://mayors-adapt.eu/
[28] http://ec.europa.eu/environment/water/water-framework/index_en.html
[29] http://ec.europa.eu/environment/water/adaptation/index_en.htm

implementation of the Floods Directive[30]. This requires Member States to establish flood risk management plans focused on prevention, protection and preparedness by 2015, also taking into climate change. The EU also has policies in place addressing water scarcity and drought[31].

Relevant further information is available from the European Commission[32], in the Water Information System for Europe (WISE)[33] and in Climate-ADAPT[34].

In the annex various examples are provided. For example Austria, Belgium and Sweden have performed flood risk assessments and implemented flood risk warning systems and management plans, in a range of river catchments. These were developed after flood events in the past decade and taking into account future climate change. In various cases this included collaboration with the national meteorological service and civil protection authorities. Spain has prepared climate change impacts assessments regarding water resources in natural regimes, urban and irrigation water demands and ecological state of water bodies. Belgium took action to address droughts in the river Maas, because water supply for large canals in Flanders and the Netherlands was becoming insufficient. New pumping stations were set up on the locks of the Albert Canal.

Human health

Direct effects of climate change result from changes in the intensity and frequency of extreme weather events (heatwaves, floods). Indirect effects include changes in the incidence of diseases transmitted by insects (mosquitoes and ticks) or changes in water and air quality. Climate change is addressed in EU health policy[35]. The European Centre for Disease Prevention and Control (ECDC) 'European Environment and Epidemiology' network and portal[36] provides guidance on surveillance of infectious diseases, a handbook for assessments on communicable diseases, infectious disease risk maps and risk assessment related to food-, water- and vector-borne diseases.

Relevant further information is available from the World Health Organisation's Regional Office for Europe[37], including on heatwave action plans, and Climate-ADAPT[38].

In the annex various examples are provided. For example Austria, Hungary, Italy and Spain have implemented heatwave warning and action plans aimed at protecting vulnerable population groups, in a range of regions and cities.

[30] http://ec.europa.eu/environment/water/flood_risk/index.htm
[31] http://ec.europa.eu/environment/water/quantity/scarcity_en.htm
[32] http://ec.europa.eu/environment/water/blueprint/index_en.htm
[33] http://water.europa.eu/
[34] http://climate-adapt.eea.europa.eu/web/guest/water-management
[35] http://ec.europa.eu/health/climate_change/policy/index_en.htm
[36] https://e3geoportal.ecdc.europa.eu/
[37] http://www.euro.who.int/en/health-topics/environment-and-health/Climate-change
[38] http://climate-adapt.eea.europa.eu/web/guest/health

3.3 Good practices and lessons learned related to processes and structures for linking national and urban adaptation planning.

- The EU Adaptation Strategy and national adaptation strategies and action plans can provide an institutional framework as well as financial resources and capacities, for actions at local level. They can also help enhance knowledge, through research, and sharing of existing information, e.g. through adaptation platforms.
- Clarity on roles and responsibilities between various governance levels (in particular urban, sub-national and national) is essential to achieve effective mainstreaming of adaptation.
- There are various actions in EU cities aimed at adaptation, including the EU funded Mayors Adapt project that aims to engage cities in taking action to adapt to climate change. Cities commit to developing a comprehensive local adaptation strategy or integrating adaptation to climate change into relevant existing plans. Also the Open European Day on climate change adaptation, an annual conference organised by ICLEI and other partners[39], is a relevant event and network for knowledge exchange. Further linking between such city actions and national adaptation strategies can be beneficial and enhance effectiveness.
- Risk and vulnerability assessments are a crucial step for adaptation planning at local level and can also be used as a means of communication and involvement of stakeholders. Local urban experts should be involved, making use of their experience about damages and losses during past events. In many cities such assessments have not yet taken place, and there is much potential to further sharing of experiences and learning amongst cities.
- Urban climate change adaptation is often driven by recent events, e.g. floods. It is important to prepare city adaptation plans well before the occurrence of extreme events. Once an extreme event is taking place this can allow cities to propose actions to policy makers, taking advantage of a "window of opportunity" for achieving political consensus on actions.

[39] http://resilient-cities.iclei.org/bonn2014/open-european-day/

Annex: Examples of adaptation activities as submitted by the EU Member States

Austria

Monitoring and Evaluation (M&E) of the Austrian National Adaptation Strategy (NAS) and National Action Plan (NAP)

An M&E scheme is currently being developed by the Ministry of Environment to review the implementation of the national adaptation strategy (NAS) and specifically linking to the 132 adaptation actions (across 14 sectors) identified in the National Action Plan (NAP). The scheme aims to provide sufficient information to monitor implementation activities through both a self-assessment (stakeholder survey) and a collection of qualitative and quantitative data under a criteria- catalogue. The framework is designed as a "learning system" to be flexible, iterative and open for new developments and foresees active stakeholder involvement throughout the process.

Link to the concept for M&E in Austria (German only):
http://www.bmlfuw.gv.at/dms/lmat/umwelt/klimaschutz/klimapolitik_national/anpassungsstrategie/fortschrittsbericht/Bericht-zur-Fortschrittsdarstellung_10323_12062014_final-v12/Bericht%20zur%20Fortschrittsdarstellung_10323_12062014_final-v12.pdf

Regional heat protection plans

Regional governments of Styria and Carinthia have developed heat protection plans as contingency measure in particular for population groups sensitive to heat stress. The plans enter into force from May until end of September and include heat warnings sent out by the national meteorological service (ZAMG) to facilities such as kindergartens, hospitals, old-age homes and mobile nursing services. The heat warning includes temperature prognosis for the region, information on heat stress and recommendations.

More information (German only): http://klimawandelanpassung.at/index.php?id=25503

Direct Links to the heat protection plans:

- Styria: http://www.gesundheit.steiermark.at/cms/beitrag/11685019/72561200
- Carinthia: http://www.ktn.gv.at/42109_DE-ktn.gv.at-THEMEN?detail=472&thema=32&subthema=39

Methods and tools for adaptation on provincial, regional and city level

In order to support politicians and experts in the public administration of provinces and cities, as well as actors in regional management in developing adaptation strategies, a handbook with methods and tools has been published which describes essential steps of adaptation processes and provides concrete recommendations and tips for each step in form of fact sheets, checklists, guidelines etc. The handbook has been developed under active involvement of the target groups and has been additionally tested and evaluated in the province of Upper Austria and the Waldviertel region together with local actors.

More information: http://www.klimawandelanpassung.at/ms/klimawandelanpassung/en/

Direct Link to the handbook:
http://www.klimawandelanpassung.at/fileadmin/inhalte/kwa/pdfs/HANDBUCH_EN_final.pdf

Integrated flood risk management in Austria

Within the last decade Austria has been hit by a number of extreme weather events (e.g. 2002, 2005, 2009, 2013) which led to an intense effort to further improve and develop the integrated approach in flood risk management. After each event a detailed analysis of the underlying processes was conducted that formed the basis for a large number of interdisciplinary research initiatives (e.g. FloodRisk I and II and the currently ongoing FloodRisk-Evaluation). These are meant to fill the existing knowledge gaps and to give detailed recommendations in particular for integrated natural hazard management approaches (water management, spatial planning, building codes, emergency planning, ..). To support those efforts awareness raising campaigns provide the broad public on the one hand with information about risk prone areas and with materials on how individual protection measures can be taken. The results and recommendations described above are also considered in the implementation of the EU Floods Directive which requires the development of detailed flood risk management plans by 2015. Positive effects of Austria's approach towards an integrated flood risk management can already be observed with a large number of good practice examples. In particular the approach proved to be effective at the flooding event of June 2013 where in many cases the flood damage compared to 2002 was considerably reduced.

Links: Federal Ministry of Agriculture, Forestry, Environment and Water Management:
http://www.bmlfuw.gv.at/wasser/schutz_vor_naturgefahren.html

EU Floods Directive: http://ec.europa.eu/environment/water/flood_risk/

Belgium

The different regional governments in Belgium all have developed plans aimed at climate change adaptation. Mostly these plans are part of an integrated approach to address climate change issues. In 2010, Belgium adopted its National Adaptation Strategy which describes the main climate change impacts, the existing adaptation responses, a roadmap to a future National Adaptation Plan (NAP) and some policy guidelines for an adapted future. The national adaptation plan (under development) identifies gaps and specific adaptation measures that need to be taken at national level in order to strengthen cooperation and develop synergies between the different entities (federal, regions) on adaptation.

Flemish regional climate plan

For the period 2013-2020 Flanders adopted a regional climate plan that both addresses climate change adaptation and mitigation measures. The development of the plan was coordinated by the Flemish department for Environment. Climate change information could be mostly obtained from publications from the Flemish Environmental Agency who gathered it from publications, studies and projects. Stakeholders were involved to give input both on vulnerability assessments and adaptation options. A bottom-up approach was used to involve all departments of the regional government to have their input in the plan. Throughout the planning process stakeholders of the

different sectors were invited to comment. The finished adaptation plan was merged with the mitigation part into the overarching climate plan to be adopted by the Flemish government.

The Sigmaplan.

The river Scheldt is Flanders biggest river. This river is exceptional as tide goes deep (around 160 km) into the hinterland. This kind of estuarine system creates specific challenges. One of these is that tidal differences are bigger around 100 km landward. In 2005 there was published a master plan what took into account the sea level rise from around 60 cm at that time known from IPCC-publications to be the maximum level in the worst case scenario. Prearrangements are made to face even higher sea level rise.

Coastal protection plan

To protect the Belgian coast, a *Master Plan Coastal Safety* was designed. The Belgian coast is a sandy coast with dunes altered with manmade concrete protection dikes. The sandy beaches and dunes turn out to be quite able to adapt to changes in a natural way. Besides sandsuppletion on the beaches (a soft manmade solution) the natural system of duneformation is used to strengthen the natural coastline. This is done by planting marram grass and placing fascines in the wind alleys to trap the sand.

Pumping stations on the Albert Canal

Due to the augmenting occurrence of severe droughts on the river Maas, water supply for the big canals in Flanders and the Netherlands was becoming more and more insufficient. Pumping stations had to be set up on the locks of the Albert Canal. Intelligent and cooperative design came to the biggest Archimedes screws in Europe. Now drought can't be of any harm any more, the screws are used as generator in case of excess of water, and fish can cross these screws as they are designed as fish friendly.

Finland

Finland's National Strategy for Adaptation to Climate Change was published in 2005 (http://www.mmm.fi/en/index/frontpage/climate_change_energy/adaption.html). The objective of the strategy is to reinforce and increase the adaptive capacity of society by minimising the negative impacts while taking advantage of any favourable impacts. The main principle of the strategy was that adaptation measures should be integrated into the normal planning and operational work in different sectors. The strategy is to be revised over the period 2011-2014. The implementation of the strategy is overseen and steered by the Coordination Group for Adaptation to Climate Change, which is run by the Ministry of Agriculture and Forestry, and also contains representatives from other ministries, research institutes, research financers and regional actors.

Lessons learned:

- A significant share of the adaptation measures are implemented at the regional and local level. Various measures promoting the provision for climate change, such as flood protection, have already been taken on at the regional or municipal level for quite a long time, though they have not been seen as adaptation measures as such. In order to be able to advance effective adaptation measures, local and regional operations should be further promoted.
- Although the sectoral approach of the Finnish Adaptation Strategy has facilitated implementation and follow-up in different administrative sectors, it has not yet sufficiently encouraged the launch of cross-sectoral cooperation. In the future, cross-sectoral measures should be better integrated with and promoted as part of adaptation measures.
- There is an identified need for a more thorough analysis in relation to possible synergies and conflicting aspects of climate change adaptation and mitigation objectives in different sectors.
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- Local conditions that may affect construction are increasingly being taken into account through existing instruments, such as building ordinances and municipal instructions for building. The use of specific local, regional and municipal guidance instruments should be further reinforced.

Tools and methods:

One essential implementation tool for the national strategy has been the ISTO research programme (http://www.mmm.fi/en/index/frontpage/climate_change_energy/adaption/adaptation_research.html), which produced comprehensive knowledge on the impacts of climate change and vulnerability in different sectors, thereby laying the foundation for sectoral adaptation measures. Financing for the five-year research programme (2006-2010) was obtained from various sources.

The Flood Risk Management Act (620/2010) came into force on 30 June 2010 and the Government Decree on Flood Risk Management on 7 July 2010. The Act aims to reduce flood risks, prevent and mitigate the adverse consequences caused by floods, and promote the level of preparedness for floods. Its purpose is also to help coordinate flood risk management and the management of river basins, while taking into account the needs relating to the sustainable use and protection of water resources. Among other things, the Act lays down obligations to perform a preliminary assessment of flood risks, specifies significant flood risk areas and aids in the preparation of flood risk management plans.

The most significant measure regarding land use and building was the Government Decision of 13 November 2008 on revising the national land use guidelines. Addressing the challenges posed by climate change was a key theme for the revision, and the new guidelines include, for example, the need to follow objectives concerning adaptations to climate change: in landuse planning, new construction should not be located in areas that are prone to flooding. An exception can only be made if need and impact studies indicate that the risks of flooding can be controlled and that the construction work is in line with sustainable development. Local master planning and detailed planning should take account of the increasing possibility of storms, heavy rainfall and flooding in built areas. The preservation of ecological corridors between protection areas is to be promoted and, where necessary, these areas and other valuable natural areas should also be protected.

The Ministry of Social Affairs and Heath recently produced a handbook on exceptional situations related to environmental health for environmental health care staff and their cooperation partners, which also includes information about weather and climate-related events. The Finnish Meteorological Institute has been issuing heat-wave and cold-spell warnings since 2011.

M&E:

A five-step indicator representing the adaptation level was developed during the mid-term assessment of the adaptation strategy, which was completed in 2009. When defining the adaptation level, the level of knowledge behind the measures and the level of cross-sectoral cooperation are taken into account (for further information see Finland's 6th national Communication, Table 6.2. http://www.stat.fi/tup/khkinv/nc6_chapter_6.pdf). It is estimated that the different sectors will reach either level 2 or level 3 in the adaptation process. The most advanced sector is water management, where adaptation has already been integrated with decision making (level 4).

Hungary

The Hungarian activities and policies are guided by the first National Climate Change Strategy (NCCS1). The National Climate Change Strategy (NCCS1) was prepared pursuant to §3 of Act No. LX/2007 (V. 28.) on the framework for the implementation of the UN Framework Convention on Climate Change and of the Kyoto Protocol thereof. The objectives of the National Climate Change Strategy are implemented by National Climate Change Programmes to be prepared on a biannual basis. The NCCS is also adjusted to the National Sustainable Development Strategy adopted by the Government by Gov. Decree No. 1054/2007 (VII. 9.).

Climate change is a risk threatening both the Hungarian society and the national economy, and forces action. Multiple analyses suggest that our natural values, water resources, flora and fauna, forests, agricultural production yields, buildings, residential environment, public health and quality of life are all threatened by the significant changes in temperatures and precipitation rates, the possible shifting of seasons and the intensification and increased frequency of certain extreme weather phenomena as predicted for the following decades. A group of scientists of the United Nations concluded that Hungary is one of the most vulnerable countries of Europe in terms of the effects of the climate change on biological diversity, i.e., the multiplicity of species.

The scientific background for the NCCS1 was a research project known as “Global Climate Change: National Effects and Responses”.

The second National Climate Change Strategy (NCCS2) has been already completed. Currently it is waiting for government approval which is planned to be given in the second half of 2014. After its adoption, the NCCS2 will update the Hungarian policies and activities regarding climate change.

Specific information on

a. Available and implemented tools and methods for adaptation planning processes addressing the four issues of ecosystems, human settlements, water resources and health;

Health

- The Climate Health Network is operating in the capital city and will be extended to the entire country.
- A Heat wave plan is prepared, with particular attention paid to preparing the general public.
- The introduction of additional vaccines and the existing vaccination practices is being assessed.
- Water resources
- Elaboration of the flood risk maps and risk management plans required by the EU Flood Directive.
- Water supply based on subsurface karst water reserves, which will require special attention and significant investments and training due to the increasing incidence of larger rainfalls, in order to guarantee the safety of water supply.
- Expansion of rainwater collection channels to be able to receive sudden large quantities of rainwater.

Human settlement

- Although the national strategy relating to building energetics is yet to be adopted, the revision of the construction standards and regulations in force is underway. Furthermore the building requirements will become more stringent creating standards that are more in line with adapting to the effects associated with climate change (risk of floods and landslides, structural stability, external insulations, material fatigue).

Ecosystems

- Establishing an information system in order to ensure water retention and contiguous vegetation coverage in the most affected regions, as well as to restore aquatic habitats. Wide-spread application of the approaches elaborated in the framework of the agri-environmental programme, including the implementation of nature-friendly farming in sensitive natural areas and in the Natura 2000 areas and their surroundings to the extent deemed possible.
- Increasing the size of forests in line with the National Afforestation Programme and with the use of tree species which are suitable for the habitat conditions and are either native or otherwise appropriate according to the relevant investigations.

b. Good practices and lessons learned in relation to adaptation planning processes, including on monitoring and evaluation, addressing the four issues of ecosystems, human settlements, water resources and health;

Human settlement

- Avoiding constructions in high-water beds (floodplains, foreshores) and waterside zones, water drainage and storage in order to facilitate water management in general.
- Avoiding construction in the areas exposed to inland inundations in order to reduce conflicts and prevent damage;
- Avoiding constructions in areas at a risk of landslides or having other geological risk sources in order to avoid the risks enhanced as a result of the climate becoming more extreme;
- Avoiding the accretion of the areas of settlements to be developed and not to be developed by constructions, in order to maintain the contiguity of the ecological network;
- Preparing regional plans for the settlement aggregates (agglomerations of large cities, agglomerating regions, settlement groups) most exposed to conflicts (depletion of the natural environment, development of heat islands, damage to the ecological network);
- Delineating the areas where afforestation can be considered, identifying the areas unsuitable for intensive agricultural uses.

Ecosystems

- Accelerating plant improvement and selecting the most appropriate variety range based on adaptation capacity studies. Besides performance and quality, the climate change should also receive emphasis in the improvement of animal species.
- Water-saving irrigation technology, multivalent cultivation serving the prevention of inland inundation and drought, improvement and dissemination of the technologies used in hail damage fighting.

c. Good practices and lessons learned related to processes and structures for linking national and local adaptation planning.

Human settlement

- Selecting land uses and construction rates with appropriate intensity that facilitate sustainable development (avoiding too high or too low population densities);
- Protecting, maintaining and developing the system of green surfaces and green areas of settlements;

- Promoting and applying differentiated settlement systems (by dividing larger cities into quarters and facilitating this at recreation areas and health resorts independently of size) in order to avoid heat islands and to facilitate resettling in close-to-natural environments;
- Promoting compact cities and reducing the necessity for transport (between home and the workplace, between raw material resources and processing sites etc.) or at least minimising the growing thereof by mixed/combined and appropriate land uses;
- Increasing or at least maintaining the biological activity level;
- Promoting rainwater management (storage and use in buildings and gardens)

d. Success stories of adaptation activities

- „Strengthening nature conservation"- Operational Programme 'Infrastructure and Energy' IEOP: development of Natura 2000 areas within the catchment area of the river Tisza in the amount of 3.3 billion HUF. The beneficiaries were the Hortobágy, Kiskunság and Körös-Maros National Parks. The programme purchased in total 5000 hectare Natura 2000 areas, with the aim of habitat reconstruction and development of forest schools.
- „The development of environmentally-friendly energy management" IEOP: 21 winning entries of renewable energies and 24 winning entries of energy efficiency projects. These resulted in a total of 2.06 PJ per year of fossil fuel savings annually.

Italy

National warning system - heat waves

The Italian Ministry of Health activates the National warning system for heath waves, with the support of the Epidemiologic Department of the Latium Region.

The system forecasts and prevents the effects of heath waves on human health. It is present in 27 italian cities (Ancona, Bari, Bologna, Bolzano, Brescia, Cagliari, Campobasso, Catania, Civitavecchia, Firenze, Frosinone, Genova, Latina, Messina, Milano, Napoli, Palermo, Perugia, Pescara, Reggio Calabria, Rieti, Roma, Torino, Trieste, Venezia, Verona, Viterbo), and provides information on meteo-climatic conditions from monday to friday for every urban area.

Daily bulletins are issued for every city, with forecasts on the possible effects on health for 24, 48 and 72 hours.

http://www.salute.gov.it/portale/temi/p2_6.jsp?lingua=italiano&id=410&area=emergenzaCaldo&menu=vuoto

Heatwave stress prevention plan - Emilia Romagna

In Emilia-Romagna, a warning service to prevent and address the health effects of heat waves has been active since the summer of 2004.

The service began with heat forecasts for 23 sub-areas in Emilia-Romagna. Since 2006, specific forecasts for the region's main towns have been added to evaluate the urban heat island effect.

Summer bioclimatic discomfort conditions are defined by the Thom index or Discomfort index (DI), which combines temperature and humidity values to produce a value for physiological discomfort.

http://www.arpa.emr.it/v2_calore_homepage.asp?idlivello=97

Early warning system for floods and landslides

The Emilia-Romagna regional authorities actively monitor precipitation, river flow, and landslides in the Apennines using a network of measurement stations and forecasting models. This monitoring supports the Regional Civil Protection Agency in preventing damage from floods and landslides.

The body which carries out this work is the Centro Funzionale, an organisation that unites services from different technical agencies such as: the Hydro-meteorological-climatic Service of ARPA Emilia-Romagna, the Regional Civil Protection Agency, the Regional Geological and Earthquake Service, and the Regional River Catchment Service.

Centro Funzionale can also call on a large network of volunteers in case of alert.

The real-time meteorological network of the Emilia-Romagna Region is made up of more than 300 rain-gauges and 250 hydrometers installed along the region's rivers, allowing the Centro Funzionale to monitor the whole territory of the region.

http://www.arpa.emr.it/dettaglio_generale.asp?id=2912&idlivello=1593

Spain

GOOD PRACTICES AND LESSONS LEARNED FROM NATIONAL ADAPTATION PLANNING PROCESS (SPAIN)

The National Climate Change Adaptation Plan[40] approved in 2006, was one of the first adaptation strategies developed in Europe. It is the current framework for carrying out actions to assess impacts, vulnerability and adaptation to climate change in Spain.

The Plan’s objective is to mainstream adaptation to climate change in planning processes of all relevant sectors or systems.

[40] http://www.magrama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/plan-nacional-adaptacion-cambio-climatico/plan-nacional-de-adaptacion-al-cambio-climatico/

Up to date a lot of good practices have been produced as a result of the plan including:

- A wide range of sectors has been covered by specific activities on impacts, vulnerability and adaptation assessment. Even some sectors such as water resources are being assessed to provide a cost-benefit methodology.
- Adaptation to climate change has been mainstreamed into many of the Spanish laws and regulations including the Law 21/2013 of Environmental Assessment[41]. One good example is the need to establish an adaptation strategy in the Spanish coast as mandated in the recent Law 2/2013 of protection and sustainable use of the seashore.
- Governance among all stakeholders is being widely promoted within the plan by periodic consultations and meetings. As a result, a platform for exchanging best practices and information on adaptation and networking has been created in 2013, *Adaptecca*,[42] which constitutes the Spanish counterpart of *Climate Adapt* in Europe.
- Private sector has been engaged in a new project called Iniciativa Adapta aimed at exploring vulnerability and adaptation options in companies of strategic sectors in Spain: tourism, energy, transport, construction and food industry.

Regarding lessons learnt:

- There is still room for improvement in some crosscutting issues not properly assessed, such as the economics of adaptation and adaptation indicators since and there are not many available methodologies on that worldwide.
- Fully implementation of the plan is still to come due to financial and human constraints.
- Monitoring and evaluation of the plan must be put into practice.
- Some difficulties have been identified when planning joint activities regarding disaster risk reduction since it involves Administrations at different levels.

a) Available and implemented tools and methods for adaptation planning processes addressing the four issues of ecosystems, human settlements, water resources and health;

Water resources:

An assessment of Impacts of Climate Change in water resources and water bodies in Spain (CEDEX in cooperation with the Spanish Climate Change Office) was carried out between 2011 and 2013 and it produced four documents on the impact of climate change in different related topics[43]:

- Water Resources in natural regime
- Water demands (urban and irrigation demands)

[41] http://www.boe.es/boe/dias/2013/12/11/pdfs/BOE-A-2013-12913.pdf
[42] www.adaptecca.es
[43] http://www.magrama.gob.es/es/agua/temas/planificacion-hidrologica/planificacion-hidrologica/EGest_CC_RH.aspx

- Exploitation Systems of water resources
- Ecological state of water bodies

Apart from the four documents a software tool has been developed with two functionalities:

- Display of maps generated in the study of impact of change climate on water resources.
- Areal calculation between the maps of the study and vector layer type polygons.

Health:

The Health and Climate Observatory is a joint initiative between the Ministry of health and the Ministry of Environment created as a tool of analysis, diagnosis, monitoring and evaluation of the impacts of climate change on public health and the National Health System.

Some of its functions are:

- The establishment of a system of indicators on health and climate change,
- The creation, maintenance and management of a database and a web platform on climate change and health to promote communication and social participation
- The coordination of a network of scientific experts to provide a basis for collaboration and common knowledge to facilitate communication and collaboration among different government institutions.
- Periodic monitoring and evaluation of the effects of climate change policies on health.

One of the outcomes of the observatory is the report on the Impacts of Climate Change on health published in 2014 that addresses relevant aspects such as the effects of extreme temperatures reflected in cold or heat waves, air or water quality and the possible spread of diseases.

Sweden

Examples from Sweden – health and water

All examples can be found at: http://www.klimatanpassning.se/Atgarder (in Swedish)

1. Adaptation to heat waves

In order to increase knowledge about heat waves and its effects on health, the health care administration staff in the municipality Botkyrka near Stockholm has taken part in a research project called Climatools.

Besides increasing knowledge, tools such as checklists to be used during heath waves have been developed. If needed, extra staff is called in to elder care homes to ensure safe treatment and care at

heath waves. In order to secure long-term preparedness, heat waves have also been included as a part of the municipality's regular inspections.

The municipality has also bought fans and future retirement homes and kindergartens will be built with rooms able to accommodate cooling requirements even during heat waves.

The project has resulted in increased awareness and preparedness for heat waves in the municipality.

2. Open surface water management in Malmö district Augustenborg

In Augustenborg, a district in the city of Malmö in the very south of Sweden, an open surface water system was introduced in the late 90's against regular basement flooding. The surface water system consists of dams, canals and some green roofs that have been integrated into the existing environment. The system slows and stores rainwater so it then can slowly drain to a nearby stream. Before the rebuilding the surface water system in Augustenborg was undersized and every time it rained heavily, the impure water was suppressed into the basements floor drains.

The new surface water system has been adapted to the prevailing climate but has also designed with a safety margin. After the introduction, there has not been any flooding despite heavy rains.

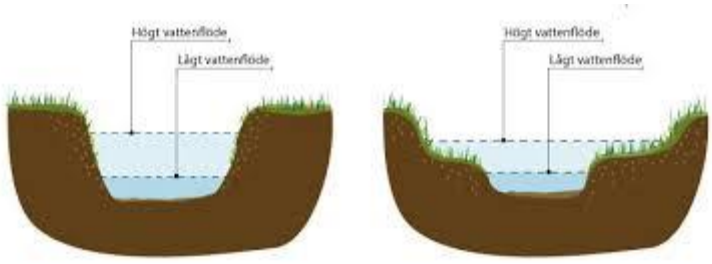
The summer of 2007 came a heavy rain that normally occurs twice in 100 years. The rain paralyzed parts of Malmö where access roads were flooded but Augustenborg managed without problems. This indicates that the district is well prepared for a future climate where rainfall of this type becomes more common. http://www.klimatanpassning.se/Atgarder/planera-for-anpassning/oppen-dagvattenhantering-i-malmostadsdelen-augustenborg-fordjupning-1.33382

3. Flood protection for agriculture, Åkra farm, Södermanland

During the summer of 2012 the first two-stage ditch in Sweden was made on a farmland at Åkra. Many crops are sensitive to flooding, but by broadening the traditional trench, in a so called two-stage ditch, such as on Åkra farm in the area of Södermanland, farm production will be protected. At Åkra, hay production has also been replaced by grain production resulting in a higher return.

In a two-stage ditch the original groove is kept but the ditch banks are taken away and the ditch is widened. At high water the water rises and overflows the upper flood stage instead of flooding up the field. The vegetation at the side level stabilizes the soil by the water and prevents the soil particles to follow the water downstream.

The two-stage ditch in Åkra is the first that has been dug in Sweden and functions as an attempt trench.



4. Safe drinking water in Karlskrona

The city of Karlskrona has secured access to safe drinking water by a solution that aims to create artificial groundwater by pumping water from Lyckebyån to the esker Johannishus Ridge. Pre-treated water from the water plant is pumped to the ridge, where it is further purified and stored naturally. At the ridge, there is a natural cleansing process that further purifies and complements treatment in waterworks.

When the water has been running through the ridge, it is pumped back.

When the project Johannishusån is fully operational by year-end 2014/2015, consumers will have secure access to a drinking water with higher and more consistent quality. In the summer, there will be cold water available and the ridge will filter out microorganisms and small organic materials reducing the need for chemicals. Work is underway to create a water protection area. The goal is to protect the water supply in the long term that spans several generations.

Paper no. 2: Mexico

Submission by Mexico

Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change

Subsidiary Body for Scientific and Technological Advise

Mexico welcomes the opportunity to present its views on *Information available and implemented tools and methods for adaptation planning processes, good practices and lessons learned in relation to adaptation planning processes addressing ecosystems, human settlement water and health, and, and processes and structures for linking national and local adaptation planning* according to document FCCC/SBSTA/2014/L.13 paragraph 7) .

a) Available and implemented tools and methods for adaptation planning processes addressing ecosystems, human settlements, water resources and health.

In the last two decades, Mexico has actively created an institutional frame to address climate change. Detailed information on climate change adaptation policies evolution in Mexico can be reviewed in the document entitled "*Adaptation to climate change: vision, elements and criteria to decision making*" available in Spanish in the following link: http://www2.inecc.gob.mx/publicaciones/download/683.pdf.

Between the years 1992 - 2006, a series of climate policies were enforced, with a particular emphasis on mitigation. Thus, GHG national inventories and communications were elaborated, together with some instruments to address climate impacts through programs focused on preventing and dealing with natural disasters, and starting to create synergies between adaptation and mitigation programmes. An example of these synergies was the Mexican - Mesoamerican Biologic Corridor which promotes biodiversity conservation and sustainable use, emissions reductions and measures towards creating a more resilient environment.

Since 2005, a Climate Change Inter-Ministerial Commission (CICC) was created at the central level of government aiming to align sectorial policies for emissions reductions and including variables of population, infrastructure and natural capital vulnerability reduction.

A momentum for climate change adaptation at the federal level started around the year 2007, when adaptation measures were firstly included as a priority issue within the National Development Plan. As a consequence, the Climate Change Special Programme published in 2009 was the first instrument where specific adaptation goals were considered.

The second edition of the Special Climate Change Programme 2014-2018 gives more enphasis to adaptation and includes it as a shared responsibility to all 13 Ministries of the Mexican Government, recognizing the importance of social and institutional capacity building as well as ecosystems-based adaptation as strategies to effectively reduce vulnerability. In particular, three out of five objectives of the Programme are related to adaptation, as follows:

> ***Objective 1***. *Reduce vulnerability of population and productive sectors and increase its resilience and the resistance of strategic infrastructure.*

***Objective 2**. Conserve, restore and sustainably manage ecosystems to guarantee their environmental services to promote climate change mitigation and adaptation.*

***Objective 5**. Consolidate the climate change policy through the implementation of efficient instruments and an effective coordination with local governments, the Legislative branch and the society.*

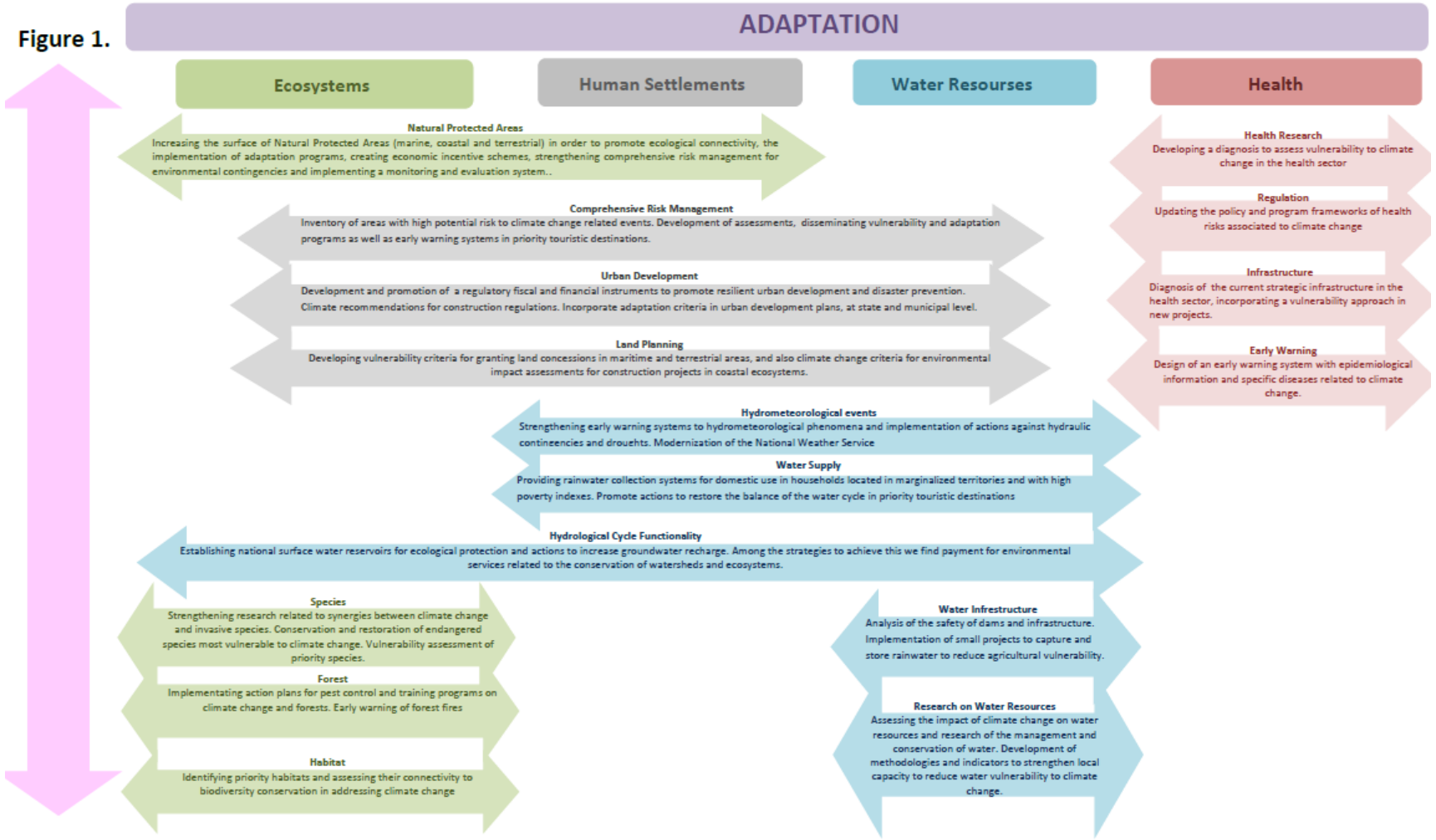
The mechanism of compliance of the Special Programme is based on a series of strategies and actions that are to be evaluated in accordance to an indicators system. The Ministry of Environment and Natural Resources (SEMARNAT), through the National Institute of Ecology and Climate Change (INECC), is in charge of doing this evaluation.

In Figure 1, we have presented the main actions agreed as part of the Special Programme on the adaptation realm. For the purpose of this analysis, we have reclassified these actions to match the four topics identified by the Nairobi Work Programme, i.e., ecosystems, human settlements, water resources, and health. As it can be seen in Figure 1, several actions related to these different topics must be implemented in a cross-cutting manner in order to ensure compliance.

Our diagram shows different actions framed in different colors depending on their specific topic (ecosystems, human settlements, water resources and health), and arrows represent collateral implications and relationships with other fields. For example, the action identified as "*surface increase under the category of natural protected areas*" derives from the ecosystems field, however, its implementation has clear repercussions for human settlements since it strengthens integrated risk management in populated areas. Another example is the action of "*the establishment of national superficial water reservoirs*", under the issue of water resources, but closely related to ecosystems for preserving natural systems that help recharging natural groundwater as well as related to human settlements where guaranteeing water supply is fundamental.

Also, it is relevant to underline the work of Mexico in relation to ecosystems based adaptation, in particular the work being made on the National Strategy of Biodiversity which explicitly recognizes that environmental services conservation is an adaptation measure and that this is reachable through the conservation and sustainable use of specific ecosystems.

Figure 1.


ADAPTATION
Ecosystems
Human Settlements
Water Resourses
Health
Natural Protected Areas
Increasing the surface of Natural Protected Areas (marine, coastal and terrestrial) in order to promote ecological connectivity, the implementation of adaptation programs, creating economic incentive schemes, strengthening comprehensive risk management for environmental contingencies and implementing a monitoring and evaluation system..
Comprehensive Risk Management
Inventory of areas with high potential risk to climate change related events. Development of assessments, disseminating vulnerability and adaptation programs as well as early warning systems in priority touristic destinations.
Urban Development
Development and promotion of a regulatory fiscal and financial instruments to promote resilient urban development and disaster prevention. Climate recommendations for construction regulations. Incorporate adaptation criteria in urban development plans, at state and municipal level.
Land Planning
Developing vulnerability criteria for granting land concessions in maritime and terrestrial areas, and also climate change criteria for environmental impact assessments for construction projects in coastal ecosystems.
Health Research
Developing a diagnosis to assess vulnerability to climate change in the health sector
Regulation
Updating the policy and program frameworks of health risks associated to climate change
Infrastructure
Diagnosis of the current strategic infrastructure in the health sector, incorporating a vulnerability approach in new projects.
Early Warning
Design of an early warning system with epidemiological information and specific diseases related to climate change.
Hydrometeorological events
Strengthening early warning systems to hydrometeorological phenomena and implementation of actions against hydraulic contineencies and drouehts. Modernization of the National Weather Service
Water Supply
Providing rainwater collection systems for domestic use in households located in marginalized territories and with high poverty indexes. Promote actions to restore the balance of the water cycle in priority touristic destinations
Hydrological Cycle Functionality
Establishing national surface water reservoirs for ecological protection and actions to increase groundwater recharge. Among the strategies to achieve this we find payment for environmental services related to the conservation of watersheds and ecosystems.
Species
Strengthening research related to synergies between climate change and invasive species. Conservation and restoration of endangered species most vulnerable to climate change. Vulnerability assessment of priority species.
Forest
Implementating action plans for pest control and training programs on climate change and forests. Early warning of forest fires
Habitat
Identifying priority habitats and assessing their connectivity to biodiversity conservation in addressing climate change
Water Infrestructure
Analysis of the safety of dams and infrastructure. Implementation of small projects to capture and store rainwater to reduce agricultural vulnerability.
Research on Water Resources
Assessing the impact of climate change on water resources and research of the management and conservation of water. Development of methodologies and indicators to strengthen local capacity to reduce water vulnerability to climate change.

b) Good practices and lessons learned in relation to adaptation planning processes, including on monitoring and evaluation, addressing ecosystems, human settlements, water resources and health.

Several ongoing adaptation studies in Mexico reflect the importance of addressing processes whose actions have a positive impact on peoples' livelihoods.. Based on those studies, we consider that a reference to "adaptation good practices" makes sense only if those practices are envisioned as a set of measures and not as isolated actions.

With the experience of adaptation planning in Mexico, particularly at the federal/central level, there are some areas that we could be identified as elements and/or minimum criteria for adaptation planning processes:

- It is first necessary to build social and institutional capacities. This means that both citizens and institutions must be sensible to the problem and therefore aware of their vulnerability and risks to climate change. From building this awareness, they could create ownership of the adaptation process and participate as part of it. At this stage it is important to foster training, deployment of informative material and the exchange of relevant experiences as well as financial access and self-conducted practices. Institutions must promote internal and external coordination, linkages amongst their own programs and the creation of synergies that enhance the final impact of the use of their resources.
- Implemented actions must pursue a reversible approach in order to be able of being modified in case their impact is not as expected or in case they generate social and/or environmental inequalities.
- Adaptation processes must be monitored and evaluated in each of its different stages. For this, it is fundamental that the population take part of the monitoring in order to effectively assess progress. Evaluation, on the other hand, needs to be transparent and widely spread between citizens and institutions. The evaluation of specific adaptation actions needs to be made based on their specific impact and in combination with other actions, e.g. training should be evaluated regarding how many participants change their attitudes towards water recycling, but also, how much they promote this attitude with other people and get involved in different stages of the adaptation process, that is, what is the overall impact of the training in influencing capacity building and ownership of the adaptation process.
- Adaptation processes must seek environmental justice in social and economic terms. For example, measures that provide water supply for one community at the expenses of a different community are not fair. Another example relates to the growing of genetically modified species due to its resilience to drought in a beekeeping region where market opportunities will be reduced for producing honey and therefore end up being unfair.
- The use of territorial approaches to adaptation planning is considered a useful practice due to the fact that it usually brings together all productive sectors and visualizes vulnerability reduction as a holistic process that includes capacity building, the implementation of conservation practices in some cases, infrastructure development, and monitoring and evaluation.

Following this line of thought, adaptation processes should comprise a set of measures which generate co-benefits. For example, if a location with high slope is reforested, it helps preventing soil loss (*ecosystems*) but also reducing the run-off of sediments which clog reservoirs (*water resources*), and reducing the speed of run-offs that could negatively impact human settlements and productive lands (*human settlements*). Also, reforestation could contribute to reduce dust particles in the air, which can also contribute to improving public health (*health*). This is a good example that shows how fragmented problems can be useful to reduce risks but a territorial vision could further enhance the integration of adaptation-oriented proposals.

There are several studies about adaptation processes in Mexico[1], however, in most cases the evaluation of these processes is fairly poor or non-existent.

A good example of how important is the evaluation of results is provided by the city of Hermosillo, Sonora, a state located in the North West of Mexico, where water scarcity is a problem that has lasted for several decades. In Hermosillo there is a 20 years programme called *Water Culture* that has been implemented. as a result of an evaluation that concluded that there is a significant decrease in the volume of water consumed per capita. As a consequence, the city of Hermosillo has being working in rainwater crop systems, aquifer recharge and floods and droughts control[2].

c) Good practices and lessons learned related to processes and structures for linking national and local adaptation planning.

In 2012, a General Law on Climate Change was published establishing an institutional framework for climate change at national level but also making provisions for the subnational and local level, including for these two last levels state and municipal climate change action plans. The Special Programme on Climate Change, for example, functions as guidance to coherently articulate climate programmes at the federal, state and municipal levels. Actually, 12 out of the 32 states of Mexico have climate change state laws .

In each state, climate change legislations also settle an institutional framework and create special programmes to entail strategies and actions between different institutions (Figure 2).

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1 http://coclima.guanajuato.gob.mx/archivos/file/Adaptaci%C3%B3n/Capitulo%203.pdf

2 Adaptación al cambio climático: Hermosillo, Sonora, un caso de estudio. Available in Spanish at: http://www.inecc.gob.mx/descargas/cclimatico/adap_cclimatico.pdf

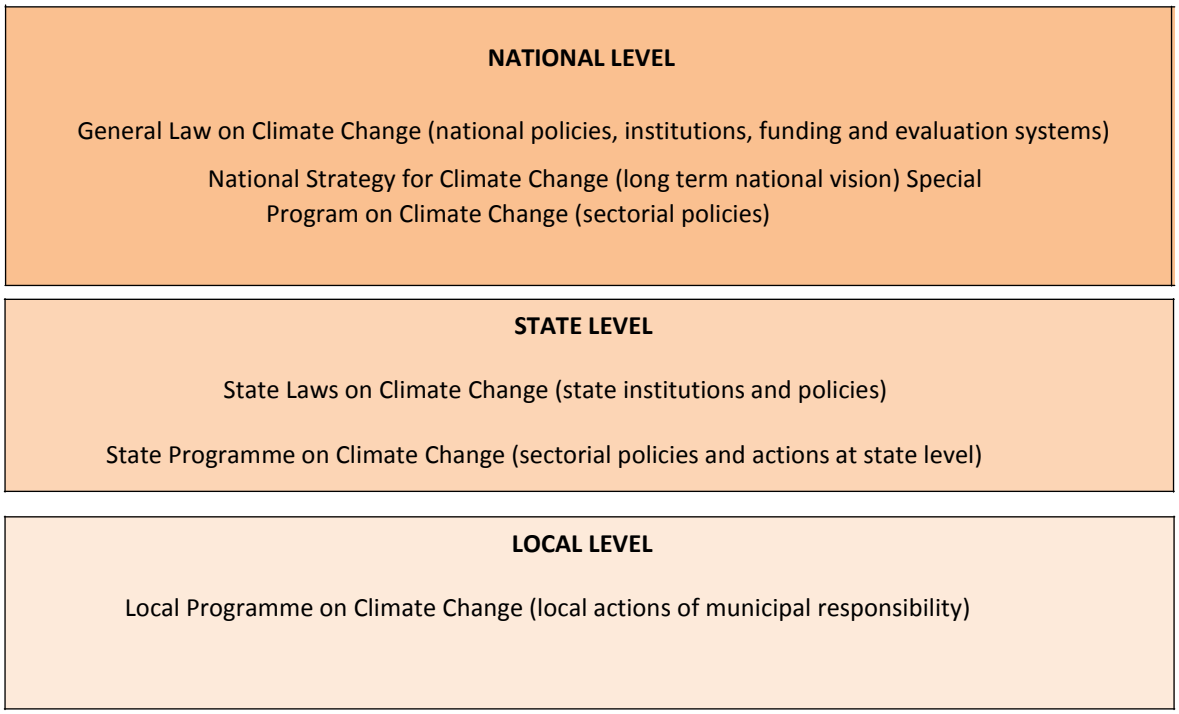


Figure 2. Mexico´s Climate Change Policy Instruments at different governmental levels

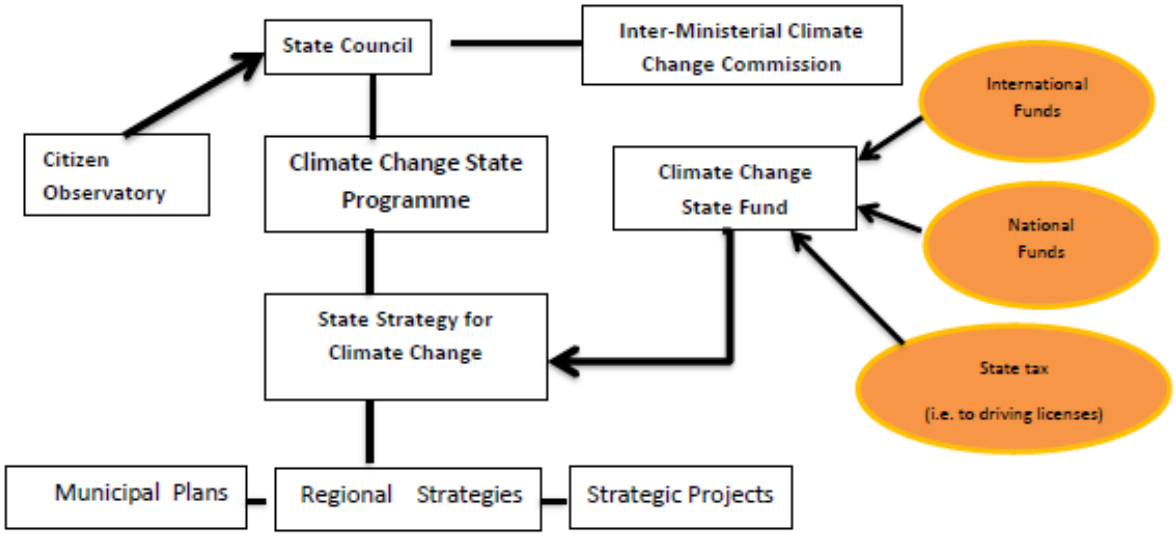
In general terms, the institutional climate change structure of the states is composed by:

- A **State Council** integrated by representatives of the State Government, municipalities, the legislative power and civil society representatives. This Council constitutes the highest decision-making body in the climate change policies for the state.
- An **Inter-Ministerial Climate Change Commission** in charge of implementing climate actions and programmes.
- A **Citizen Observatory** oriented to evaluating and to provide advice to the State Council in the implementation of climate actions.

Also, there are several policy instruments developed for the planning and implementation of actions other than the Climate Change State Strategy, which includes a long term vision of the state's climatic actions, such as the Climate Change State Programme, which envisages the actions of the actual state government, the Municipalities Climate Action Plans, as well as Regional Strategies and Strategic Projects (Figure 3).

In some cases, there is also a Climate Change State Fund that works as the financial instrument that will enable the development of projects and actions. This fund could be composed by a combination of public and private resources. For example, in one state, it is being analyzed the implementation of a transportation tax to be destined to the Fund.

Figure 3. State´s Climate Policy Structure



Additionally, some states have built a virtual center (http://www.cvcccm-atmosfera.unam.mx/) to contribute to the transparency of the structure, processes and practices related to climate change.

Paper no. 3: United States of America

Submission by the United States of America
National Adaptation Planning Process: Good Practices in and Lessons Learned

At its thirty-ninth and fortieth sessions, the Subsidiary Body for Scientific and Technological Advice (SBSTA) invited Parties and Nairobi work programme (NWP) partner organizations, including regional centres and networks, to submit to the secretariat, by 20 August 2014, information on good practices in and lessons learned from national adaptation planning, and to include information on the following, as appropriate, in their submissions:

1. Available and implemented tools and methods for adaptation planning processes addressing the four issues of ecosystems, human settlements, water resources and health;
2. Good practices and lessons learned in relation to adaptation planning processes, including on monitoring and evaluation, addressing the four issues of ecosystems, human settlements, water resources and health; and
3. Good practices and lessons learned related to processes and structures for linking national and local adaptation planning.

The United States welcomes the opportunity to submit information on the United States' national adaptation planning processes. The lessons and good practices we describe below are all relevant to the four issues of ecosystems, human settlements, water resources, and health.

U.S. Approach to National Adaptation Planning

Coordinated national adaptation planning is relatively new in the United States. Shortly after coming into office, President Obama established the Interagency Climate Change Adaptation Task Force, which included representatives from more than 20 Federal agencies. In 2009, President Obama directed the Task Force to recommend ways Federal policies and programs can better prepare the Nation for climate change. Then, in 2013, President Obama announced his comprehensive Climate Action Plan, which includes a focus on preparing the United States for the impacts of climate change. A follow-on Executive Order laid out more details of implementation and formalized creation of a new interagency Council on Climate Preparedness and Resilience that replaced the 2009 Task Force.

As part of the Climate Action Plan and Executive Order, Federal agencies must facilitate communities' efforts to strengthen resilience to extreme weather and prepare for other impacts of climate change, as well as address climate impacts to their own operations and assets. Agencies must modernize Federal programs to support climate-resilient investments, plan for climate change-related risks to Federal facilities, operations, and programs, and provide the information, data, and tools that state, local, and private-sector leaders need to make smart decisions to improve preparedness and resilience. Federal efforts also included the establishment of a Task Force of state, local, and tribal leaders to advise the Administration on how the Federal Government can respond to the needs of communities that are dealing with the impacts of climate change.

1. *Available and implemented tools and methods for adaptation planning processes addressing the four issues of ecosystems, human settlements, water resources and health*

We would like to highlight two important aspects of our domestic experience when it comes to tools and methods for adaptation planning.

First, the Federal government plays an important role in providing tools and methods to support adaptation. For example:

- Pursuant to the Global Change Research Act of 1990, the U.S. Federal government conducts a National Climate Assessment every four years that presents the best available science-based information on current and future climate impacts on the United States. U.S. Government, citizens, communities, and businesses use the Assessment as they plan for future impacts of climate change in all sectors. In May 2014, the Administration released the third U.S. National Climate Assessment, the most authoritative and comprehensive source of scientific information to date about climate change impacts across all U.S. regions and on critical sectors of the economy.

- U.S. Federal agencies are currently building an online Climate Resilience Toolkit to provide scientific tools, information, and expertise to help people manage climate-related risks and opportunities and improve their resilience to extreme events. The Toolkit will be made available online in late November 2014 at http://toolkit.climate.gov. The website is designed to serve interested citizens, communities, businesses, resource managers, planners, and policy leaders at all levels of government. The Toolkit will provide easy access to existing resources, as well as new tools, including:
    - A 5-step process to help communities and businesses plan and implement climate-resilience building projects;
    - Real-world case studies describing successful actions communities and businesses have taken to improve their resilience to climate-related stressors;
    - Catalogs of decision-support tools and online training courses;
    - A visualization tool that offers maps of climate stressors and impacts; o Explanations of impacts on particular regions and sectors;
    - Maps highlighting centers where people can seek scientific expertise; and
    - The ability to search the entire U.S. government's online climate science information, and filter results according to facets of users' interests.

Second, the Federal government plays an important role in galvanizing adaptation action, including by businesses, non-profits, the scientific community, and local governments. For example:

- The White House Climate Data Initiative is an effort to leverage extensive open data across the Federal government to spur innovation and private-sector entrepreneurship in order to advance awareness of and preparedness for the impacts of climate change. The initiative is developing an online catalog of climate-related datasets and data products, and tools from across the Federal government that focus on key areas of climate change risk and vulnerability. This catalog has a web presence at climate.data.gov and is currently developed around the following themes: Coastal Flooding, Food Resilience, Water, Ecosystems Vulnerability, Energy Infrastructure, Human Health, and

Transportation. The two first themes: Coastal Flooding and Food Resilience were released online on March 19th 2014 and June 29th 2014, respectively. The Federal government is continuing work on the remaining identified themes. An additional facet of the initiative focuses on engaging with the private sector to advance the development of climate resilience information via innovation challenges and partnerships with external partners. The goal is to incentivize and benefit from commitments with the private sector, the philanthropic community, and academia to mobilize climate data for action. For example, Esri, the company that produces the ArcGIS software used by thousands of city and regional planning experts, will partner with 12 U.S. cities to create free and open "maps and apps" to help state and local governments plan for climate change impacts. External partners include Google, Intel, Amazon, HP, Coca-Cola, IBM, Walmart, Microsoft, the World Bank, Rockefeller Foundation, among many others.

- To help respond to diverse, place-based climate change challenges, many Federal agencies have established regional centers and programs that bring together the climate research community, diverse stakeholders, and decision makers to encourage the more effective production and use of climate data, to help identify climate change risks in the region, and to develop locally appropriate response plans.

  For example, NOAA's Regional Integrated Sciences and Assessments (RISA) program brings together researchers with decision makers from the private and public sectors, including state, local, and tribal governments, utilities, the business community, and national and international non-profit organizations. Together, RISA teams use their understanding of different decision contexts to develop knowledge tailored to suit specific needs for climate information across different timescales.

  Further examples include the Department of the Interior's (DOI) Climate Science Centers, which provide natural and cultural resource managers with scientific and technical decision support to develop and execute climate adaptation strategies, and the U.S. Department of Agriculture's Climate Hubs, which package and deliver information to enable farmers, ranchers, and forest landowners to adapt to the impacts of climate change.

The United States is expanding its efforts to provide climate information services to vulnerable countries. At the UN Climate Summit in September 2014, President Obama announced new and expanded U.S. government efforts to build off of domestic efforts and produce and deliver climate services and tools to help developing countries better prepare for climate change. This includes the release of high-resolution topographic data, development of new outlooks for extreme weather risk, providing training and tools to meteorologists in developing countries, and the launch of a public-private partnership on climate data and information for resilient development.

2. *Good practices and lessons learned in relation to adaptation planning processes, including on monitoring and evaluation, addressing the four issues of ecosystems, human settlements, water resources and health*

We would like to share two important good practices and lessons learned in relation to adaptation planning processes:

First, planning is an iterative, ongoing process. As part of an iterative planning process, President Obama has directed all Federal agencies to produce adaptation plans, detailing how they are integrating adaptation into their operations, policies, and programs. In February 2013, Federal agencies publicly released their first-ever Climate Change Adaptation Plans as part of their agency Sustainability Plans (http://archive-sustainability.performance.gov/). Agencies are required to report on progress annually, and update the plans every four years. This allows agencies to learn from and collaborate with each other, improve their plans over time, monitor and evaluate progress in implementing their plans, and account for changes in scientific understanding and socioeconomic conditions.

In some cases, Federal agencies have also partnered to produce sector-focused adaptation plans. For example, in 2011 Federal agencies and non-government stakeholders released a *National Action Plan* for managing freshwater resources in a changing climate (http://www.whitehouse.gov/sites/default/files/microsites/ceq/2011_national_action_plan.pdf). Additionally, in 2013, Federal agencies, in partnership with state, tribal, and local representatives, released a *National Fish, Wildlife, and Plants Climate Adaptation Strategy* (http://www.wildlifeadaptationstrategy.gov/pdf/NFWPCAS-Final.pdf) to address the impacts climate change is having on our natural resources and the people, communities, and economies that depend on them. Building upon this effort, in October 2014, the White House announced the Climate and Natural Resources Priority Agenda (http://www.whitehouse.gov/sites/default/files/docs/enhancing_climate_resilience_of_americas_ natural_resources.pdf), a comprehensive commitment to support resilience of our Nation's natural resources. The Priority Agenda identifies a suite of actions the Federal Government will take to enhance the resilience of America's natural resources to the impacts of climate change and promote their ability to absorb carbon dioxide.

Second, adaptation is not a stand-alone activity. Mainstreaming adaptation into existing decision-making processes maximizes investments and increases our ability to reduce vulnerability. In order to ensure the future safety of our communities and efficacy of our investments, considerations of climate risk and adaptation are integrated into all decisions and across diverse sectors. For example:

- After Hurricane Sandy in 2012, the U.S. Federal government required that much of the recovery funds were to be used to improve the resilience of the affected communities in the face of climate change and future hazards and not recreate vulnerabilities. Recipients of these funds had to consider impacts of climate change in their recovery planning, and established minimum flood risk standards that take into account sea level rise. The Federal Flood Risk Management Standard will establish the flood level to which new and rebuilt Federally-funded structures or facilities must be resilient. The Standard will require agencies to consider the best-available, actionable science of both current and future risk when taxpayer dollars are used to build or rebuild in floodplains. When implemented, the Standard will reduce flood risk and increase resilience.

- The U.S. Environmental Protection Agency (EPA) is increasingly including climate change resilience criteria in requirements for entities that obtain Federal financial assistance agreements for cleanup, infrastructure investment, and environmental restoration projects. In 2013, EPA added a resilience requirement for brownfields grants recipients to take potential changing climate conditions into consideration when evaluating alternatives for cleaning up hazardous substances. In 2014, EPA began promoting consideration of climate change in the management of the Clean Water and Drinking Water State Revolving Loan Funds.

- The U.S. Department of Transportation's Transportation Investment Generating Economic Recovery (TIGER) program has started to incorporate selection criteria related to improving the resilience of transportation assets when awarding competitive grants for capital investments in surface transportation infrastructure such as highways, bridges, public transportation, ports, and intermodal transportation.

3. Good practices and lessons learned related to processes and structures for linking national and local adaptation planning

And finally, we would like to share two important good practices and lessons learned related to processes and structures for linking national and local adaptation planning.

First, national and subnational governments must work together to coordinate policies and programs to build resilience. U.S. Federal programs often fund or regulate state and local actions, and can actively encourage decisions that build resilience. Conversely, existing Federal programs, which were designed for a static climate, may not be flexible enough to allow necessary innovation at the local level and may need revision. Actions and decisions must be coordinated across different levels to avoid inconsistencies and leverage resources. In 2013, at the same time as the President established the interagency Council on Climate Preparedness and Resilience, he also established a Task Force of State, Local and Tribal Leaders to inform the work of the Council. This fall, the Task Force provided recommendations to the Council on their needs for increasing climate preparedness and resilience, which are informing the priorities of the Council and are anticipated to result in improved support and services from the Federal government.

Second, subnational governments and leaders play a critical role in increasing resilience to climate impacts, and many state, local, and tribal governments in the United States are taking aggressive action. For example, in 2013 the Governor of the state of Delaware created a *Governor's Committee on Climate and Resiliency* to oversee development of an implementation plan to maintain and build upon Delaware's leadership in responsibly reducing greenhouse gas emissions and to develop agency-specific actionable recommendations for improving Delaware's preparedness and resilience to climate impacts. The Governor also required that state agencies develop strategies to improve the resiliency of state operations and facilities with a focus on using natural systems and green infrastructure; incorporate measures for adapting to increased flood heights and sea level rise in the siting and design of state-funded projects; share best practices with local governments; and reach out to residents and businesses about risks and adaptation strategies.

Paper no. 4: Food and Agriculture Organization of the United Nations

FOOD AND AGRICULTURE ORGANIZATION (FAO) OF THE UNITED NATIONS

Good practices and lessons learned related to processes and structures for linking national and local adaptation planning; and addressing the issues of ecosystems, water resources and health in the Agriculture Sector

August 2014

In response to the call for submissions to be considered at SBSTA 41 (December 2014) based on the mandates contained in the conclusions FCCC/SBSTA/2013/5, paragraph 13 (b) and FCCC/SBSTA/2014/L.13, paragraph 7, FAO is pleased to submit relevant information on good practices and lessons learned related to processes and structures for linking national and local adaptation planning and addressing the issues of ecosystems, water resources and health in the agriculture sector. The submission is based on FAO's experience in relation to two specific programmes and country examples.

Linking National and Local Adaptation Plans: Nepal

National level Priority Framework for Action (PFA) [1]**:** Increasing resilience to climate change and climate related extreme events is one of the five priority measures identified under the draft agriculture development strategy (ADS) of Nepal to increase agricultural productivity. The National Adaptation Programme of Action (NAPA) [2] and the National Strategy for Disaster Risk Management (NSDRM) in Nepal have already created a strong momentum for integration of climate risk concerns into agricultural priorities, and call for on the ground action to address both, immediate and future impacts.

In response to the call made by the Government of Nepal, FAO facilitated a multi-stakeholder interactive process to prepare the Priority Framework for Action (PFA) 2011 – 2020. The process' objective was to identify priorities and elaborate and enable donor agencies and development partners to assist the country in building the institutional capacities and technical skills needed for integrated and cross-sectoral implementation of the NAPA priorities and the NSDRM strategies. Within the framework of the NAPA and the NSDRM, the overall aim of the PFA is to assist the Ministry of Agricultural Development (MOAD) in operationalizing the shift from a reactive emergency response-focused approach towards a proactive risk prevention and preparedness in the short term, and climate change adaptation in the long term.

The specific objectives of the PFA are to facilitate: i) strengthening of technical activities for climate change adaptation, reduce impacts of extreme climate events, preparedness and response, and rehabilitation in the agriculture sector; ii) integration of NAPA and NSDRM priorities into the regular activities of MOAD and its operational departments; iii) development of institutional and technical capacities to provide farmers with climate change adaptation and disaster risk management services; and iv) better coordination among key stakeholders in climate change adaptation and disaster risk management at the national, district and local levels in the agriculture sector. The key components of the priority framework include: (i) strengthening of institutional and technical capacity; (ii) assessing and monitoring climate risks (current and future) and vulnerabilities and enhance early warning systems, (iii) improve knowledge management, databases and

[1] Government of Nepal, 2011.Priority Framework for Action (2011 – 2020). Climate change adaptation and disaster risk management in agriculture. http://www.fao.org/docrep/015/an713e/an713e00.pdf

[2] Ministry of Environment (2010) National Adaptation Programme of Action to Climate Change, Kathmandu, Nepal. http://www.undp-alm.org/sites/default/files/downloads/nepal_napa.pdf

awareness raising; (iv) reduce climate-related risks and underlying vulnerabilities, and (v) Strengthening capacities and procedures for effective preparedness, response and rehabilitation.

The ten-year (2011–2020) PFA proposes ways and means for managing the impacts of climate-related extremes and climate change in agriculture. Its preparation was based on a brain-storming session and stakeholder workshops led by MOAD. The PFA provides a roadmap for addressing the impacts of risks associated with extreme climate events and climate change and seeks to ensure that risk management and climate change adaptation measures are based on national and local priorities, with a strong institutional basis for implementation. The PFA provides guidelines for institutional arrangements, coordination, monitoring and evaluation, and also considers cross-cutting elements such as capacity development, knowledge and communication, partnerships and gender equity.

District Disaster Risk Management Planning (DDRMP) [3]**:** The District Disaster Relief Committee (DDRC) in Nepal becomes active when a district is hit by extreme climate events. To enhance proactive planning for disaster risk reduction, four districts of Nepal have formulated DDRMPs: Arghakhanchi, Kapilvastu, Udaipur and Siraha. Preparation of the DDRMPs was facilitated by FAO in close collaboration with decentralized offices of different Ministries of the Government of Nepal. District development committees have taken a leading role in the coordination and monitoring of plan preparation; District Agricultural Development Offices (DADOs) have also played an important role because of the heavy impacts of extreme climate events on the agriculture sector. During the planning process, government line agencies and local stakeholders are trained to shift from a reactive disaster management approach to one that is more proactive, with greater involvement in prevention and preparedness actions.

To ensure the linking of national to local disaster risk management planning, the DDRMP planning process uses the framework of sectors and priority areas outlined by the NSDRM. To avoid duplication of efforts at local level, the priorities of the National Adaptation Programme of Action (NAPA) and the National Strategy for Disaster Risk Management (NSDRM) are considered as guiding principles for the formulation of local plans. The planning aims at ensuring that disaster risks are addressed in a coordinated way by engaging government line agencies, development partners, local institutions and local communities. With periodic reviews and updates, DDRMPs can provide a cornerstone for reducing duplication of efforts, increasing efficiency and – ultimately – helping to empower communities at large.

The local planning processes supported and extended the national-level needs assessment carried out under the NSDRM by assessing the hazard risk context, analyzing the impacts of hazards and the vulnerabilities faced within districts, and identifying key institutions and critical capacity gaps at both, district and local levels. The participatory assessment at local level included focus group discussions, key informant interviews, key informant workshops, formation of the district level planning committee, secondary data collection and analysis among others. In particular, assessment of impacts of extreme climate events on vulnerable groups, risk analysis based on the information about hazards and vulnerability and district institutional capacity analysis formed the basis for detailed planning and preparation of the action plan. Local stakeholder workshops and feedback sessions contributed to the development of detailed priorities for planning purposes.

Climate change adaptation in the Agriculture Sector of the Magellan Region in Chile: Collaboration and experience on subnational planning

The Magellan Region is the southernmost region in Chile. It is characterized by different climate patterns, including extreme events such as strong winds and frequent frontal systems, causing significant losses of

[3] Government of Nepal, 2011. District Disaster Risk Management Plan – Arghakanchi district. http://www.fao.org/climatechange/35702-031dac721bf7bf63928c01de3ae048669.pdf

agricultural and livestock production. Although the agricultural, livestock and forestry sector represent only 0.5% of regional GDP, it covers 43% of the surface area and generates 3.5% of annual sales and 13.2% of the regional exports. This area hosts 50% of the Chilean sheep population and it is the main exporter of sheep meat. The region has experienced a decline in all subsectors of agricultural and forestry production, being more marked in the livestock sector (sheep). This is partly due to the type of extensive exploitation, dependence on natural highly degraded pastures and limited use of technology, among other factors.

The Regional Ministerial Secretariat (SEREMI) of Agriculture in the Magellan region sought assistance from the United Nations Food and Agriculture Organization (FAO) to develop an Adaptation Plan for the forestry, livestock and agriculture sectors to climatic variability and climate change. The planning process was implemented for a period of 18 months between 2010 and 2012.

When the planning process started, there was no information on the specific impacts of climate change on the agricultural, livestock and forestry production systems. The Chilean Government had focused its attention to the impacts of climate change in areas with agricultural potential, dismissing the southern area[4]. In the Magellan region, it is expected that the rise in temperature caused by climate change entails benefits for agricultural production. However, the new weather conditions could also increase the current risks, through the intensification of winds and drier summers or even create new risks through the indirect impacts associated with the increase in temperature and precipitation changes (i.e. erosion and incidence of invasive species).

A planning tool was required to organize adaptation measures that transform the agriculture sector, and to remedy the lack of information about the local weather, as well as to increase local adaptation capacities of farmers and institutions to adapt the production systems. FAO provided decentralized technical cooperation through a technical cooperation project.

The support evaluated the adaptive capacities of the regional agriculture and forestry sectors and concluded that: i) the diversification of the regional agricultural production systems needed improvement, ii) the predominant type of livestock and agriculture production systems needed modernizing, and iii) the capacity development of the human resources in public institutions and research centers and innovation capabilities of forestry and agricultural producers needed to be strengthened. Measures to strengthen the local knowledge and adaptive capacity were identified, and integrated into the territorial specificities for adaptation at subnational level, which migrated from an impact analysis based on future scenarios (the lack of these projections was a barrier to define the aforesaid measures) to an approach based on the adaptive capacity assessment (coping capacity for current variability climate).

FAO´s experience confirmed the importance of prioritizing adaptation measures to a scale that allows the improvement of production and enhances the local capacities for adaptation. The planning process for sectoral adaptation demanded to combine several development goals in the region. Furthermore, the experience also showed the importance of synergies between climate change adaptation and mitigation. An Ex-Ante evaluation was made on certain measures promoted by the adaptation plan, including incentives to improve the condition of natural grassland degradation and restoration of natural forests, in addition to improving the resilience of the production system.

The Magellan Region in Chile is the only one in the country with its own adaptation plan, which has high consistency with measures considered for the territory and later defined by the Government of Chile in the National Plan for Adaptation to Climate Change in Forestry and Agricultural Sectors, issued in October

[4] Second National. Communication on Climate. Change to the UNFCCC. Ministry of Environment. Executive summary available at: http://unfccc.int/resource/docs/natc/chinc2execsum.pdf

2013[5]. The key lessons with respect to the development of sectoral plans linking national and local adaptation planning process should explicitly consider not only the process in the availability of climate modeling projections but also consider issues regarding the local capacity for adaptation and involve farmers and stakeholders in the formulation of adaptation measures to climate change early in the planning process.

Addressing the issues of ecosystems, water resources and health in Agriculture Sector

FAO's work in relation to ecosystems, water resources and health

Context: The nexus between ecosystems, human settlements, water resources and health is an important emerging issue which requires multidisciplinary intervention. In this respect, the Land and Water Division (NRL) of FAO has already initiated a number of activities in the field and also under UN Water initiatives. The Nairobi Work Program (NWP) provides a unique platform for exchanging innovative ideas and for FAO to expand its collaboration with other participating agencies.

Agriculture is the world's largest water user in terms of volume[6]. With increasing competition for water between industrial, social and agricultural purposes; as well as climate change impacts on availability of water resources, farmers are increasingly looking into non-conventional water resources, like wastewater. In most cases the wastewater does not go through proper treatment processes, which leads to different adverse health impacts and water-borne diseases. On the other hand, in many African countries, irrigation water is being used as a source of drinking water although it does not meet the potable water criteria, which can also be the cause of health related issues, such as diarrhea.

An estimated 801 000 children younger than 5 years of age perish from diarrhea each year, mostly in developing countries[7]. Only in Mauritania, around 2 150 people, including 1 700 children under the age of 5 die each year from diarrheal disease. The World Health Organization estimates that nearly 90% of these deaths are directly attributed to the poor quality of water, sanitation and lack of hygiene. In addition, human settlements in urban and rural areas often add to the complexity of the situation by disturbing ecosystem services, leading to adverse environmental and health impacts.

Various aspects of the problem have been studied in different regions of the world, but very few studies focus on the direct inter-linkages of these factors. This initiative will provide a foundation for integrated multidisciplinary assessment of ecosystems, human settlements, water resources and health inter-linkages to identify risk factors and develop a sustainable management scenario.

The Methodology: FAO's work in relation to the topic relies on the collection, analysis and assessment of the existing data. This is often performed by conducting a thorough gap analysis. Availability of primary data at the regional, national and subnational levels (with a current focus into African countries) in relation to ecosystems, human settlements (in relation to agriculture), water resources and health is crucial. For instance, an assessment of the existing information on the epidemiology of water related disease (i.e. type, mortality, average age of affected people, gender, etc.) and identification of the inter-linkages to water quality, food safety and agriculture depends on available data at country level.

[5] National Adaptation Plan for the Agriculture Sector in Chile, available at: http://www.mma.gob.cl/1304/articles-55879_InstrumentoFinalCC_Silvoagropecuario.pdf
[6] FAO, the State of Food and Agriculture, 1993
[7] WHO and UNICEF, 2012

FAO will be using a vast number of existing database and guidelines, such as the WHO-FAO Guidelines in "Wastewater Use in Agriculture" for the assessment[8]. To complement the analysis, it is important to consider already existing information with new data from the analysis of water samples taken in selected sites to identify and quantify chemical and microbiological water contaminants. The next step is to conduct targeted testing on foods that are produced using the water analysed and then finding the relation between these different factors. Identification of appropriate indicators and right monitoring tools such as WASH Impact Indicators (i.e. Quantity of water used per capita per day), Annual Monitoring indicators (i.e. Percentage of constructed water supply systems adequately operated), etc. are an essential part of FAO's work on the topic.

Inter-agency collaboration: FAO is already part of a multi-agency UN Water task team on "Water Quality and Reuse" under post 2015 Waste Water Quality Management and Water Resource Management Global Monitoring Mechanism. As part of the mandate, the task team will propose a selection of water quality monitoring options for global data acquisition and reporting, propose modifications to the existing indicators/targets as needed and liaise with other working groups working on complementary indicators. The findings of this task team will benefit the ecosystems, human settlements, water resources and health nexus.

The main objective of the inter-agency collaboration will be to evaluate possible risks reduction strategies and "tailored" management options based on the information obtained and to develop tools to understand and map vulnerabilities/visualise risk. The work is expected to contribute to the development of sustainable strategic management frameworks, trigger behaviour changes among national stakeholders and to bridge the gap between local and national stakeholders - policy and practice.

The programme is expected to enhance the resilience of people, communities and ecosystems to disasters, climate change, etc. As such, the development of safety practices to minimize exposure of farmworkers and their families to risks associated with contaminated water usage in low resource settings are the priority. Improvement and protection of ecosystems, water resources, livelihoods and human well-being are the crucial part of the overall initiative. However, further expansion of capacity developments activities including public education and training to promote the adoption of good practices and sanitation programs are also seen as an integral part of the programme.

The way forward: As mentioned above, FAO is actively involved in different initiatives and programs (i.e. Thematic Priority Area on Water Quality, Global Wastewater Initiative, Safe Use of Wastewater in Agriculture, etc.). In all these programs, it is vital to have a holistic approach and analyze the nexus between water quality and other factors, such as health. The results of these initiatives/programs will help FAO expand its presence and active involvement in the areas where the nexus between ecosystems, human settlements, water resources and health is analyzed and implemented.

As a result, FAO is now in the process of developing a program within the above framework in five African countries for identifying the inter-linkage between water quality, agricultural practices, food safety and adverse health impacts – a baseline study for future development of a sustainable management framework for improving people's livelihood and wellbeing. This project will then lead to a broader second phase for implementation which will expand to cover more African countries and will formulate evidence-based strategic management framework for the region. FAO is therefore looking forward to fully engage with the NWP and all partners and parties in a well-directed and successful collaboration, sharing its good practices and lessons learned while benefiting from others' achievements. `

[8] Guidelines for the safe use of wastewater, excreta and grey water, Volume 2: wastewater use in agriculture, 2006 http://www.who.int/water_sanitation_health/wastewater/gsuweg2/en/

Paper no. 5: Global Water Partnership

Submission by the Global Water Partnership on good practices in and lessons learned from national adaptation planning with specific focus on water resources

August 2014

GWP welcomes the opportunity to respond to the invitation to submit to the Nairobi Work Programme (NWP) information on: i) available and implemented tools and methods for adaptation planning processes addressing ecosystems, human settlements, water resources and health; ii) good practices and lessons learned in relation to adaptation planning processes, including on monitoring and evaluation, addressing ecosystems, human settlements, water resources and health; and iii) good practices and lessons learned related to processes and structures for linking national and local adaptation planning, based on the mandates contained in the following conclusions:
FCCC/SBSTA/2013/5, paragraph 13 (b) and FCCC/SBSTA/2014/L.13, paragraph 7.

1. GWP contribution to national adaptation planning processes

1.1. The Global Water, Climate and Development Programme (WACDEP)

Through the Global Water, Climate and Development Programme (WACDEP), GWP supports around 60 countries

[1] world-wide to integrate water security and climate resilience in development planning and decision-making processes, through enhanced technical and institutional capacity, predictable financing and investments in water security, better drought/flood management, and climate change adaptation.

The GWP supported interventions are aligned and consistent with the UNFCCC NAP Technical guidelines issues by the Least Developed Countries Exert Group (LEG) including the objectives of the UNFCCC NAPs process below:

- to reduce vulnerability to the impacts of climate change, by building adaptive capacity and resilience, and 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.[2]

The GWP portfolio includes several programmes and projects to deliver the objectives, such as regional Water, Climate and Development Programmes (WACDEP) in Africa, Asia, Latin America, and the Caribbean, (e.g. WACDEP Africa, jointly implemented with the African Union and the African Ministers Council of Water (AMCOW), and WACDEP Caribbean jointly implemented with the Caribbean Community Climate

[1] **Africa**: Burkina Faso, Côte d'Ivoire, Ghana, Mali, Benin, Togo, Cameroon, Central African Republic, Chad, Libya, Niger, Nigeria, Sudan, Burundi, Rwanda, Tanzania, Uganda, Kenya, Botswana, Mozambique, South Africa, Zimbabwe, Algeria, and Tunisia; **Central America:** Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama; South Asia: Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka; **Central Asia and Caucasus:** Armenia, Georgia, Azerbajan, Kazakhstan, Mongolia, Tajikistan, Turkmenistan, Uzbekistan, and Kyrgyz Republic; **Central and Eastern Europe:** Polans, Czech Republic, Slovakia, Lithuania, Ukraine, Romania, Hungary, Bulgaria, and Slovenia; **Caribbean:** Barbados, Belize, Jamaica, Sain Lucia, and Suriname; **South America:** Peru

[2] Decision 5/CP.17, paragraph 1.

Change Centre (CCCCC)); the Integrated Drought Management Programme (IDMP) and the Associated Programme on Flood Management (APFM), joint initiatives of the World Meteorological Organisation (WMO) and GWP; and the Delta Climate Resilience Programme for enhancing climate resilience of communities in delta regions.

The Global WACDEP and the sub-programmes and projects are being implemented through 8 work packages within three strategic goals:

Goal 1. Catalyse change in policies and practice

Work Package 1: Regional and transboundary cooperation
To support Regional Economic Communities River Basin Organisations (RBOs) and governments to advance regional cooperation in climate change adaptation in transboundary waters and shared aquifers for regional and economic development.

Work Package 2: National development and sector plans
To support countries to integrate water security and climate resilience into national development planning and decision-making processes.

Work Package 3: Investments
To support the development of gender sensitive 'No/low Regrets' investments and financing strategy document at all levels.

Work Package 4: Project preparation and financing
To support governments to enhance efficiency in Project preparation to leverage funding from traditional sources of water financing and adaptation funds.

Work Package 5: Demonstration projects
Support development of innovative pro-poor and gender sensitive 'green' solutions for addressing critical water security challenges such as water, food, and energy, to enhance climate resilience of countries and communities.

Goal 2. Generate and communicate knowledge

Work Package 6: Capacity development
Support capacity development of institutions and stakeholders to develop no/low regrets investment and integrate water security and climate resilience in development plans.

Work Package 7: Knowledge and awareness
To share, package and disseminate information and knowledge on how to enhance water security and climate resilient development.

Goal 3. Strengthen partnerships

Work Package 8: Governance and fundraising
Build internal capacity of GWP and enhance regional/ country level partnerships' key competencies in fund raising, project coordination, financial management, stakeholder engagement, monitoring and evaluation.

1.2. Examples of results of GWP activities

Following are some specific examples of results of GWP activities in 2013 including results of the WACDEP:

- Nine (9) regional organisations were supported in developing agreements, commitments and investment options and tools that integrate water security and climate resilience. The organization supported the Asia Pacific Adaptation Network (APAN) and Climate Action Network South Asia, the

Economic Community of Central African States (ECCAS), the SADC Regional Strategic Action Plan (RSAP III), contribution to the implementation of the Lake Victoria Basin Commission Action Plan, the stakeholder engagement process for IWRM Planning in the Orange Seque River Basin (ORASECOM) and the implementation of climate resilience in the Limpopo River Basin (LIMCOM). Support was also extended to the Economic Community Of West African States (ECOWAS) and in the Volta Basin Authority studies were commissioned to strengthen water security and climate resilience of the Basin Water Resources Master Plan

- Three (3) organisations were supported in the development of investment strategies supporting policies and plans which integrate water security for climate resilience- Support to SADC in developing investment options for water security and climate resilience through the commissioning of national studies; support to Zimbabwe's Ministry of Environment and Natural Resource Management the implementation of the National Climate Change Response Strategy through the development of Investment Plans for water related sectors; and the drafting of TOR jointly with UNDP to support the costing of Rwanda' low carbon green growth and investment strategy.
- At transboundary, regional level, 3 agreements on enhanced water security were influenced i.e. through an agreement with the Economic Community of Central African States (ECCAS) for the elaboration of a hydro-meteorological strategy; a Ministerial declaration to develop waste water programmes in the Caribbean; and the ratification of the 1997 UN Convention on transboundary waters in Niger.
- 34 national organisations were supported in developing legal frameworks/policies/strategies, sectoral and development plans integrating water security and climate resilience. Examples include expert support provided to Cameroon's Ministry of Environment Nature Protection and Sustainable Development on water security and climate resilience in the development of the National Biodiversity Action Plan and the Draft National Adaptation Plan; support to the Tunisian Department of Water and Land in the Ministry of Agriculture in strengthening water security and climate change aspects of the Water and Land Conservation Strategy; support to Ghana's National Development Planning Commission in strengthening the guidelines for the development of water related projects. Botswana's national development plan was also supported to integrate water security for climate resilience
- 30 government institutions and other stakeholders in Africa, Asia, Latin America and Eastern Europe were capacitated to integrate water security and climate change in the design and implementation of policies, plans and projects.
- 40 publications, knowledge products (including strategic messages) and tools for water security & climate resilience developed and disseminated far exceeded projection in 2013. The partnership with CDKN led to delivery of knowledge products and guidance documents for advancing water security and climate resilience.
- Strong partnerships have been established with UNDP-GEF, the Infrastructure Consortium for Africa (ICA), hosted by the African Development Bank, CDKN, Cap Net, EU Water Initiative Africa working Group and others, which has enabled the programme to expand its capacity building interventions and knowledge dissemination from 8 to 25 countries. GWP's support to the African Union and the African Minsters Council on Water (AMCOW) has also been strengthened with key officials from these entities actively participating the in programme;
- GWP regions outside Africa have developed regional climate resilience programmes modelled after the WACDEP Africa but with regional ownership. By the beginning of 2014, 60 countries were

participating in the programme across the world, with region specific programmes in Africa, the Caribbean, South, South East, and Central Asia, and Central and South America;

- Regional initiatives of the IDMP in Central and Eastern Europe, West Africa, the Horn of Africa and South Asia have been developed or are under development.

1.3. GWP support through the NAP-GSP and upcoming NAP-GPS for non-LDCs

GWP has been actively supporting countries with NAP related activities. This is done through GWP ongoing projects and activities on water and climate change adaptation (as described above), as well as through collaboration with the UNDP-UNEP led Global Support Programme (NAP-GSP). The NAP-GSP for LDCs, financed by the LDCF, is providing support to Least Developed Countries (LDCs) to advance their NAP processes. A NAP-GSP for non-LDCs will start implementation in 2015.

NAP will bring greater focus and coordination to country-led efforts in disaster management, disaster risk reduction, and climate change adaptation, and the NAP support from the NAP-GSP is based on 1) institutional support; 2) technical support; and 3) knowledge brokering. Some examples of the support are listed below:

Institutional support

- One Asia Regional Training Workshop was held on 17-20 February 2014 in Pattaya, Thailand. Representatives from Environment, Planning and Finance Ministries from nine Asian LDCs participated in the workshop (Afghanistan, Bangladesh, Bhutan, Cambodia, East Timor, Lao PDR, Myanmar, Nepal, and Yemen);
- In Africa two training workshops based on the NAP Guidelines were carried out in April 2014; one for Anglophone LDCs including representatives from 15 countries (Angola, Eritrea, Ethiopia, Gambia, Lesotho, Liberia, Malawi, Mozambique, Rwanda, Sierra Leone, Somalia, Sudan, Tanzania, Uganda and Zambia), and one for Francophone LDCs including representatives from 19 countries (Benin, Burkina Faso, Burundi, Comoros, Djibouti, Guinea, Guinea-Bissau, Equatorial Guinea, Madagascar, Mali, Mauritania, Niger, Central African Republic, Democratic Republic of Congo, Sao Tomé et Principe, Senegal, Chad and Togo).
- A Capacity Development Programme on the Economics of Climate Change Adaptation, Water Security and Climate Resilient Development (ECCA) in Africa is running between January 2014 and June 2015. The initiative is a cooperative effort between UNDP-GEF, GWP, CDKN, UNDP-CAPNET, UNEP and Centre for Environmental Economics & Policy in Africa (CEEPA), and it responds to a Capacity Building Assessment that was carried out in each of the targeted countries. The initiative includes 5 national training workshops and mentoring process activities in 8 pilot countries in Africa (Benin, Burkina-Faso, Burundi, Cameroon, Ghana, Rwanda, Tunisia, and Zimbabwe). The first training workshop was held in Addis Ababa, Ethiopia on 14-17 April 2014.
- Capacity development of government officials (planners in the Finance Ministries/ Environment and Water Ministries) in South Asia and South East Asia Countries on Economics of Climate Change Adaptation (ECCA). The capacity building on ECCA in South Asia and South East Asia is a cooperative effort between UNDP, USAID ADAPT Asia-Pacific Project, ADB, GWP South Asia and Yale University. ECCA Country Teams are being trained on applying analytical techniques or tool on ECCA. There are three training programmes planned and final programme will be held in Cambodia from 17-20 September 2014.

Knowledge support

- GWP is developing a Water Supplement to the NAP Technical Guidelines developed by the UNFCCC LDC Expert Group LEG, to advance the knowledge on water related adaptation. The work on the water supplement is in the final stage and the document has gone through several reviews. The document closely aligns with the Guidelines and focus on complementing the Guidelines for specific support on water specific issues;
- In August 2013 a workshop was carried out with key stakeholders (UNFCCC, UN-Water, Asian Development Bank, the African Minister's Council on Water Secretariat (AMCOW), Organisation for Economic Co-operation and Development (OECD), United Nations Economic Commission for Europe (UNECE), World Bank, Stakeholder Forum, Swedish Energy Agency (SPC), NIRAS);
- GWP have participated in informal meetings with UNFCCC and the LEG throughout the process (Cambodia in August 2013, Tanzania in February 2014, and Germany in August 2014).

Technical Support

- To Burkina Faso through mainstreaming water security as cross cutting issues in the NAP document expected to be approved by the Government in the second half of 2014. A specific study was carried and consultations among climate and water communities were facilitated for this purpose;
- To Niger through a country stocktaking mission to assist government and key stakeholders: i) to take stock of relevant initiatives on climate mainstreaming to support National Adaptation Plans process in Niger; and ii) to suggest next steps and actions (road-map) of the NAP's process;
- To Malawi through providing additional support and coordinating a stakeholder consultation workshop on the NAP process in Malawi. The workshop in Malawi is focused on training stakeholders in Malawi on NAP guidelines leading to the development of the NAP process.

2. Available and implemented tools and methods for adaptation planning addressing water resources

Many tools, knowledge products and methods are being used for the implementation of GWP activities across the regions on climate change adaptation planning, some examples for GWP and the WACDEP programmes and projects are mentioned below.

2.1. Knowledge platforms

IWRM ToolBox

The IWRM ToolBox comprises of an organised collection of case studies, reference documents, reader lists, external web sites and other supporting materials in water resources management, which have been submitted by various contributors and are peer reviewed.

The IWRM Toolbox is intended to be an information exchange platform where experiences are shared to help develop the body of knowledge which can enable all those engaged in water issues to work together to build water security and sustainable water for all. GWP has developed the ToolBox as a free access source of knowledge.

The ToolBox allows water related practitioners and professionals to discuss and analyse the various elements of the IWRM process, and facilitates the prioritisation of actions aimed at improving water governance and management. It aims to facilitate those professionals and specialists engage with a broader

community for the solution of (water related) problems. More information on: http://www.gwp.org/ToolBox/

IWRM ToolBox South East Asia

The objectives of the GWP South East Asia IWRM ToolBox are:

- to create greater awareness and use of the knowledge resources available at the GWP IWRM ToolBox website, in each of the member countries of GWP-SEA;
- to develop the IWRM capacity in each GWP-SEA member country, through greater awareness of the IWRM tools and how they are used in a local context;
- to facilitate the creation of an IWRM ToolBox user community in each member country of GWP-SEA;
- to facilitate the development and sharing of IWRM case studies, pertinent to each member country, and also awareness of similar case studies world-wide;
- to facilitate the development of quality case studies for submission to the GWP IWRM ToolBox website.

More information at: http://gwpsea-toolbox.net/

ToolBox on Rainwater Harvesting

GWP-C has developed the Toolbox on Rainwater Harvesting in the Caribbean to share information on RWH and to improve knowledge on conducting RWH under safe and sanitary conditions. The Toolbox is a compilation of research materials on RWH in the Caribbean and best practices applicable to the Region. In addition to the Toolbox, a rainwater harvesting demonstration model has been developed for display within the Caribbean as an advocacy and education tool to promote safe rainwater harvesting. The model is used at exhibitions and other for a in the Caribbean to give live demonstrations of how rainwater harvesting can be done by households, schools and others in the community. More information available at: http://www.cehi.org.lc/Rain/Rainwater%20Harvesting%20Toolbox/index.htm

Caribbean Water and Climate Knowledge platform

The Caribbean Water and Climate Knowledge Platform is an initiative within the WACDEP in the Caribbean developed by GWP Caribbean (GWP-C). The Platform has been developed to support the work of the GWP-C WACDEP but more importantly to be a user-friendly resource that provides a range of Caribbean knowledge products, tools and information geared toward building climate resilience in the Caribbean water sector. More information available at: http://www.gwp.org/en/Caribbean-Water-and-Climate-Knowledge-Platform/

IDMP Central and Eastern Europe: Drought information exchange platform

http://www.droughtmanagement.info/idmp-activities/idmp_cee/

APFM IFM HelpDesk

The IFM HelpDesk provides guidance on flood management policy, strategy, and institutional development for countries that wants to adopt the IFM concept. Users have the possibility either to request custom-made technical support through the Get Help function or to find flood management solutions by themselves using the literature in the Help Yourself section.

Although freely accessible online, the Helpdesk has been especially conceived for some categories of audience, in particular government agencies in charge of flood management, river basin organizations, bi- and multilateral development agencies in the field of water resources and disaster management, community-based organizations and NGOs engaged in flood preparedness, universities and other capacity building institutions for the water and disaster management sectors.

The good performance of the HelpDesk is made possible by the active support of the Support Base Partners (SBPs), a network of professional institutions and organizations contributing their expertise and technical backup in various areas of activity. These range from advice and advocacy in policy formulation as well as technical issues to facilitation of training courses on IFM to development of tools and capacity building materials.

2.2. Capacity building trainings and materials

WACDEP Africa Capacity Development Training Material

Training material developed for the capacity development programme within WACDEP Africa

IDMP CEE: Capacity building trainings and workshops on national and regional levels

APFM Training curriculum on flood management

The Associated Programme on Flood Management has developed a comprehensive training curriculum on flood management. Over the past years, several training workshops were conducted in various countries. In this regards, APFM is supported not only by the World Meteorological Organization and the Global Water Partnership, but also through contributions from its Support Base Partners, i.e. a network of external institutions supporting the activities of the IFM HelpDesk. Trainings are organized on a demand-driven basis, and individually tailored to the requesting parties and governments. Scope, duration and topics vary but can generally be divided into the following:

- Short vocational trainings or workshops (3-5 days) on the principles and aspects of Integrated Flood Management for policy makers, development planners, and water and disaster management professionals with a priority on the national and basin level;
- Training of trainers workshops (1-5 days) for capacity building institutions targeting vocational training of relevant professionals; and
- National workshops analyzing the current flood management situation and developing a strategic national framework in accordance with the Integrated Flood Management concept.

2.3. Knowledge products and guidance documents

Strategic Framework for Water Security and Climate Resilient Development

In an effort to address the twin challenges of water security and climate change, GWP together with AMCOW produced a Strategic Framework for Water Security and Climate Resilient Development, available in English, French and Portuguese. The resources are available at: http://www.gwp.org/en/WACDEP/RESOURCES/Technical-References/

Technical Background Document for Water Security and Climate Resilient Development

The technical background document was developed to support the Strategic Framework on Water Security and Climate Development.

Policy Briefs on Water Security and Climate Resilient Development

5 policy briefs were developed to support the Strategic Framework on Water Security and Climate Development.

UNICEF/GWP Strategic Framework for WASH and Climate Resilient Development

In collaboration with UNICEF, GWP is developing a Strategic Framework for WASH and Climate Resilient Development. In addition to the Strategic Framework a number of technical briefs are bring developed and the material is planned to be translated into an online tool at a later stage.

Water Supplement to the NAP Technical Guidelines

GWP is developing a Water Supplement to the NAP Technical Guidelines developed by the UNFCCC LDC Expert Group LEG, to advance the knowledge on water related adaptation. The work on the water supplement is in the final stage and the document have gone through several reviews. The document closely aligns with the Guidelines and focus on complementing the Guidelines for specific support on water specific issues.

In August 2013 a workshop was carried out with key stakeholders (UNFCCC, UN-Water, Asian Development Bank, the African Minister's Council on Water Secretariat (AMCOW), Organisation for Economic Co-operation and Development (OECD), United Nations Economic Commission for Europe (UNECE), World Bank, Stakeholder Forum, Swedish Energy Agency (SPC), NIRAS), and GWP have participated in several informal meetings with UNFCCC and the LEG throughout the process (Cambodia in August 2013, Tanzania in February 2014, and Germany in August 2014), to inform the process.

Sourcebook for Achieving Development Resilient to Climate Change

The Sourcebook aims to strengthen the capacity of users to manage and mitigate climate related risks through the use of a framework, intended to stimulate the identification and implementation of investments to enhance climate resilience, thereby underpinning sustainable development and growth in the region.

The target audience for the Sourcebook comprises water resources managers and water service providers who are seeking an understanding of how to better manage climate risks. The application of the Sourcebook will require collaboration across sectors which are related to or dependent on water to ensure solutions accommodate the wider economic, social and environmental aspects of water management.

The full sourcebook and technical briefs can be accessed at: Achieving Development Resilient to Climate Change: A Sourcebook for the Caribbean Water Sector

IDMP National Drought Management Policy Guidelines – A Template for Action

WMO/GWP Integrated Drought Management Programme (IDMP) (2014) ***National Drought Management Policy Guidelines – A Template for Action*** **(D.A. Wilhite).** Tools and Guidelines Series 1. WMO, Geneva, Switzerland and GWP, Stockholm, Sweden.

The National Drought Management Policy Guidelines provide a template for action that countries can use in the development of a national drought management policy and drought preparedness/mitigation plans. The process is structured in 10 steps that can be adapted by countries to reflect their institutional, infrastructure, legal, socio-economic and environmental context. The approach has influenced the development of drought policies in Brazil, Mexico, Morocco and the USA, of which case studies are included in the guidelines. Guidelines available at: http://www.droughtmanagement.info/guidelines/

APFM Guidance Materials

In terms of guidance materials, APFM has published an IFM Policy Series and a Flood Management Tool Series. This last one constitutes an insight on various specific aspects of flood management targeted to flood management practitioners to help them gain quick access to relevant technical guidance. These Tools incorporate various aspects within the framework of an integrated approach to flood management. The compilation of the tools is an ongoing process and as such these tools should be considered as living documents being updated periodically.

Water Use Efficiency Manuals

GWP-C in its efforts to improve water resources management in the region has developed two training manuals on Water Use Efficiency in the Agriculture Sector and the Tourism Industry.

Both manuals were specifically developed to be used as a training tool in GWP-C's capacity building activities such as its Water Use Efficiency (WUE) training workshops.

Since the development of the manuals, they have been used as a facilitators' guide/teaching tool in GWP-C workshops and a general handbook and reference document for course participants. The manuals are comprehensive but offer a practical and clear guide to its users in a simple user-friendly format. More information at: http://www.gwp.org/en/GWP-Caribbean/GWP-C-IN-ACTION/Water-Use-Efficiency-Manuals/

Video material on IWRM

GWP-C in collaboration with the Organisation of American States (OAS), the United Nations Economic Commission for Latin America and the Caribbean (UNECLAC) and the National Institute of Higher Education, Research, Science and Technology (NIHERST) has created 3 video productions on Integrated Water Resources Management (IWRM). More information at: http://www.gwp.org/en/GWP-Caribbean/GWP-C-IN-ACTION/IWRM-Videos/

IDMP Central and Eastern Europe: Guidelines for the preparation of drought management plans within river basin management plans according to European Union Water Framework Directive

IDMP Central and Eastern Europe: Compendium of good practices

2.4. Publications

The GWP Technical Committee, through the development of publications, help to create an understanding of the links between issues, and with policy and strategy responses, in order to provide a coherent set of insights as a foundation for concrete action. A complete list of GWP publications is available on: http://www.gwp.org/en/About-GWP/Publications/

The Status of Climate Change Management in South Asia
The report introduces the main issues of Climate Change occurred in the country and actions in place and some key challenges for adapting the Climate Change. There are important water related actions as the key for intervention on Climate change applied IWRM concepts.

Integrated water resources management in Central Asia: The challenges of managing large transboundary rivers
Technical Focus Paper available at:
http://www.gwp.org/Global/ToolBox/Publications/Technical%20Focus%20Papers/05%20Integrated%20water%20resources%20management%20in%20Central%20Asia.pdf

Integrated water resources management in the Caribbean: The challenges facing Small Island Developing States
Technical Focus Paper available at:
http://www.gwp.org/Global/ToolBox/Publications/Technical%20Focus%20Papers/04%20Caribbean_TFP_2014.pdf

2. Good practices and lessons learned in relation to adaptation planning processes, including on monitoring and evaluation, addressing water resources

GWP lessons learned from the implementation of the NAPs in Africa, including on monitoring and evaluation are:

- Decision-makers are concerned about the uncertainty that climate change poses and tend to be risk-averse. Therefore, it is important to have a knowledge management system in place that conveys appropriate information on adaptation priorities and water management processes more broadly. Uncertainty can be best addressed by prioritizing no and low regret options, or options that convey benefits no matter what future climate or socio-economic scenario materializes;
- Current international processes and debates, such as the SDG and post-2015 sustainable development Framework, need to be exploited to create the momentum for action on water security and climate resilience. For example, a Sustainable Development Goal on water with associated targets for disaster risk reduction could contribute to the objectives of National Adaptation Plans (NAPs);
- Building partnerships and engaging stakeholders is the best way to support more resilient development and avoid conflicts and inequalities;
- Decision-makers need local case studies, simple language, and interaction in the capacity development programme, and to ensure the learning material is accessible to a wide range of participants;
- Maintaining commitment of the various stakeholders in the implementation national adaptation plans due to the multiplicity of initiatives is a challenge. It will be therefore be important for the programme to be adaptive, continuously engage and communicate with stakeholders. It is also critical to ensure that the programme is integrated into on-going government or regional processes to ensure continued support and engagement;
- There is need for a good understanding of the national adaptation planning in order to identify the ideal entry points and timing is important in the process;
- Countries are learning from each other for example the Vulnerability Assessment and the Flood and Drought Mapping which has already been done in Southern Africa – is being shared with the other countries.
- Media involvement is very important as exemplified by Cameroon, who organised a workshop aimed at improving reporting on water security and climate resilient development.
- Capacity development is vital in driving the successful implementation of NAPs and a sizeable investment has to be made to ensure that regional teams and national teams are equipped with skills.
- Linking with the recent NAP process and other national on-going processes and linking with on-going and new programs/projects, and policy and strategy review processes is the success for integrating climate resilience into development process.
- There is need to consider budget for communication and monitoring and evaluation in all projects/programmes;

- Adapting to climate change will require the mobilisation of financial resources through dedicated multilateral climate funds as well as domestic budgets. Action is required to improve the efficient use of available public funds and secure additional funding. Governments need to make use of partnerships and networks with other governments, regional bodies and international actors to access them.
- Most LDCs agree that NAP is both a process and a document;
- The connection between the NAPA and NAP process is an important concern for countries. In particular for those who have challenges with NAPA implementation;
- Climate finance for NAP is a priority for most countries including finance for implementation;
- Institutional coordination is a challenge for all countries. Exchange of experiences can promote learning;
- Broadening the NAP process beyond environment ministries to integrate with planning and budgeting processes and national development strategies is a long term process;
- Demand for technical support to advance the NAP process from LDCs is growing. The NAP-GSP has received requests from 26 countries till date;
- The medium term framework of the NAP requires sustained investment;
- The NAP is a country driven process that needs overarching efforts and partnerships between Planning, Finance and Environment ministries;
- More targeted and sustained one-one-one support is required based on specific institutional and national context in LDCs;
- Regional thematic workshops provide an avenue for technical training as well as South-South exchange;
- The work with NAP-GSP Team and partners is promoting coordinated support to countries in the NAP process. With GWP involved with other NAP-GSP partners this is enhancing collaboration between water communities and climate communities in countries like Burkina-Faso and Benin engaging in the NAP process;
- Countries have a number of on-going initiatives that can be used as entry points to take forward the NAP process within countries and this has been learnt from countries like Niger. Stock-taking is therefore a key step in order to ensure that we build on on-going activities and avoid duplication;
- Institutional and technical capacities are need to be developed in order to ensure that countries can effectively integrate climate change into development processes. The Capacity Development work being done under the GWP WACDEP programme is intensive and there is demand for this from other countries like Niger;
- Country support is needed in order to ensure that there is an understanding of some of the steps within the guidelines – an investment has to be made upfront to ensure that countries have spent time in developing road maps based on their context and issues. This support will facilitate smooth implementation of the NAP process;
- Coordination of the NAP process should be at a strategic level with commitment from all stakeholders as has been evidenced by a Presidential Decree issued in Benin aimed at ensuring all

relevant stakeholders are part of the process and mainstreaming climate change into national budgeting processes.

Lessons learned on Monitoring and Evaluation

GWP's comprehensive M&E system enables a robust analysis to be made of the links between the organisation's operations and the water governance outcomes that are influenced. This system consists of a hybrid of two methodologies, namely outcome mapping and traditional Result Based Management (RBM).

According to this approach, each of the projects under implementation complies with a generic system of planning and reporting that identifies and monitors project activities and outputs along with the boundary actors and water governance outcomes that these are intended to influence. This includes logframe indicator targets against which quantified progress is monitored on a regular basis.

The advantages of the M&E system as currently adopted include the following:

- The combination of outcome mapping and traditional RBM enables the analysis of progress based on observed changes in the behaviour of boundary actors and water governance mechanisms, while at the same time setting quantified targets against a set of common indicators. The analysis of both methodologies enables GWP to evaluate the effectiveness and efficiency of project implementation which subsequently advances learning and strengthens project planning.
- The outcome mapping approach adopted by GWP inherently recognises that direct attribution of results to indirect outcomes is a challenge and thereby seeks to identify and report on the *plausible linkages* between outputs and outcomes. Results are planned and assessed according to the extent to which boundary actors with whom GWP is working to effect change have been influenced. This helps to identify and better understand the links between the organisation's operations and the water governance outcomes that are claimed to result.
- The RBM approach that complements the outcome mapping consists of a series of impact, outcome and output indicators derived according to the overall ambitions of the organisation along with its strategic goals. The targets set and results recorded for each project against these indicators allows quantified progress to be measured on an ongoing basis.

3. Processes and structures for linking national and local adaptation planning

GWP would like to express one main point for linking national and local adaptation planning, mainly the importance of thematic networks such as GWP for water resources, IUCN and WWF for ecosystems, etc. The network structures provide key opportunities for linkages between national and local adaptation planning.

GWP will continue to support national adaptation planning thorugh different processes in relation to water resources. With this submission GWP would also express a continous interest in contributing to the deliverables planned by the NWP in relation to the above and other submissions on good practices in and lessons learned from national adaptation planning in relation to water resources.

Paper no. 6: International Centre for Integrated Mountain Development

Submission from ICIMOD to be considered in SBSTA 41

20 August 2014

Submission from International Centre for Integrated Mountain Development (ICIMOD) with reference to and based on the mandates contained in the following conclusions: FCCC/SBSTA/2013/5, paragraph 13 (b) and FCCC/SBSTA/2014/L.13, paragraph 7), ICIMOD makes submission to the Nairobi Work Programme.

The ICIMOD submission provide information on good practices and lessons learned in relation to adaptation planning processes, including on monitoring and evaluation, addressing the four issues of ecosystems, human settlements, water resources and health with specific reference to the mountain of the Hindu Kush Himalaya region.

In this submission, and based on ICIMOD mandate, this submission is covers the following four topics:

1. Planning Responsive Adaptation
2. Ecosystem-Based Adaptation (EBA)
3. Community-Based Early Flood Warning Systems
4. Building the Adaptive Capacity of the Migrant sending households

1. Planning Responsive Adaptation

Planning adaptations that are responsive to community needs

While governments discuss how to respond to climate change, rural communities are compelled to act immediately to secure their livelihoods. At present, there are few structured processes through which communities can talk to scientists and policy makers about climate change adaptation. As a result planned adaptation processes are not sufficiently responsive to community needs and fail to consider or support spontaneous community adaptation measures that are already in place. An inclusive planning process is needed – one that incorporates learning from existing community adaptation measures and addresses community concerns.

Adaptation Learning Highways is a strategic process that fosters information and knowledge exchange between communities, scientists, and policy makers to inform the decision-making process and make it more inclusive. By recognizing autonomous community adaption as a basis for planned adapation, this initiative seeks to make planned adaptation more effective, targeted, and responsive to community needs. To that end, the Adaptation Learning Highways initiative engages communities in a number of fora at different stages, namely: community-to-community knowledge exchange fora (C2C KEF); community-scientists interface fora (CSIF); forum for interaction and exchange with policy makers (FIP); and state/regional consultation workshop on adaptive strategies.

Community-to-community knowledge exchange fora (C2C KEF)

The first stage in the Adaptation Learning Highways is the establishment of community-to-community knowledge exchange fora (C2C KEF). C2C KEFs brings community members from villages or village clusters together to hold focus group discussions and share what they are doing to adapt to climate change. These exchanges are facilitated by a mentor or facilitator and are conducted in the presence of representatives from technical agencies (research institutions and line departments) that are involved as observers, participating only when their expert opinion is sought. Discussions are centered around community responses to stresses brought about by change and the impact of such change on household livelihood security. Community members are encouraged to share their concerns, and facilitators draw out coping and adaptation mechanisms. Ideally, each focus group discussion focuses on a specific theme, which means that exchanges need to be held on multiple occasions.

The discussion should result in participatory verification, assessment, and peer evaluation of the reported coping and adaptation mechanisms. As part of this assessment, the strengths and weaknesses of promising adaptation measures are discussed to determine the potential for up-scaling them, particularly through community-led initiatives and cross-community exchange. The potential for up-scaling is discussed to identify gaps in supportive services and the support required from different agencies at the local and higher levels. At this stage the role of the expert observer becomes proactive. The C2C KEFs should help identify how local bodies, line agencies, the local administration and research institutes can be more responsive to the needs of the community. The proceedings of the C2C KEFs are documented audio-visually by a

process documenter, preferably from the media or with a strong understanding of media, for wider dissemination and use at subsequent fora.

Stage 2: Community-scientists interface fora

The main objective of the community-scientists interface fora (CSIF) is to stimulate dialogue and exchange between community members and scientists on the coping and adaptive mechanisms documented during the C2C KEF and to initiate a participatory assessment of such adaptive mechanisms. The CSIF is also a catalyst for changing scientists' perception of community innovation, and fosters appreciation and respect for community-based knowledge and practices.

The CSIF consists of community representatives, particularly knowledge innovators (developers of promising adaptation mechanisms) and key informants identified during the C2C KEFs; representatives of technical line departments who participated in the C2C KEFs; members of the scientific community; and representatives of civil society organizations. CSIFs are conducted by experienced facilitators to ensure that the exchanges between community members and scientists take place on an equal footing, with each group respecting the other's viewpoint. At no stage should scientists be allowed to act in a 'superior' way or become dismissive of community innovations.

Promising adaptive mechanisms identified during the C2C KEFs are introduced at this stage for discussion and evaluation. Community members and scientists are both encouraged to express their viewpoints to ensure an objective assessment of each adaptive mechanism. Adaptive mechanisms are then selected for subsequent scientific validation, which is conducted 'on farm' rather than on experimental plots at research stations. Finally, a process of participatory assessment and monitoring is agreed upon and a way of sharing results established to facilitate wider dissemination and up-scaling.

Stage 3: Forum for interaction and exchange with policy makers

The third stage in the Adaptation Learning Highway is the establishment of a mechanism for regular interaction and exchange with policy makers at the local or district level. The forum for interaction and exchange with policy makers (FIP) is initiated by the implementers of the Adaptation Learning Highway or a local development partner in conjunction with the local administration. It can be strategically useful to work with the government structure for climate change adaptation planning at the local level or to partner with such structures at the higher level.

The FIP involves key knowledge innovators, representatives from civil society, and members of the scientific/technical community, and is facilitated by senior members of the partnering project. Activities at this stage involve reporting the results of the C2C KEF and CSIF including sharing promising adaptation mechanisms and innovations and highlighting issues, concerns, and gaps in support systems raised during these exchanges. The objective of the FIP is to identify ways in which supportive services can be made more responsive to community needs and to identify existing programmes and institutional mechanisms for adaptation that need to be more proactive and responsive. Areas that require action on the part of higher authorities to make delivery mechanisms more effective are identified during this stage.

Stage 4: State/regional consultation workshop on adaptive strategies

The fourth and final stage of the Adaptation Learning Highway is the state/regional level consultation workshop, which brings together knowledge innovators, members of the scientific and technical community, representatives of local administration, and line departments, as well as the facilitating project partners. The objectives are multiple, but primarily to: share the findings and lessons from all fora to promote knowledge innovators and provide them with a platform to present their innovative adaptation mechanisms; present the validation assessments conducted by scientists; request policy action from policy makers; and advocate for policy support for up-scaling promising and effective adaptive strategies and identifying policy action necessary to make local delivery mechanisms more effective.

The workshop should be organized by the facilitating project partner in conjunction with the state authority responsible for climate change adaptation. At this stage, the findings from the C2C KEFs, CSIFs, and FIP, together with the concerns raised at each forum, are discussed with the aim of generating potential solutions. The consultation workshop's primary objective is to set in motion a process that results in the formulation of adaptation strategies to respond to stress resulting from change. The consultation should highlight promising adaptation strategies developed autonomously, present the results of peer assessment and scientific validation, and raise any concerns in regard to the up-scaling of such mechanisms. The workshop should also identify mechanisms required to translate community based adaptation mechanisms into formal planned adaptation strategies. Overall, the workshop is designed to contribute to policy refinement and formulation that supports building upon autonomous adaptation and makes planned adaptation more responsive.

The Adaptation Learning Highway has been initiated in India and Nepal through Adapt Himal partners – Meghalaya Livelihood Improvement Project, North Eastern Region Community Resource Management Project, and Uttarakhand Livelihood Improvement Project (in India) and the Western Upland Poverty Alleviation Project and Leasehold Forestry and Livestock Promotion Project (in Nepal). The Adaptation Learning Highway has been facilitated by ECARDS in Nepal and by Uttarakhand Organic Commodities Board in Uttarakhand, India. The findings from the Adaptation Learning Highway in India have contributed in shaping the Uttarakhand State Action

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2. Ecosystem-Based Adaptation (EBA)

Overall objective:
The objective of this programme is to improve understanding of the impact of climate change and associated changes in the ecosystems in order to enable research institutions, governments, and civil society organizations to develop better strategies for adaptation. The programme thus seeks to support strategic thinking and interventions that can enhance ecosystem resilience in the four river basins of the Hindu Kush Himalayas (HKH), thereby contributing to research, adaptation planning and practices under the Nairobi Work Programme (NWP).
The specific objectives of the programme are to: (a) develop a better understanding of the trends of ecosystem change and the drivers of these changes; (b) enhance understanding of ecosystem management and identify possible adaptation measures; (c) develop an understanding of the valuation of ecosystem services with clear linkages with possible adaption planning.

Project purpose:
The Hindu Kush Himalayan (HKH) region is endowed with a rich variety of gene pools and species and ecosystems of global importance. It is a storehouse of biological diversity and a priority region for many global conservation agendas (Brooks et al., 2006). The region has many unique ecosystems that play a critical role in protecting the environment and in providing livelihoods for much of Asia and beyond (Erikson et al., 2009). The ecosystem services, as defined by the Millennium Ecosystem Assessment (2005), provided by the HKH include fresh water which is used by more than 200 million people living in the region and by 1.3 billion people living in the ten downstream river basins (Schild, 2008)

The ecosystems of the HKH region, like many other ecosystems worldwide, are being degraded by anthropogenic factors (Xu et al., 2008). Growing demand for ecosystem goods and services stemming from a burgeoning human population and haphazard infrastructure development, combined with unsustainable use, poor management, and low investment in conservation, have all led to habitat degradation, biodiversity loss, and decreased agricultural productivity (Chettri et al., 2008b; Xu et al., 2008; GOI 2009; Sharma et al., 2009; Tsering et al., 2010). The extensive modification of vital ecosystems may affect their natural processes and reduce their capacity to provide services in future.

In order to address these issues, the Himalayan Climate Change Adaptation Programme (HICAP) has adopted an integrated approach with a focus on ecosystem services in the selected four river basins, namely the Bramhaputra, Upper Indus, Koshi and Mekong-Salween, in the HKH region. Among the five major components of HICAP, the ecosystem services component aims to follow the concept of ecosystem-based adaptation that is suited to the mountain context. EBA is one of the key approaches that are being used in these river basins for long-term ecosystem management and sustainable supply of ecosystem services.

Key Programme Activities
Sub Component 1: Understanding the state of ecosystem and drivers of ecosystem change

a. Building stakeholders' capacity to understand ecosystem change and the drivers of these changes
b. Field-based action research on ecosystem change trend analysis coupled with GIS and remote sensing tools

Sub Component 2: Understanding social and economical value of ecosystem services
a. Provide training on valuation of ecosystem services to key partners.
b. Conduct research on the social and economic value of ecosystem services, and community mapping of services generated from various ecosystems.

Sub Component 3: develop and practice possible financial instruments for ecosystem services management (such as payment for ecosystem services)
a. Conduct stakeholders' consultation both at local and regional level for assessing possible financial-based instruments for ecosystem-based adaptation, such as payment for ecosystem services (PES).
b. Conduct a field test of PES or similar mechanisms in selected watersheds within the river basins
c. Facilitate upstream and downstream communities for a possible ecosystem services agreement.

Sub Component 4: Practice ecosystem-based adaptation measures for possible policy support
a. Develop EBA-based approach to adaptation planning at the local level
b. Pilot and test EBA interventions
c. Support policy formulation process on EBA and ecosystem management

Expected Outputs
The Programme aims at the following main outputs that are closely linked to the programme objectives and components:
a. National and regional level research on ecosystem-based adaptation
b. Possible PES mechanism at local (watershed) level becomes functional
c. Detailed investigation of the state of ecosystem change and the drivers of these changes
d. Detailed social and economic valuation of ecosystem services
e. Methodology for economic valuation developed and tested at the watershed level
f. A set of adaptation options identified and recommended for ecosystem and communities

Indicator of Achievements
a. Enhanced knowledge on ecosystem change and the drivers of these changes
b. National institutions are capable of adopting the PES mechanism
c. Possible PES mechanism adopted both at local and national level
d. EBA approach taken into consideration during local and sub national planning
e. National and regional institutions have enhanced capacity to understand the impact of climate change and adaptation policies
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3. Community-Based Early Flood Warning Systems

Overall objective:
The Hindu Kush Himalayas (HKH) is subject to water-induced disasters caused by many factors, of which the most important is high intensity of rainfall in the monsoon and steep mountain slopes. Most of these water-induced disasters happen during the monsoon season; at this time of year "too much water" becomes a bane to the mountain people. Paradoxically, these very same mountain people are now increasingly facing water shortages in the dry months of the year. This is especially true in the middle mountains where springs are increasingly drying up leading to acute shortage of drinking water. Given this overall scenario, our objective is twofold:
1. How to minimize the impact of "too much" water by investing in community-based early flood warning systems
2. How to minimize the impact of "too little" water through investments in building understanding of spring hydrology and in appropriate policies and institutions

Project purpose:
Based on the overall objectives, the project purpose is to help local communities in adapting to climate and non-climate induced changes in the HKH. This will be done through investment in community-based early warning systems in flash flood areas and by enhancing understanding of spring systems in the mid hills of the HKH.

Activities for the community-based early warning system:
The Hindu Kush Himalayan (HKH) region is one of the most dynamic and complex mountain systems. It is extremely fragile and sensitive to the effects of climate change and other drivers of change. Floods and flash floods are hazards that can cause considerable loss of life and property in lowland communities of the region, particularly during the monsoon season. Floods in small rivers and tributaries are particularly destructive, and the relief and support provided by concerned agencies is not always sufficient. Therefore, the Community-Based Flood Early Warning System (CB-FEWS) is a low cost technology for reducing flood risks and enhancing the adaptive capacity of vulnerable communities.
CB-FEWS is an integrated system of tools and plans managed by communities to reduce flood risks and enhance adaptive capacities. It provides early warnings to the downstream communities and enhances cooperation between upstream and downstream in sharing real time flood information. By doing so, it addresses one of the major gaps identified by Hyogo Protocol and the UNFCCC's Special Report on Extreme Events and Disasters (SREX 2012) in communicating flood information to the most vulnerable communities. CB-FEWS is based on people-centered, timely, simple and low-cost technology that can guide vulnerable communities on how to act on flood warnings. It incorporates four major elements:

1) Risk Knowledge: Flood risk maps were prepared based on GIS and remote sensing data, and vulnerable communities were selected through the process of ground truthing. Based on their past experiences and perceptions, communities identified vulnerable areas to be included in the community risk map.

2) Monitoring and Early Warning Systems: The CB-FEWS technology was manufactured in collaboration with the Sustainable Eco Engineering, Nepal. A prototype was tested before it was installed in the field. The system consists of two units: a transmitter and a receiver. The transmitter is installed along the riverbank of vulnerable upstream villages, and the receiver at a house near the river. A flood sensor attached to the transmitter detects rising water levels. When the water reaches a critical level, a signal is wirelessly transmitted to the receiver. The flood warning is then disseminated via mobile phone to concerned agencies and vulnerable communities downstream. The wireless technology has some drawbacks related to the range of transmission, sensor pipe, battery, etc. Other options are being explored to address these issues.

3) Dissemination and Communication: The flood information received by the receiver household is provided to the local District Disaster Management Authority (DDMA), contact person at Aaranyak and key persons in the downstream villages. DDMA and Aaranyak contact persons, in turn, pass the information on to the downstream communities. At present 42 vulnerable communities along the Jiadhal River and 18 along the Singora River are directly receiving flood information. A formal network will be prepared and institutionalized through the DDMA to ensure sustainability and regular information flow.

4) Response Capability: Community members were trained to regularly monitor and record flood events and changes in weather conditions, particularly temperature and rainfall. Using downscaled climate and hydrological scenarios, they identified three major drivers of change and prepared two future scenarios based on their own experiences. Through this activity, they were able to envision future changes and gain an understanding about how to develop flexible community plans to enhance their adaptive capacity. The flexible flood management plan could be used by DDMA while preparing local-level disaster flood action plans.

Activities for mapping spring water systems

In the mid hills of the HKH, springs are often the only source of drinking water. Over the last few years, a lot of anecdotal evidence has emerged which shows that these springs are increasingly drying up, leading to untold misery for the local population dependent on these sources. Faced with increasing water scarcity, men and women are adapting in a number of different ways – lifting water through pipelines, imposing rationing on available water and harvesting rainwater. However, there is very little scientific documentation of both hydrogeological; social and policy dimensions of water scarcity in the mid hills. To fill this gap, we suggest the following activities:

1. Hydrogeological mapping of springs in a few selected locations of the HKH (Nepal, India and Bhutan, to begin with)
2. Social and institutional mapping of springs and spring users in the same selected sites
3. Training of local stakeholders in spring mapping and spring rejuvenation activities.

Expected results:

There are two broad categories of expected results, each related to theme of ‘too much’ and ‘too little’ water. We expect that community-based early warning systems will be piloted in several locations in the HKH and then accepted as an effective tool for

adaptation for those who face the risk of riverine and flash floods. We also expect that such low-cost community managed systems will be mainstreamed in all the countries of the HKH and will find mention in policy documents. On the issue of 'too little' water, we expect that the proposed work on mountain springs will lead to an inventory of springs in selected locations and a better understanding of the socio-political dimensions of coping with water scarcity.

Indicators of achievement:
Community based early warning systems tested and piloted in at least three locations in HKH and springs inventory prepared in at least three locations. Based on these pilots and studies, research reports and journal articles will be prepared and they will be disseminated through various relevant fora.

Expected outcome:
The knowledge generated by this project is utilized in the UNFCCC, SBSTA and NWP and MEA processes such that mountain ecosystems and mountain environment get due recognition in the global processes and negotiations.
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4. Building the Adaptive Capacity of the Migrant Sending Households

Overall objective

The objective of this action research is to demonstrate a sustainable, scalable, and replicable approach to build the adaptive capacity of the migrant sending households in the HKH region by leveraging the investment of remittances in flood preparedness and flood resilient value chains through financial literacy, flood preparedness, and value chain trainings, and associated community level extension services.

Project purpose

Financial remittance, which is the money sent home by the migrant workers, can be a 'local' financing mechanism for the unmet adaptation requirements of the migrant sending households in the mountain communities. This will require a supportive policy framework and institutional arrangement that facilitates access to information and technical guidance at various levels (e.g., national, provincial, and local). However, there is limited understanding of the relationship between migration and adaptation planning and practices in the migrant sending households and origin communities in the HKH region. Public and policy discourses in the HKH region show a bias arising from negative perceptions of migration. These discourses ignore the benefits of migration: employment, purchasing power, food security, asset creation, livelihoods diversification (e.g., income, sector, and geographic), disaster risk reduction, changes in attitude, knowledge, or skills. For example, Sapkota (2013:1321) has shown that remittances are equivalent to a much larger share of GDP in Nepal than official development assistance and foreign direct investment.
Adaptation planning and practices need to explore circumstances that allow human mobility to prevent the erosion of adaptive capacity (e.g., social, financial, human, physical, and natural) or build such capacity so that individuals, households, or communities can effectively cope with the effects of climate change.

People in the mountains largely depend on natural resources for their livelihoods. Mountain households employ a 'multi-income' livelihood system, combining agricultural (e.g., farming and animal husbandry) and non-agricultural systems (e.g., wage employment, trade, or remittances) (Schutte and Kreutzmann 2011). Natural resource dependent households are more vulnerable than those whose livelihoods are based on sectors that are less climate sensitive (MoE 2010:14). Migration for work is a traditional livelihood strategy in the mountain communities across the HKH region. Pakistani cities such as Muzaffarabad, Peshawar, Rawalpindi, Lahore, and Karachi were major destinations of migrant workers from the mountain areas (Schutte and Kreutzmann 2011). A fairly recent household survey (2010/2011) suggests that 56 per cent of Nepali households receive remittances (both domestic and foreign) (CBS 2011). However, national and sub-national policies on adaptation, sustainable development, and poverty reduction across the HKH region have not taken this seriously into consideration. The National Adaptation Programmes in India, Nepal, and Pakistan ignore the potential of migration and remittances to address future adaptation and welfare needs of the migrant sending households and origin communities.

The role of migration and remittances in climate change adaptation is an emerging policy concern at the global level. Paragraph 14f of the Cancún Adaptation Framework (2010) mentions the need for “measures to enhance understanding, coordination and cooperation with regard to climate change induced displacement, migration and planned relocation, where appropriate, at national, regional and international levels” (UNFCCC 2011:5). However, there is little empirical evidence on the mechanisms to support migration-related actions and activities - such as the delivery of social and financial remittances – that can build adaptive capacity of the migrant sending households and resilience of the origin communities to environmental stresses and shocks (e.g., drought, floods, flash floods, etc.).

The present policy framework and institutional arrangement need to acknowledge the significance of migration in the rapidly changing societal fabric of mountain communities in the HKH region. The role of migration and remittances need to be explored as part of the national adaptation agenda on sustainable development, livelihood diversification, and community resilience. An evidence-based policy engagement is needed to encourage and support the investment of financial remittances or use of social remittances in poverty reduction and climate adaptation. This action research aims to demonstrate a sustainable, scalable and replicable approach to build the adaptive capacity of the migrant sending households by leveraging the investment of remittances in flood preparedness and flood resilient value chains through financial literacy, flood preparedness, and value chain trainings, and associated community level extension services.

The latent nature of adaptive capacity makes it difficult to examine until after its realization or mobilization within a system. Besides, a large number of socioeconomic variables with uncertain coefficients determine the adaptive capacity (Vincent 2007). Knowledge about actions during past or present stress events (e.g., droughts, floods, storm surges) can be used as a proxy to empirically investigate how systems might (or might not) build and mobilize their adaptive capacity to prepare for and respond to future climate changes (Engle 2011:563). In this action research, an array of rural communities, which are affected to different extents by the riverine floods/ flash floods, will provide a proxy for the future impacts of climate change induced floods. This action research will be conducted in India (Lakhimpur district in the Assam province), Nepal (Udayapur district), and Pakistan (Hunzanagar district in the Gilgit-Baltistan). The flood impacts differ between and within these countries because of the nature, frequency, and magnitude of the floods as well as the local vulnerabilities and adaptive capacities, which are an outcome of the social, economic, environmental, and political factors.

The patterns of migration vary across the HKH region. For example, the migration from the Lakhimpur district in Assam is, predominantly, internal in nature. Main urban centres in the plains of Pakistan are the destination of the majority of the migrant workers from the Hunzanagar district in Gilgit-Baltistan. There are some semi to low skilled professionals from the Hunzanagar district who migrate to the Persian Gulf countries in search of economic opportunities in transportation, restaurants, construction, cargo services, and oilfield. In the Udayapur district of Nepal, migration is oriented to the Persian Gulf countries, South East Asia, and East Asia. India remains a major destination for the poorer

migrant workers from Nepal because of the open border. The migration outcomes vary depending on the destination of a migrant worker. This action research will include the households of the migrant workers belonging to the major streams from the research area.

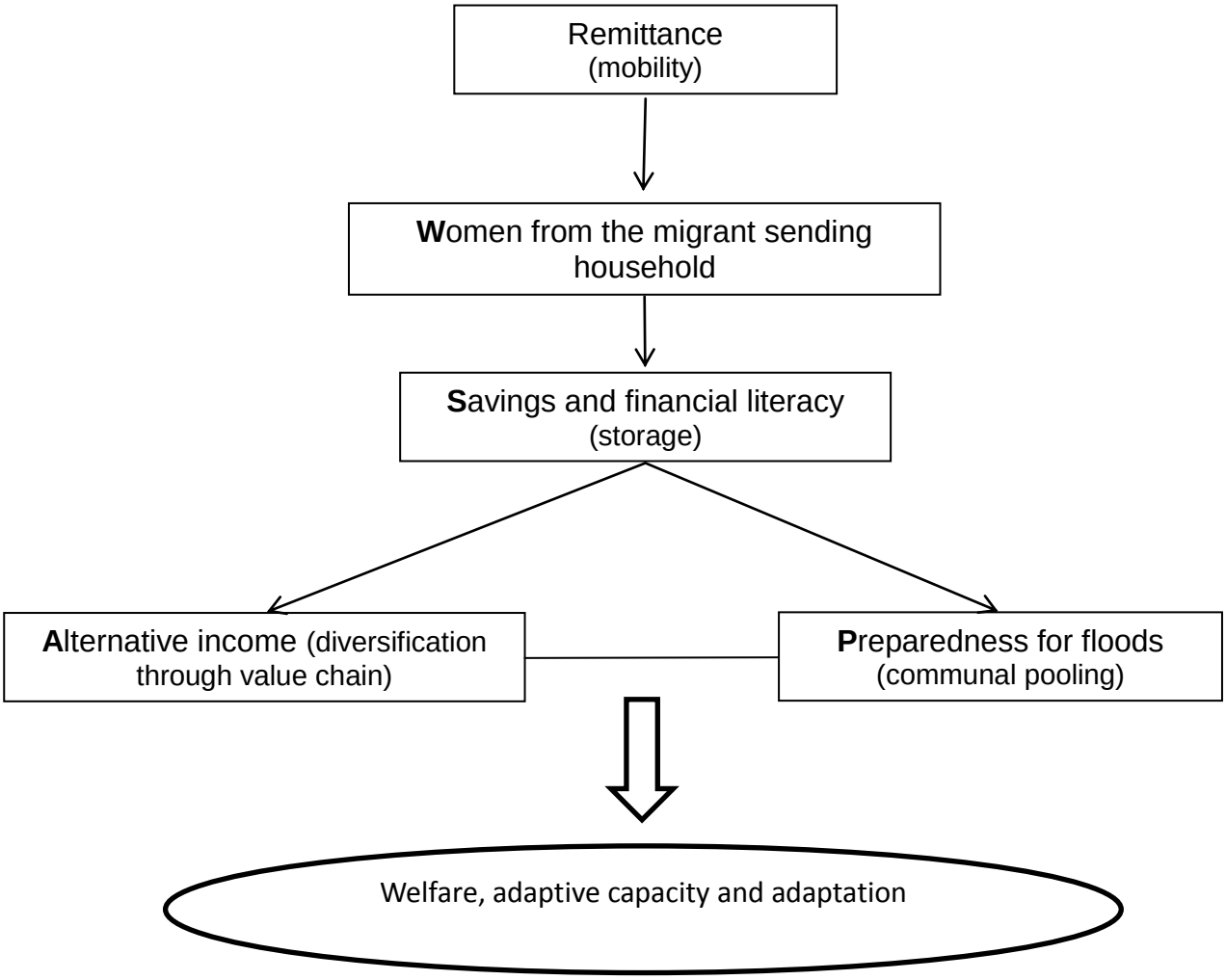
Overall, this action research will provide an ensemble of the adaptive outcomes of migration, which are set within the same conceptual framework but are customized according to the local context. A better understanding of the relationship between labour migration (hereafter, migration) and adaptive capacity will increase the ability of the migrant sending community to cope with climatic shock or stress.

Adaptive capacity can be conceptualized in several ways. Bebbington (1999) suggested that a household could increase its adaptive capacity by expanding its asset base, both the tangible resources (e.g., natural capital and productive resources) and the capabilities to do so (e.g. social and human capital).

This action research builds on the 'capital assets' approach suggested by Chambers (1987) and the Sustainable Livelihoods Framework proposed by Scoones (1998) through the WASP approach (i.e., women, alternative income, savings and preparedness). The 'women' from the migrant sending households are envisaged as the household level 'change maker'. Given the predominantly male out-migration from the research areas, the women members of the migrant sending households (e.g., wife, mother), particularly in India and Nepal, are the recipients of remittance. They have an important role in the decision to utilize the remittance, which is mainly used to meet the basic needs. Due to a low volume of remittances and a lack of knowledge, information, technical expertise, and market access, these women have yet to internalize the idea of 'savings' and using remittances to generate 'alternative income' (i.e., in-situ climate resilient income generation), or 'preparedness' for flood disasters (disaster risk reduction). This action research aims to address these issues by providing them access to information, training, and community level extension services (refer to Figure 1 and Figure 2).

The information aspect of this action research (i.e., financial literacy, flood preparedness, and value chain trainings) will help enhance human capital in the migrant sending households. Financial literacy and flood resilient alternative income are aimed at maximizing the financial returns for the migrant sending households. Investing remittances in flood preparedness measures (e.g., emergency food, water, and crop storage; rescue equipment; housing; transport; livestock shelter) will build the physical capital of migrant sending households. This action research identifies the migrant sending households as a special interest group in the rural communities. A group of migrant sending households will be trained in the research communities. This intervention thus brings the migrant sending households together and enables them to identify their unique characteristics and requirements. This in turn will help enhance the social capital of the migrant sending households.

Figure 1: Figure illustrating the WASP approach for leveraging remittance investment in flood preparedness and flood resilient value chains



Activities

Financial literacy and flood preparedness training: The women from the migrant sending households will be provided financial literacy and flood preparedness training. These trainings will be conducted in two phases: Training I will focus on increasing the financial literacy (e.g., basic arithmetic functions, household level budget planning, information on financial services, and planning of remittance savings and utilization) of the beneficiary households. Training II will reflect on the household level flood preparedness (e.g., assessment of a household's flood preparedness, identification of priority areas, use of remittances in emergency food, water, and crop storage, first aid, rescue equipment, housing, transport, livestock shelter, and climate smart livelihood options). These trainings will be facilitated by experts in financial literacy, disaster risk reduction, migration, gender, and value chain. The expert group will be assisted by village level extension workers, who will carry out 'round-the-clock' monitoring and serve as a conduit of information between the beneficiary households and the experts.

Flood resilient value chains: The research team will identify and analyse flood resilient value chains that are suitable for the research area and the beneficiaries. Beneficiary households will be guided by the relevant experts to channel remittances into these value chains in order to diversify the household income base. This will reduce the impact of flood on household income, which at present is overwhelmingly dependent on natural resources.

Baseline and end line surveys: The impact assessment will be documented through baseline and end-line surveys. A baseline survey will be conducted in the research villages to document the status of (a) access to financial services (loan, savings account, other financial products); (b) self help groups/ cooperatives/ MFIs, (c) remittance transfer (e.g., frequency/ cost/ recipient), (d) remittance utilization, (e) flood impacts, (f) household level flood preparedness, and (g) role of the local institutions involved in disaster preparedness. Upon completion of the intervention, an end line survey will be conducted to document the impacts of the action research on the adaptive capacity of the migrant sending households.

Peer review publication, policy briefs, and roundtables: The results and learning will be disseminated through peer reviewed publications, policy briefs, and roundtables.

Expected outputs

The expected outputs are closely linked to the objectives and components of this research:

g. Identify knowledge and policy gaps regarding the use of remittances to build the adaptive capacity of the migrant sending households.

h. Identify enabling and constraining factors to leverage remittances to build the adaptive capacity of the migrant sending households.

i. Identify research and implementation capacity building needs

j. Demonstrate a sustainable, scalable and replicable approach to build the adaptive capacity of the migrant sending households by leveraging the investment of remittances in flood preparedness and flood resilient value chains.

k. Contribute empirical evidence to the global discourse on migration and climate change adaptation.

l. Provide actionable recommendations for the government institutions, non-government organizations, and international development agencies.

Indicators of achievement

f. National institutions have enhanced knowledge on the relationship between climate change adaptation and migration and are able to incorporate these learning in relevant policy processes.

g. Provincial and local institutions have enhanced understanding and capacity to incorporate the migration and remittance aspects in the provincial and local adaptation planning.

h. This approach is recognized as a ‘best practice’ in the HKH region.

Expected outcome

The knowledge generated in this research is used in the UNFCCC, SDG, NAPA, SAPCC, and GFMD processes such that migration and remittances receives due recognition in global and national policy processes on sustainable development and climate change adaptation.

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Paper no. 7: International Fund for Agricultural Development

INTERNATIONAL FUND FOR AGRICULTURAL DEVELOPMENT (IFAD)

SUBMISSION TO NAIROBI WORK PROGRAMME ON AVAILABLE AND IMPLEMENTED TOOLS AND METHODS FOR ADAPTATION PLANNING PROCESSES, GOOD PRACTICES AND LESSONS LEARNED IN RELATION TO ADAPTATION PLANNING PROCESSES ADDRESSING THE AREAS OF WATER AND ECOSYSTEMS

August 2014

Guidelines for Integrating Climate Change Adaptation into Fisheries and Aquaculture Projects

This study, which is available at http://www.ifad.org/climate/asap/fisheries.pdf describes a range of multiple-benefit options for integrating climate change adaptation and mitigation into IFAD interventions in the fisheries and aquaculture sectors, based on a review of relevant literature on climate change, the fisheries and aquaculture sectors, and related activities of other international organizations.

Climate change is transforming the context in which the world's 55 million fishers and fish farmers live and work, posing a major threat to their livelihoods and the ecosystems on which they depend. For millennia, small-scale fisheries and fish farmers have drawn on their indigenous knowledge and historical observations to manage seasonal and climate variability, but today the speed and intensity of environmental change is accelerating, outpacing the ability of both human and aquatic systems to adapt.

The changes already being witnessed include warming of the atmosphere and the oceans, changes in rainfall patterns and increased frequency of extreme weather events. The oceans are becoming increasingly saline and acidic, affecting the physiology and behaviour of many aquatic species and altering productivity, habitats and migration patterns. Sea level rise, combined with stronger storms, severely threatens coastal communities and ecosystems. The world's coral reefs are under threat of destruction over the coming century. Some inland lakes and water bodies are drying up, while in other areas destructive flooding is becoming a regular occurrence. In many cases it is the poorest communities in the poorest countries that are most vulnerable to these changes.

Most of the measures proposed in the study are not new concepts or ideas but have been proven time and again in practice to provide a range of benefits to and increase the resilience of small-scale fishers and fish farmers, as well as the ecosystems on which they rely. This approach is in line with ASAP's first principle of scaling up tried and trusted approaches.

Summary of Key Multiple Benefit Actions

Climate Challenges	Potential multiple-benefit actions
Increase climate resilience of small scale fishers and fish farmers	• Reduce overfishing and excess capacity • Implement the ecosystem approach to fisheries and aquaculture management (incl. ICZM, MPAs).

	• Establish natural resource co-management regimes with community groups and fishers and fish farmers associations. • Strengthen the knowledge base and climate change advisory capacity of fisheries and aquaculture extension workers. • Invest in key infrastructure and ecosystem rehabilitation projects, favouring a 'no-regrets' approach. • Encourage diversification of livelihoods and income sources, including non-fisheries related activities. • Invest in research to develop/identify new commercially viable strains of aquaculture species tolerant of low water quality, high temperatures and disease. • Promote integrated aquaculture and agriculture systems, including using flooded/saline land and water bodies.
Increase capacity to manage short and long term climate risks and reduce losses from weather related disasters	• Establish early warning systems, safety-at-sea, and disaster risk reduction and preparedness plans. • Rehabilitate coastal ecosystems which provide protection from storms and waves (mangroves, wetlands, marshes and coral reefs). • Increase access to financial services and insurance mechanisms. • Encourage establishment of small scale fish nurseries to facilitate restocking after disasters. • Improve aquaculture development planning and zoning.
Reduce and/or sequester Greenhouse Gas Emissions	• Introduce more fuel efficient boats and encourage use of static fishing gear rather than towed gear like trawls. • Promote the culture of low trophic level species and aquatic plants in polyculture/Integrated Multi Trophic Aquaculture systems. • Identify opportunities to access carbon finance for mangrove planting or restoration.

Paper no. 8: International Organization for Migration, United Nations High Commissioner for Refugees, and United Nations University Institute for Environment and Human Security

Joint submission to the United Nations Convention on Climate Change (UNFCCC)

On the Nairobi Work Programme on impacts, vulnerability and adaptation to climate change

On behalf of:
The International Organization for Migration (IOM)
The United Nations High Commissioner for Refugees (UNHCR)
The United Nations University Institute for Environment and Human Security (UNU-EHS)
The Norwegian Refugee Council (NRC) and its Internal Displacement Monitoring Centre (NRC/IDMC)

Also on behalf of:
Centre d'études et de recherches internationales de Sciences Po (Sciences Po -CERI) and Refugees International

These organizations form the Advisory Group on Climate Change and Human Mobility

FOR CONSIDERATION AT SBSTA 41

Recalling the decision 1/CP.16 (paragraph 14(f)) that establishes the Cancun Adaptation Framework, and invites Parties to enhance actions on adaptation by undertaking "Measures to enhance understanding, coordination and cooperation with regard to climate change induced displacement, migration and planned relocation, where appropriate, at the national, regional and international levels;"

Also recalling the conclusions adopted on NWP by SBSTA 40 (paragraphs 12–28), in Bonn from 4 to 15 June 2014, which include ways to enhance the effectiveness of the modalities of the NWP and a set of activities, including a request for submissions by August 20, 2014, to be carried out under the NWP, in order to collect, analyse and disseminate information and knowledge to inform adaptation planning and actions at the regional, national and subnational levels, particularly in relation to, inter alia, ecosystems, human settlements, water resources and health.

The Advisory Group on Climate Change and Human Mobility would like to submit information on good practices in and lessons learned from national adaptation planning for consideration at SBSTA 41.

a) Available and implemented tools and methods for adaptation planning processes addressing human settlements;

- The United Nations University and the Nansen Initiative, in collaboration with IOM, UNHCR and a number of organizations, produced a policy brief on Integrating Human Mobility Issues within National Adaptation Plans, as a concrete tool to support policymakers. The results of Nansen Initiative's Consultations in the Pacific, Central America, and the Greater Horn of Africa, have confirmed the importance of incorporating human mobility, including voluntary migration and planned relocation into national adaptation plans. For example, it has become clear that voluntary migration, whether circular, temporary, or permanent can be a potentially positive form of adaptation to climate change. Or planned relocation, if well managed and undertaken in a participatory fashion, could be an effective strategy for assisting communities to adapt to climate change impacts. Hence, the lesson learned is that incorporating human mobility into the national adaptation plans could positively inform the adaptation planning process and is therefore seen as a good practice.

- UNHCR, together with the Brookings Institution and Georgetown University's Institute for the Study of International Migration have developed guidance on Planned relocation, disasters and climate change, based on an expert consultation to consolidate good practices and existing guidance such as the Peninsula Principles and preparing for the future, which was held on 12-14 March 2014 in
  Sanremo, Italy, supported with a grant from the European Union and co-funding from Norway and Switzerland. The guidance examines the complex issue of planned relocations made necessary by sudden-onset disasters, acute environmental degradation, and the longer-term effects of climate change.

- IOM has developed a comprehensive training curriculum on migration, environment and climate change for policymakers and practitioners across different areas: migration, climate, adaption and disaster risk reduction. One key module of the training relates to "Migration and Adaptation" and discusses how migration and human mobility aspects can be integrated into NAPs and NAPAs. To date, trainings have been held in East Africa, Asia Pacific and Latin America. A fully fledged training manual, heavily featuring adaptation planning in the context of human mobility, is under development.

- NRC and IDMC have produced global and regional analyses of existing patterns of displacement associated with climate-related hazards. Based upon the scale of displacement related to reported disasters, IDMC has developed probabilistic models that estimate the likelihood of future displacement, information that Parties can incorporate into adaptation planning processes. This research and modeling includes a decision-support tool that simulates in real time the impacts of climate hazards, demographic trends and different policies and interventions on pastoralist livelihoods and displacement; this tool can be used to evaluate the effectiveness of different adaptation strategies under different climate scenarios.

b) Good practices and lessons learned in relation to adaptation planning processes, including on monitoring and evaluation, addressing human settlements;

- UNHCR and CARE International developed in 2005 the Framework for Assessing, Monitoring and Evaluating the Environment in refugee-related operations (FRAME). Planned and tested with partners in many countries, FRAME has produced tools and guidelines that help managers and field practitioners address environmental issues and concerns, from contingency planning to when camps are closed and rehabilitated. To date, it has been applied in refugee, IDP and return situations, in post-conflict and post-disaster situations, primarily in Africa and Asia.

- IOM is working closely with its Member States to advocate for the inclusion of human mobility issues in adaptation planning, supporting them with technical expertise to concretely include these questions in national policy development. For instance, IOM collaborated with the Government of the Federated States of Micronesia to design a new integrated policy that refers to human mobility, climate change, disaster risk reduction and sustainable development.

- IDMC have produced research on how human mobility has been addressed within existing NAPAs, NAPs and other related laws and policy instruments in the Pacific. Based upon this analysis, IDMC has provided recommendations for Parties on how they can increase the effectiveness of adaptation strategies with respect to preventing and responding to climate change-induced displacement.

c) Good practices and lessons learned related to processes and structures for linking national and local adaptation planning.

- UNHCR and NRC/IDMC are supporting the development of 'protection agenda' for cross-border displacement in the context of disasters and climate change through the Nansen Initiative that aims to build consensus among interested governments on key principles and elements regarding the protection of persons displaced across borders in the context of disasters and to set a protection agenda for future action at domestic, regional and international levels that will feed into formal existing processes at domestic, regional and international levels.

- IOM has signed a Memorandum of Understanding with the Ministry of Environment of the Republic of Colombia in 2013, with a view to develop activities related to the integration of human mobility issues into national and local adaptation and territorial development planning. IOM and the Colombian Ministry of Environment organized a workshop in 2013 that brought together different national and local level actors, such as ministries officials and representatives of local civil society in the field. This event constituted a first step towards linking national and local adaptation planning with a focus on migration/mobility, and is potentially an example to be replicated in the future in other countries.

- Through partnership with national civil society organizations in Egypt, Somalia, Sudan and Uganda, NRC has established working groups consisting of selected national stakeholders that in addition to specific assessment of exiting legal instruments and policies (at national level) relevant for DRR, disaster response, management and displacement studies on risk, disasters induced displacement, and in some cases a cost-benefit analysis on risk reduction to informed policy development and implementation, will also advocate with the relevant government bodies to secure that displacement is included in the NAPs.

The Advisory Group on Climate Change and Human Mobility
20th August 2014

Paper no. 9: International Telecommunication Union

Overview of
ITU Activities on ICTs, the Environment & Climate Change

Information and Communication Technologies (ICTs), such as satellites, mobile phones or the Internet, are capable of playing a key role in addressing the global challenges of climate change and sustainable development.

By raising awareness of ICT's role in tackling environmental challenges including climate change, ITU is promoting innovative ICT solutions to environmental questions and is developing green ICT standards to support a sustainable future.

ITU-T STUDY GROUP 5

ITU-T is the standardization branch of ITU. In particular, ITU-T Study Group 5 (SG5) offers the ideal **platform for climate change stakeholders** to exchange knowledge and expertise with the aim of identifying policy and standard needs **to support the integration of ICTs in tackling climate change**.

SG5 develops international standards (ITU-T Recommendations) that address ICT's relationship with electromagnetic effects and climate change.
SG5 works through three working groups. They are namely:

- Working Group 1 – Damage prevention and safety
- Working Group 2 – Electromagnetic fields: emission, immunity and human exposure
- ***Working Group 3 – ICT and Climate Change***

SG5 has been developing a number of important technical standards and guidelines to assist governments in instituting policy frameworks to use information and communication technologies to tackle climate change.

SG5 has been developing a set of **standardized methodologies to assess the environmental impacts of ICTs**, both in terms of ICT greenhouse gas (GHG) emissions and the emissions savings created through green ICT applications in other industry sectors. The methodologies are being developed in cooperation with over 60 organizations including major ICT private sector organizations, the European Union, the United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Environmental Programme (UNEP).

- Recommendation ITU-T L.1400 "Overview and general principles of methodologies for assessing the environmental impact of information and communication technologies"
- Recommendation ITU-T L.1410 "Methodology for the assessment of the environmental impact of information and communication technology goods, networks and services"
- Recommendation ITU-T L.1420 "Methodology for energy consumption and greenhouse gas emissions impact assessment of information and communication technologies in organizations"

- Recommendation ITU-T L.1430 “Methodology for assessment of the environmental impact of information and communication technology greenhouse gas and energy projects”

Recommendations ITU-T L.1000 series provide requirements for a **universal charger and a universal power adapter (UPA) solution** compatible with a variety of ICT devices, reducing waste, enabling their reuse, increasing their lifetime and improving convenience to users. The “one-size-fits-all” solution also aims to reduce GHG emissions, energy consumption, demand on raw materials, and e-waste.

- Recommendation ITU-T L.1000 “Universal power adapter and charger solution for mobile terminals and other hand-held ICT devices”
  - ITU-T L.1000 will eliminate an estimated 82,000 tons of redundant chargers and at least 13.6 million tons of CO2 emissions annually
- Recommendation ITU-T L.1001 “External universal power adapter solutions for stationary information and communication technology devices”
  - ITU-T L.1001 will save an estimated 300,000 tons of e-waste annually and will reduce CO_2 emissions by between 25% and 50%
- Recommendation ITU-T L.1002 “External universal power adapter solutions for portable information and communication technology devices”
- Recommendation ITU-T L.1005 “Test suites for assessment of the universal charger solution”

SG5 is developing “**Green batteries** solution for mobile phones and other hand-held information and communication technology devices”, as in Recommendation ITU-T L.1010.

Within its work on **energy efficiency**, SG5 has developed best practices for **green data centers** to minimize their energy consumption and GHG emissions. The best practices include guidelines on management and planning of data centers; optimum design of data center buildings; selection of ICT equipment; cooling and power equipment; and data center utilization and the monitoring of data centers after construction.

- Recommendation ITU-T L.1300 “Best practices for green data centers”
- Recommendation ITU-T L.1310 “Energy efficiency metrics and measurement methods for telecommunication equipment”
- Recommendation ITU-T L.1320 “Energy efficiency metrics and measurement for power and cooling equipment for telecommunications and data centres”
- Recommendation ITU-T L.1340 “Informative values on the energy efficiency of telecommunication equipment”

SG5 is also developing a **framework for using ICTs in adaptation to the effects of climate change**, as in Recommendation ITU-T L.1500 “Framework for information and communication technologies and adaptation to the effects of climate change”.
This framework identifies and defines the basis for development of the other specific standards on the use of ICTs to adapt to the effects of climate change in countries and in cities, and to build resilient ICT infrastructure.

The group also raises awareness of ICT's role in tackling climate change and assists in the development of "green ICT" strategies by organizing dedicated symposia, workshops, training and capacity-building activities. SG5 additionally develops reports on issues related to ICTs, the environment and climate change to facilitate the exchange of technological knowledge, to assess countries' experiences with emerging sustainable technologies, and to support public and private-sector efforts in moving towards a greener, more resource-efficient global economy. The next meeting will take place in Kochi, India from 8 to 19 December 2014.

For additional information, please visit the SG5 webpage.

NEW GREEN ICT STANDARDS DATABASE

Green ICT standards and supplement development by ITU-T Study Group 5 are available on an online dynamic database.

FOCUS GROUP ON SMART SUSTAINABLE CITIES (FG SSC)

The Focus Group on Smart Sustainable Cities (FG SSC) has been established in February 2013 to assess the standardization requirements of cities aiming to boost their social, economic and environmental sustainability through the integration of information and communication technologies (ICTs) in their infrastructures and operations. The FG-SSC acts as an open platform for smart-city stakeholders - such as municipalities; academic and research institutes; non-governmental organizations (NGOs); and ICT organizations, industry forums and consortia - to exchange knowledge in the interests of identifying the standardized frameworks needed to support the integration of ICT services in smart cities. The **Terms of Reference** of the FG-SSC are available on the FG SSC webpage.

The FG SSC held its first meeting in Turin, Italy, on 8 May 2013, its second meeting in Madrid, Spain, on 17 September 2013, its third meeting in Lima, Peru, on 6 December 2013, its fourth meeting in Geneva, Switzerland, on 5-6 March 2014 and its fifth meeting in Genoa, Italy on 19-20 June 2014. FG SSC meetings are free and open to all interested parties.

At its fifth meeting in June 2014, the FG SSC **agreed** on the **definition of Smart Sustainable City** which reads as follows:

"*A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social and environmental aspects*".

Furthermore, the following **technical reports** are being developed by over 80 international experts including representatives from UNFCCC, European Union, UNESCO, etc:

1. Roadmap for SSC (including Technical Specifications for a Smart Sustainable City)
2. Technical Report on Overview of SSC and the Role of ICT
3. Technical Report on Definitions and Attributes of a Smart Sustainable City
4. Technical Report on Smart Sustainable Cities Infrastructure
5. Technical Report of Smart Buildings for Smart Sustainable Cities
6. Technical Report of Smart Water Management for Smart Sustainable Cities
7. Technical Report on ICT Infrastructure for Climate Change Adaptation in Cities
8. Technical Report on EMF Considerations in Smart Sustainable Cities
9. Technical Report on Integrated Management for Smart Sustainable Cities
10. Technical Report on Standardization Activities and Gaps for SSC and Suggestions to SG5
11. Technical Report on KPIs Definitions for Smart Sustainable Cities
12. Technical Report on KPIs Metrics Evaluation
13. Technical Report on Smart Sustainable Cities Stakeholders
14. Technical Report on Cybersecurity, Data Protection and Cyber-resilience in Smart Sustainable Cities
15. Technical Report on Anonymization Infrastructure and Open Data for Smart Sustainable Cities
16. Technical Report on Assessment of Energy and GHG from ICT in Cities

The draft technical reports can be found on the FG SSC document area.

The next meeting of the FG SSC will be held from 13 to 16 October 2014 in Geneva, Switzerland. For additional information, please visit the FG SSC webpage.

EVENTS

ITU is organizing events to raise awareness of the role of ICTs with regards to the environment and climate change.

Upcoming events

- Forum on “Sustainable smart cities: from vision to reality”
  13 (morning) October 2014, Geneva, Switzerland
- 6th meeting of the Focus Group on Smart Sustainable Cities (FG-SSC)
  13 (afternoon)-16 October 2014, Geneva, Switzerland
- 4th ITU Green Standards Week
  22-26 September 2014, Beijing, China
  - 22 September 2014: Forum on “Green ICT for a sustainable resource efficient economy”
  - 23 September 2014: Forum on "E-waste: the inconvenient truth"
  - 24 September 2014: High-Level Forum on "Setting the vision for smart sustainable cities"
  - 25 September 2014: Forum on “Using EMF to achieve the smartest sustainable city”

- 26 September 2014: Regional meeting of ITU-T Study Group 5 Regional Group for Asia and the Pacific (SG5 RG-AP)

- ITU NBTC Training for Asia-Pacific Region

  29 September – 2 October 2014, Bangkok, Thailand

For additional information, please visit the ITU Symposia and Events on ICTs, the Environment and Climate Change webpage.

PUBLICATIONS

As part of its research activities, ITU contributes to increase the body of knowledge in the area of ICTs, the environment and climate change.

Two new reports were released in 2014:

- **ITU/UNESCO/UNFCCC Report on Resilient pathways: the adaptation of the ICT sector to climate change – April 2014**
  The main objective of this report is to explore the impacts of climate change on the ICT sector and the potential for adaptation, while emphasizing the need for resilient pathways of action, enabling environments and new standards to foster the sector's approach to adaptation.

- **ITU/UNESCO Report on Partnering for solutions: ICTs in Smart Water Management – March 2014**
  Though economic growth, climate change and rising populations highly influence the availability of global water resources, strategic incorporation of ICTs in SWM can mitigate some of these challenges. Such achievements, however, are unattainable without proper stakeholder involvement and buy-in. The principal intention of this report is to go further and emphasize how ICTs can overcome some of the challenges faced in the water sector when there is proper stakeholder involvement.

Other key publications include:

- **Climate Change Adaptation, Mitigation and Information & Communications Technologies (ICTs): the Case of Ghana**
  This report focuses on exploring an increasingly important question: "How can developing countries effectively integrate ICT tools within climate change adaptation and mitigation strategies?" The contribution of this report is two-fold. It presents the potential of ICTs towards adaptation and mitigation through the concrete case of Ghana, illustrating the challenges and opportunities faced by developing countries in this field.

- **The case of Korea: the quantification of GHG reduction effects achieved by ICTs**
  The purpose of this report is to demonstrate the potential GHG reductions by ICT services, estimate the reduced volume of GHG, and identify major ICT GHG reduction enablers in Korea. This report follows the methodology described in ITU-T Recommendation L.1410 and

comprises a review of more than 30 ICT services through a literature study and global benchmarking.

- **Toolkit on Environmental Sustainability for the ICT Sector**
  The Toolkit on Environmental Sustainability for the ICT sector is an ITU-T initiative which provides plenty of detailed support on how ICT companies can build sustainability into the operations and management of their organizations, through the practical application of international standards and guidelines.

All ITU reports on ICTs, the environment and climate change are available for download by click here.

GLOBAL PORTAL ON ICTs, ENVIRONMENT AND CLIMATE CHANGE – launched in February 2014

The new ITU Global Portal on ICTs, the Environment and Climate Change offers an index to external resources relevant to ITU's areas of action in the "green ICT" field (such as climate change adaptation and mitigation, e-waste, smart sustainable cities and conflict minerals) supplying a wealth of information to those interested in learning more about how ICTs are being leveraged to boost environmental sustainability.

Paper no. 10: United Nations Environment Programme – Programme of Research on Climate Change Vulnerability, Impacts and Adaptation

PROVIA: Science for adaptation policy

The Global Programme of Research on Climate Change Vulnerability, Impacts and Adaptation (PROVIA) [1] represents an interface between the research community and decision makers and other stakeholders to improve policy-relevant research on vulnerability, impacts and adaptation (VIA), allowing scientists to coordinate and facilitate the dissemination and practical application of their research. PROVIA helps international community of practice share practical experiences and research findings by improving the availability and accessibility of knowledge to the people that need it most. PROVIA aims to do so together with collaborative partners, knowledge networks, and the larger VIA community, by identifying research needs and gaps, helping scientific community to mobilize and communicate the growing knowledge-based on VIA so that governments and other main stakeholders are able to solicit scientific knowledge into their decision making processes.

PROVIA has two overarching objectives:

- To advance policy-relevant research on vulnerability, impacts and adaptation related to climate change;
- To coordinate and facilitate the dissemination and practical application of this research for benefit and value of society.

Specific objectives of PROVIA are:

- To build a new and important interface between the research community and decision makers and other stakeholders involved in VIA issues;
- To promote communication between the community of researchers working on VIA issues and users, by providing a vehicle for exchanging new research results, encouraging cooperative work on specific research challenges, and providing a forum for improving the relevance of research;
- To identify VIA research gaps, priorities and critical emerging issues that are important to both the science and policy communities;
- To provide a new avenue by which decision makers can solicit scientific input to new critical policy issues;
- To contribute to the capacity building of young scientists in developing countries to carry out scientific assessments of climate change VIA.

PROVIA aims to improve the general understanding of, and access to, relevant science-based information on the options for and impacts of adaptation to climate change as well as impacts of adaptation action on environment and society for decision-makers and a wide range of stakeholders.

A significant obstacle that continues to impede effective action on adaptation to climate change is lack of well-organized scientific knowledge on climate change impacts, vulnerabilities and the consequences and risks of response action vs inaction. This is in part due to a lack of coordination of research and understanding of scientific information, a deficiency of location-specific and sector-specific knowledge necessary to guide more effective decisions, poor access to and dissemination of science-based information and lack of research capacity in developing countries. This challenge is addressed through supporting the Global Programme of Research on Climate Change Vulnerability, Impacts and Adaptation PROVIA), a global network of scientists, practitioners and decision-makers working towards vulnerability, impacts and adaptation (VIA). PROVIA provides international direction to coordinate research on VIA as well as an avenue by which decision makers can solicit scientific input to critical policy issues in order to facilitate

[1] http://www.unep.org/provia.

implementation of science based VIA knowledge on the ground for effective adaptation. As a component of the World Climate Programme, PROVIA provides highly demanded inputs from social and political research directly responding to needs of the UNFCCC Parties and other recipients of climate services.

Progress, current status and future directions

PROVIA became part of the World Climate Programme in 2013 and will contribute to the Global Framework for Climate Services. Since its inception in 2011, PROVIA has implemented the work plan agreed by the PROVIA Scientific Steering Committee (SSC), which included the activities, and delivered outputs as follows:

Activity 1: Defining global research priorities to support adaptation planning and implementation. A landmark report 'Research Priorities on Vulnerability, Impacts, and Adaptation: Responding to the Climate Change Challenge'[2] was published. The report compiles global VIA research priorities identified through a consultation process with both scientists and policymakers to respond to the demand for better coordination of policy-relevant research. A summary of the findings was disseminated at various fora including UNFCCC COP 19 (November 2013, Warsaw, Poland).

Activity 2: Provide advice and scientific information to the UNFCCC and other international bodies to support policy and to enable more effective adaptation. PROVIA is, in a number of ways, an active provider of scientific information to the UNFCCC process, and is now a designated partner of the Nairobi work programme on impacts, vulnerability and adaptation to climate change (NWP). Since its inception, PROVIA has been communicating scientific findings to policy-makers in order to support in decision making through the UNFCCC processes. These include updates and sharing the final products from Activity1 and 4, through the NWP and the UNFCCC SBSTA Research Dialogue[3456].

Activity 3: Strengthen communication within the Vulnerability, Impacts and Adaptation Research community and provide an interface with stakeholders affected by climate change. PROVIA is promoting communication of VIA information through a number of mechanisms, including a regularly updated PROVIA website[7] and a quarterly newsletter. PROVIA is a founder of the biennial International Adaptation Futures Conference and is also one of the strategic partners and conveners of the Conference that brings together research scientists, policy makers and practitioners from developed and developing countries to share knowledge about adaptation challenges and opportunities. In May 2014, PROVIA co-hosted the Third International Climate Change Adaptation Conference (Adaptation Futures 2014, Fortaleza, Brazil). The Fourth International Climate Change Adaptation Conference 2016 will be organized by the European Commission (EC) and PROVIA, and will be hosted by the Government of the Netherlands[8].

Activity 4: Improving practices of assessing climate change vulnerability, impacts, and adaptation. PROVIA has released 'PROVIA Guidance on Assessing Vulnerability, Impacts and Adaptation to Climate Change'[9] dedicated to climate adaptation planners. The guidance helps adaptation practitioners assess vulnerability, impacts and adaptation,

2 http://www.unep.org/provia/RESOURCES/Publications/ResearchPriorities/tabid/130750/Default.aspx.

3 http://www.iisd.ca/vol12/enb12571e.html

4 http://unfccc.int/resource/docs/2013/smsn/igo/118.pdf

5 http://www.wmo.int/pages/prog/wcp/COP/cop19/index_en.php

6 https://unfccc.int/files/methods_and_science/research_and_systematic_observation/application/pdf/14_provia.pdf

7 http://www.unep.org/provia

8 http://www.unep.org/provia/NEWSLETTER/tabid/55283/Default.aspx

9 http://www.unep.org/provia/RESOURCES/Publications/PROVIAGuidancereport/tabid/130752/Default.aspx.

covering the wide array of approaches, methods and tools with focus on practical implication to the development of specific, sectoral or place-based approaches with case studies and good practices for effective adaptation. The recommendations of the publication were featured at UNFCCC COP 19 (November 2013, Warsaw, Poland). Another report 'Supporting NAP development with the PROVIA Guidance: A user companion[10] was also produced to explain how the PROVIA Guidance can be used to better understand key concepts and available methods and tools to support UNFCCC National Adaptation Planning Process[11].

In 2013, the **PROVIA Communication and Outreach Strategy** was developed and adopted by the PROVIA SSC to help achieve its organizational objectives, and to help PROVIA engage effectively with internal and external partners and stakeholders. PROVIA implements outreach strategy through the growing network of scientists, practitioners and decision-makers to improve the availability and accessibility of VIA knowledge for effective adaptation. Apart from major outreach activities, PROVIA have also expanded its VIA network and built its outreach through social media.

In 2013, the **PROVIA Resource Mobilization Strategy** was developed and adopted by the PROVIA SSC to outline an overall strategic approach for PROVIA to efficiently and effectively mobilize resources for its work.

Recently, PROVIA has identified priorities in research, communication and training for 2014-15 that were approved by the SSC in May 2014[12], also listed below.

PROVIA priority activities for 2014-15

PROVIA has recently undergone an exercise to identify priorities in research, communication and training for 2014-15. The criteria against which potential activities were evaluated to assign priority are:

- Do the topics match the PROVIA objectives (as listed above)?
- Do the topics advance understanding of VIA amongst the research and practitioner communities?
- Will these deliver useful outputs for decision makers working in VIA in developing countries?
- Will these deliver useful outputs on timescales of 2-3 years?
- How many topics can feasibly be undertaken given the available resources?
- Is the budget available from PROVIA commensurate with the cost of undertaking the work?
- Does PROVIA have the expertise to manage and/or undertake this work?

A. Research activities: advancing policy-relevant research on VIA

A.1 Monitoring and evaluation: Develop indicators as a basis to monitor progress in adaptation as proxy for measuring adaptation impact; these indicators should permit measurement of levels of vulnerability (e.g., number of people residing in flood plains) and of progress in adaptation and resilience building (number of houses insulated, number of councils actively involved in adaptation planning). PROVIA Research Topic A.1.2

A.2 Limits to adaptation: Identification of situations where impacts exceed the capacity to adapt through incremental and/or transformational change; where current "best practice" no longer works and more radical responses are required. Identification and detection of VIA thresholds and tipping points; reviewing and applying current vulnerability indices to identify hotspots; avoiding surprises. A.1.3

A.3 Historical case studies: Evaluate examples of past interventions as a guide to the future, exploring climate related stresses and how the affected (individuals, civil society and the different tiers of government) have coped. To include case studies of investments by the public and private sectors. Identification of examples of good practice: construction

10 http://www.sei-international.org/mediamanager/documents/Publications/Climate/PROVIA-NAP-user-companion-2014.pdf.

11http://unfccc.int/files/adaptation/cancun_adaptation_framework/application/pdf/naptechguidelines_eng_high__res.pdf.

12 http://www.unep.org/provia/ACTIVITIES/NewInitiatives/tabid/55279/Default.aspx

of case studies and promotion of these good practice examples through the web page. Evaluation of the extent to which past good practice examples (mainly around responses to extreme events) can be used to inform our thinking on adaptation. Case studies of maladaptation and unintended consequences; case studies of transformational change. A.2.2; A4.3

A.4 Model inter-comparison: Conduct a comparison of models used in VIA research; utilize the results to improve the capacity of the research community to identify effective response and adaptation strategies. Advise on next generation of modelling for VIA. C.6

A.5 Scenario development: Provide organizational support for evaluation of the strengths and weaknesses of existing scenarios, especially the recent RCP and SSP scenarios, using a workshop approach. Support for development of a new generation of global and regional scenarios of climate change vulnerability, impact and adaptation as part of the current worldwide effort on climate change scenario production. C.5

A.6 Evaluation of strategies to communicate climate change science to policy and decision makers and practitioners. Understanding the knowledge requirements of this community (demand-led knowledge generation and communication); knowledge to support implementation. Matching knowledge needs to knowledge availability; understanding uncertainty and strategies for decision making under uncertainty. A.4.2

B. Engagement activities: coordinating and facilitating dissemination and practical applications of research

B.1 Biennial PROVIA Climate Adaptation Futures conference: ensure this conference occurs and is successful by identifying a host partner, working closely with them in steering committees, and participating to showcase PROVIA activities.

B.2 Communication of findings from the IPCC WGII Fifth Assessment in association with the Working Group II TSU, adding value where PROVIA has a role to play.

B.3 Develop a series of Policy Briefs to underpin and facilitate regular reporting to policymakers and civil society of the latest results from the VIA community, including especially PROVIA products. These could be in the form of an annual/semi-annual Climate Change Science Compendium providing a review of important new scientific literature on the state of knowledge about VIA. Briefs could also be produced on key emerging science papers – providing a summary for policy makers and practitioners in accessible language.

B.4 Dialogue meetings: Organize a series of regional and national science-policy dialogue meetings with policymakers and other stakeholders around the "Research Priorities on VIA" Report.

B.5 Advisory role: Provide advice and scientific information to the UNFCCC and other international and national bodies and institutions in climate change (including, for example, advice to UK DECC on country-level impact studies).

B.6 Liaison with international and national organizations relevant to PROVIA, including UNFCCC, WCRP, GCOS, UK DECC, EU Horizon 2020.

C. Development and training activities

C.1 Extension of activities on PROVIA VIA Technical Guidelines: Dissemination and training workshops for application of the Guidelines in Small Island Developing States (SIDS) (funds are available for this activity).

C.2 VIA-related training workshops: Co-organize workshops for developing country scientists and practitioners, in close cooperation with international organizations such as START and GAN (Global Adaptation Network) and regional organizations such as APN.

C.3 Mentoring program for young researchers: Support a mentoring program for young researchers from developing countries in the area of VIA research. This would be carried out in close cooperation with START and the UNEP-sponsored GAN.

PROVIA demonstrated strong potential to respond to the need of governments and other main stakeholders to support an organizing platform for the VIA scientists to communicate knowledge to policy makers. In 2013, the work of PROVIA was recognized by the UNEP Governing Council (UNEP/GC.27/11.V)[13] and by the Executive Council of WMO that included PROVIA as a component of the World Climate Programme (Resolution 4.3(2)/1 (EC-65) at the 65th Session of the WMO Executive Council[14].

Following the inclusion of PROVIA in the WCP, PROVIA has been actively engaging with the WMO ECWG-CWE[15], the GCOS Steering Committee[16]. Working modalities have been discussed at the recent meetings of WMO EC-66 Session[17], Commission for Climatology (CCI)[18] and WCRP[19] for PROVIA to cooperate with the above institutions towards the Global Framework for Climate Services (GFCS).

PROVIA will provide the platform through which this project advances the coherence of policy-relevant research on climate change vulnerability, impacts and adaptation and improves the availability and accessibility of knowledge for adaptation through knowledge-sharing events, knowledge products, and online knowledge portals. Secondly, it aims at building capacity for using this knowledge for adaptation policy-setting, planning and practice, through biannual PROVIA International Adaptation Conference, training, technical advisory services, and institutional support. PROVIA will build on the latest findings of the IPCC, in particular, Working Group 2 on Impacts, Adaptation and Vulnerability, and other subsequent research. Reputable scientific experts will be involved in report writing, training and capacity development activities and will advise on emerging issues and specific climate related threats and challenges. PROVIA will also capitalize on the scientific knowledge platforms currently being developed and the institutional repositories being created by universities and national research centres in developing countries, which go largely underutilized in the IPCC process. Finally, the project develops on the convening power in the areas of scientific coordination, dissemination of scientific information and capacity building, while it will significantly strengthen the science base and contribute to the implementation of the Science Strategy by strengthening its ties with scientists in a strategically-important area.

13 UNEP/GC.27/17.V.

14 Resolution 6 (EC-65).

15 http://www.wmo.int/pages/prog/wcp/cca/documents/ECWGCWE-7-Report_270114_Final.pdf.

16 https://www.wmo.int/pages/prog/gcos/SCXXI/Doc3.1_GCOS_Review.pdf

17 http://ec-66.wmo.int/

18 http://ccl-16.wmo.int/

19 http://www.wcrp-climate.org/JSC35/

Paper no. 11: United Nations Institute for Training and Research

UN CC:Learn Submission to the Nairobi Work Programme in the Area of Health

Resource Guide for Advanced Learning on Understanding the Climate Change and Health Interface

The UN CC:Learn Secretariat has produced a *Resource Guide for Advanced Learning on Understanding the Climate Change and Health Interface* to promote advanced understanding of the different aspects of climate change and health. The guide, which was developed with technical advice from the World Health Organization (WHO), provides a tour of the most relevant resources on the climate change and health interface, mostly drawn from within the UN System. Target groups include:

- Decision makers and technical staff in the Operational Health Sector and in other Government sectors concerned with the health dimensions of climate change;
- Stakeholders involved in the development and implementation of National Adaptation Plans (NAPs) and National Adaptation Programmes of Action (NAPAs), Nationally Appropriate Mitigation Actions (NAMAs) and National Communications;
- Representatives involved in the global UNFCCC process, such as negotiators and UNFCCC focal points;
- General Health Sector including medical staff and other professionals providing health services;
- NGO experts active in the area of climate change and/or health;
- Researchers working on health issues related to climate change; and
- Interested citizens/youth/students.

The guide is organized into three parts. Part I provides basic orientation for readers, including a brief introduction to the subject area and an outline of the following learning topics:

1. Health Impacts of Climate Change
2. Health-related Vulnerability and Adaptation (V&A) Assessments
3. Early Warning Systems for Health Risks
4. Building Resilience of the Health System
5. National Strategies and Action Plans on Health Adaptation to Climate Change
6. Monitoring and Evaluation of Programmes on Health Adaptation to Climate Change
7. Engagement with Other Health-determining Sectors
8. Health Co-benefits of Mitigation and Adaptation Policies and Programmes

Part II lists available written learning resources as well training courses currently being offered, organized by learning topic. Part III provides more detailed factsheets and further links to source material. This Guide is part of a series of Resource Guides developed through UN CC:Learn to facilitate access to existing state-of-the-art materials relevant for climate change learning on particular topics.

About UN CC:Learn

UN CC:Learn is a partnership of more than 30 multilateral organizations supporting countries to design and implement systematic, recurrent and results-oriented climate change learning. At the global level, the partnership supports knowledge-sharing, promotes the development of common climate change learning materials, and coordinates learning interventions through a

collaboration of UN agencies and other partners. At the national level, UN CC:Learn supports countries in developing and implementing national climate change learning strategies. Through its engagement at the national and global levels, UN CC:Learn contributes to the implementation of Article 6 of the UNFCCC on training, education and public awareness-raising, and the 2012-2020 Doha Work Programme. Funding for UN CC:Learn is provided by the Swiss Government and UN partners. The Secretariat for UN CC:Learn is hosted by the UN Institute for Training and Research (UNITAR).

For further information please visit www.uncclearn.org or contact uncclearn@unitar.org

Paper no. 12: World Health Organization

For Submission to the SBSTA request for materials

Introduction

The following information summarize the most relevant activities that WHO has been carrying out in the area of Climate Change and health, divided in three categories as per requested by SBSTA.

Category: Tools and Methods that are available and implemented for adaptation planning addressing health.

Title: Advanced Learning Package (ALP) on climate change and health
Type of document: Training materials
Description: This initiative aims to support Member States and development partners in designing and implementing results-oriented and sustainable learning to address climate change. It has two main components related to: a.) the development of a One *(single)* UN Climate Chance training package; and b.) the implementation of pilot country projects. Under the UN Climate Change training package, health was identified as one out of six initial priority areas to be supported with in-depth learning by the development of an ALP (Advanced Leaning Package), which consists of a compilation of available UN resources on climate change and health, as identified by countries, under the following priority learning topics: 1. Health impacts of climate change; 2. Health-related Vulnerability and Adaptation (V&A) Assessments 3. Early Warning Systems for Health Risks; 4. Building Resilience of the Health System ; 5. National Strategies and Action Plans on Health Adaptation to Climate Change; 6. Monitoring and Evaluation of Programmes on Health Adaptation to Climate Change; 7. Engagement with other Health-determining Sectors; 8. Health co-benefits of mitigation and adaptation policies and programmes Available learning materials include WHO as well as other UN relevant tools and resources. A limited number of key external resources were also included. The process of development of this resource served also to map current gaps in knowledge and technical guidance to building resilient health systems.
Website: http://www.uncclearn.org/
Partners involved: This product was developed under the UN CC: Learn, an UN initiative financially supported by the Swiss Government and hosted by UNITAR.
Status: Finalized

Title: Vulnerability and Adaptation Assessment (V&A) guidance
Type of document provided: Guidance
Description: This document is designed to provide basic and flexible guidance on conducting a national or subnational assessment of current and future vulnerability (i.e. the susceptibility of a population or region to harm) to the health risks of climate change, and of policies and programmes that could increase resilience, taking into account the multiple determinants of climate-sensitive health outcomes. The assessment outcome provides information for decision-makers on the extent and magnitude of likely health risks attributable to climate change, and priority policies and programmes targeted to prevent and reduce the severity of future impacts.
Website: http://www.who.int/globalchange/resources/adaptationresources/en/
Partners involved: None
Status: Finalized

Title: Atlas on Health and Climate
Type of document provided: Technical Report
Description: The Atlas of Health and Climate is a product of a unique collaboration between the meteorological and public health communities. It provides sound scientific information on the connections between weather and climate and major health challenges. These range from diseases of poverty to emergencies arising from extreme weather events and disease outbreaks. It also includes environmental degradation, the increasing prevalence of noncommunicable diseases and the universal trend of demographic ageing.
Website: http://www.who.int/globalchange/publications/atlas/en/
Partners involved: WHO-WMO
Status: Finalized

Title: Mainstreaming gender in health adaptation to climate change programmes
Type of document provided: Guidance
Description: This guide targets programme managers who work in climate change and health adaptation, and provides them with practical information and concrete guidance to mainstream gender throughout all four phases of the project cycle: identification, formulation and design, implementation, and monitoring and evaluation.
Website: http://www.who.int/globalchange/publications/en/
Partners involved: This is a product of the collaboration between the WMO and the WMO

Status: Finalized

Title: WHO guidance to protect health from climate change through health adaptation planning (H-NAP)

Description:
This guide targets decision makers in charge of planning adaptation actions for health protection from climate variability and change. *Using broadly the UNFCCC, and the NAP process in particular, as a framework*, the present guidance aims to ensure that the health sector works with partners in the environment and other related communities, and follows a systematic process to:

1. Engage in the overall NAP process at the national level
2. Identify national strategic goals for building health resilience to climate change (if countries have not done so through, for example, a National Health Adaptation Strategy).
3. Develop a national plan with prioritized activities to achieve these goals within both a specific time period and given available resources.

The guidance outlines the process to be followed to ensure these goals are achieved. In addition, further guidance on how to plan for building climate resilient health systems at country level is provided.

Website: http://www.climateandhealthalliance.org/resources/international-guidance

Partners involved: WHO

Status: Finalized

Title: Update guidance on global funding opportunities on CCH

Type of document provided: Guidance

Description:
This product generates constant mapping and updates of available entry points for health adaptation to climate change funding under the main global climate change funding streams as well as those under bilateral and international donors.

The current guidance can be found through the following link and includes four categories for funding source analysis:

- For climate change adaptation implementation
- For adaptation integration in health development
- For climate and health research
- For mitigation

Website: http://www.who.int/globalchange/resources/adaptationresources/en/index3.html

Partners involved: WHO

Status: Finalized

Title: Training on Climate Change Diplomacy and Health

Type of document provided: Training materials

Description:
This product was developed to train the selected representatives of Ministries of Health and Environment participating as negotiators in the Conference of the Parties to the UNFCCC. The content includes topics such as: health implications of climate change; health issues in the UNFCCC negotiations; general information on the relevant negotiating groups and forums; history of the negotiations under the UNFCCC and their relevance for health; and key issues in recent international climate negotiations and their relevance for health.

Website:

Partners involved: WHO

Status: Finalized

Title: Human Health and Climate Change in the Small Island States of the Pacific

Type of document provided: Technical report-guidance oriented

Description:
This Report summarizes the work carried out by the World Health Organization, in partnership with member states of the Pacific region, during the period 2010-2013, assessing human health vulnerabilities to climate change and the planning of adaptation strategies to reduce those risks. The document highlights key threats to wellbeing, health and physical security and the priorities for action. In relation to the latter, this report provides an evidence-based framework and a clear, feasible and regionally-specific roadmap for the implementation of adaptation measures to protect the health of Pacific island communities from the adverse impacts of climate change.

The aims of this Synthesis Report are to describe the methodology employed to assess the vulnerabilities of Pacific island countries to the health impacts of climate change; summarize the evidence linking climate change with health impacts in the Pacific region; and provide an overview of adaptation strategies to manage those threats to health.

Website:

Partners involved: WHO in partnership with member states of the Pacific region (Partners TBC)

Status: Finalized

Title: Arab environment. Climate Change: impacts of climate change on Arab countries (EMRO)

Type of document provided: Technical Report

Description:
The 2009 AFED report has been designed to provide information to governments, business, academia and the public about the impact of climate change on the Arab countries, and encourage concrete action to face the challenge. The report analyses the Arab response to the urgent need for adaptation measures,
and uses the latest research findings to describe the vulnerabilities of natural and human systems in the Arab world to climate change and the impacts on each sector of human activity. The systems selected for this study include: coastal areas, food production, fresh water, human health, bio-diversity, in addition to the consequences on housing, transport, and tourism. In an attempt to help shape adequate policies, the report discusses options for a post-Kyoto regime and outlines the state of international negotiations in this regard.

Website: http://www.afedonline.org/afedreport09/

Partners involved: UNDP Regional Bureau for Arab States

Status: Finalized

Title: Protecting health in Europe from Climate Change (EURO)

Type of document provided: Guidance

Description:
This publication focuses on the current and projected health effects related to climate change and on the challenges they present to health systems in the WHO European Region. It provides up-to-date information and practical guidance on specific actions that can be taken now, at different levels, to protect health from climate change. It also highlights the opportunity of strengthening the links and developing synergy with other instruments, such as those developed to address health security. In doing so, it aims at bringing considerations about climate change on the agenda of health system governance, while bringing health considerations on the agenda of those responsible for addressing climate change in other sectors.

Website: http://www.euro.who.int/__data/assets/pdf_file/0016/74401/E91865.pdf

Partners involved: WHO Europe

Status: Finalized

Title: Climate Change Economics Tool (EURO)

Type of document provided: Guidance

Description:
This economic valuation tool
can help to analyse these costs and benefits. It comprises three main economic components:
• the health damage costs associated with a "business-as-usual" (i.e. no adaptation) scenario under climate change;
• the costs of undertaking the necessary measures to minimize or prevent the health damage of climate change; and
• summary indicators of the economic performance of adaptation measures, in terms of either cost – effectiveness or economic benefits versus costs.

Website:
http://www.euro.who.int/__data/assets/pdf_file/0018/190404/WHO_Content_Climate_change_health_Druck II.pdf

Partners involved: WHO Europe

Status: Finalized

Title: Guidance on water supply in extreme weather (EURO)

Type of document provided: Guidance

Description:
This Guidance is intended to provide an overview of why and how adaptation policies should consider the vulnerability of and new risk elements for health and environment arising from water services management during adverse weather episodes. This document addresses a broad audience, including policymakers, environment, health and water resources professionals, and water services managers. An integrated environment and health approach steered the development and discussion of the Guidance.

Website:
http://www.unece.org/fileadmin/DAM/env/water/whmop2/WHO_Guidance_EWE_Final_draft_web_opt.pdf

Partners involved: WHO Europe

Status: Finalized

Title: Heat-Health Actions plans (EURO)

Type of document provided: Guidance

Description:
This publication addresses policy-makers in the health sector as well as medical professionals. It describes the general principles and core elements of national or regional heat–health action plans, gives options and models for interventions and practical examples and tools from various European countries.

Website: http://www.euro.who.int/__data/assets/pdf_file/0006/95919/E91347.pdf

Partners involved: WHO Europe

Status: Finalized

Title: Global Framework for Climate Services (GFCS) Adaptation Programme in Africa-Health component

Type of document: Link to project information

Description:
Over 3 years, this project will explore how health actors in Malawi and Tanzania can better use climate information to inform health planning, research, and public health responses to climate-related health risks, such as cholera, malaria, malnutrition, and disasters.
Health Project activities fall in 7 categories, and take place at both the national and sub-national level.

- Mainstreaming Climate Change into Health Policy
- Inter-sectoral coordination mechanisms for climate information
- Vulnerability and Adaptation Assessment
- Capacity Building
- Developing and pilot testing 2 different climate services for health at the local level
- Awareness raising and risk communication
- Operational Research on health sector needs for climate services

Website: http://www.gfcs-climate.org/Norway_2

Partners involved: WMO-WHO, funded by the government of Norway.

Status: Ongoing (completion expected by 2016)

Title: WMO and WHO Joint Office for Climate and Health

Type of document: Link to press release

Description:
A new WHO/WMO Climate and Health office has been established in response to the increasing demand from the health community for improved access to climate and weather products like regional climate predictions, hazard warning and seasonal outlooks. The office will ensure that there is in-house health expertise at WMO and a focal point for liaison with WHO to respond to the needs of different departments within WHO.

The join office has been created under the auspices of the Global Framework for Climate Services (GFCS) and will contribute to increase awareness, build capacity, and connect meteorological services with experts in the health sector in an active partnership for climate adaptation and risk management.

Website: http://www.wmo.int/pages/mediacentre/press_releases/pr_996_en.html

Partners involved: WMO-WHO

Status: Ongoing

Category: Good practices and lessons learned in relation to adaptation planning, including monitoring and evaluation, addressing health.

Title: UNDP/WHO GEF Project "Piloting Climate Change Adaptation to Protect Human Health"

Type of document provided: Mid-term Review

Description:
The Pilot Program on Climate Change Adaptation to Protect Human Health is the first full-size project funded by the Special Climate Change Fund that pilots and demonstrates how adaptation can reduce health vulnerability to climate change (including climate variability).

The objective of this mid-term review was to determine progress towards achievement of the four global Outcomes.

- Outcome 1: Establish early warning and response systems with information on the likely incidence of climate-sensitive health outcomes.
- Outcome 2: Improve the capacity of health sector institutions to respond to climate-sensitive health risks based on early warning information.
- Outcome 3: Pilot disease prevention measures in areas of heightened health risk due to climate change.
- Outcome 4: Promote innovation in adaptation to climate variability and change through facilitating cooperation among participating countries.

The mid-term review focused on: the effectiveness, efficiency, and timeliness of program implementation; issues requiring decisions and actions on the strength and weaknesses of the project design; directional and implementation changes that will build on the strengths and correct weaknesses in program design, implementation, and management; and lessons learnt for future monitoring and evaluation of health adaptation projects. The mid-term review was conducted using a participatory approach, consulting with and keeping informed UNDP/GEF Task Managers and WHO and other relevant staff.

Website: http://www.adaptationlearning.net/project/piloting-climate-change-adaptation-protect-human-health
http://www.who.int/globalchange/climate/gefproject/en/

Partners involved: Funded by the Special Climate Change Fund. Implementing agency: UNDP, executive agency: WHO.

Status: Ongoing (end date May 2015)

Title: Adaptation to Climate Change to Sustain Jordan's MDG Achievements *

Type of document provided: Final report

Description:
The rationale of this joint programme is to address threats to health, food security, productivity, and human security brought about by aggravated water scarcity that is induced by climate change as key to sustain Jordan's human development achievements and growth. The strategy of the joint programme is to enhance the capacity to adapt to climate change by addressing Jordan's long-term adaptation needs. The joint programme seek to develop Jordan's key government and civil society's capacities to adapt to climate change threats to health, food security, productivity, and human security under the conditions of severe water scarcity that is expected to be aggravated by climate change.

- Outcome 1: Sustained access to improved water supply sources despite increased water scarcity induced by climate change
- Outcome 2: Strengthened adaptive capacity for health protection and food security to climate change under water scarcity conditions

Website:
http://www.mdgfund.org/es/program/adaptaci%C3%B3nalcambioclim%C3%A1ticolosodmmantenerjordanialogros

Partners involved: funded by the Government of Spain and implemented by
4 UN agencies (UNDP, UNESCO and WHO), five main national partners (Ministry of Planning and International Cooperation, Ministry of Health, Ministry of Agriculture, Ministry of Education and Ministry of Environment) and several other stakeholders such as IUCN - an international NGO - and a water supply company.

Status: Finalized

Title: Climate Change and Health in the Western Pacific Region Synthesis of Evidence, profiles of Selected Countries and Policy Direction

Type of document: Synthesis report

Description:
This document is a unique collaboration between climate change and health stakeholders from many Member States in the WHO Western Pacific Region. It describes the efforts and initiatives of dedicated experts in the field, and it contains lessons for policy-makers and scientists across the Region. This report, as well as an accompanying Synthesis of Climate Change and Health in the Pacific, document the climate change and health adaptation plans and activities of several countries in the region and can be referenced by governments, researchers and the public as

resources that will increase awareness of the health impact of climate change and encourage similar initiatives elsewhere.
Website:
Partners involved: WHO with Member States in the WHO Western Pacific Region**.**
Status: Finalized (to be launched soon)

Title: Lessons learned from the first five years of implementation of health adaptation projects in low and middle income countries (2008-2013)
Type of document provided: Lessons learnt

Description: A Synthesis report on lessons learned from the first five years of implementation of health adaptation projects in low and middle income countries (2008-2013) is under development, coordinated by WHO HQ. The synthesis report will draw from successful practices1 and effective interventions identified in evaluation reports from health adaptation projects that have either been completed (e.g. those funded by the MDG-F in Jordan and China, and the Philippines, and by the German Government in Central Europe and Asia) or that are nearing completion (the WHO/UNDP Global project on health adaptation, funded by the Global environmental Facility). It will also try to draw on experience in scaling up interventions in other areas of health, with a focus on other environmental health areas, such as water and sanitation.
Website:
Partners involved: Funded by the Special Climate Change Fund. Implementing agency: UNDP, executive agency: WHO**.**
Status: Under development

Title: Adaptation to Climate Change: A Vulnerability Assessment for Sudan (EMRO)
Type of document provided: Vulnerability assessment and lessons learnt
Description: This study assesses Sudan's vulnerability to climate change. By overlaying maps of population distribution, poverty, rainfall distribution and variability, and incidence of environmental hazards, it has been possible to identify the states which are most vulnerable to climate change. It also outlines some of the actions being taken to help the country to adapt to a changing climate, and makes recommendations for how such actions could become more effective.
Website: https://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/5850/14855IIED.pdf?sequence=1
Partners involved: IIED
Status: Finalized

[1] The document intends to highlight successful interventions for potential scale-up, but also "what did not work" as difficulties encountered during the various project cycles.

Title: Climate Change Adaptation options and good practices for the Arab region(EMRO)
Type of document provided: Lessons learnt
Description: The study examines current evidence provided by earlier studies and research in order to provide the UNDP-Arab Region Office with an improved understanding of the potential adaptation to climate change impacts for the Arab region. It provides an overview of the options for adaptation in order to minimize potential negative effects.
Website: http://www.arabclimateinitiative.org/knowledge/background/Balgis_CC_Adaptation-AG-Clean2.pdf
Partners involved: UNDP Regional Bureau for Arab States
Status: Finalized

Category: Good practices and lessons learned in relation to linking national and local adaptation planning.

Title: Building adaptation to climate change in health in least developed countries through resilient WASH
Type of document provided: Evaluation Report
Description: The impact of this project is expected to be greater health protection from climate change for the poorest populations, with a target that 25% of Low Income Countries (LICs) and Low-Middle Income Countries (LMICs) have health adaptation plans and policies in place by 2017. The outcomes directly attributable to this programme are: i) An improvement in health adaptation practice and a reduction in vulnerability for the four pilot countries (Tanzania, Bangladesh, Ethiopia and Nepal) ii) Improvements in adaptation in the health sector in a wider set of low and low-middle income countries iii) The specific outputs will relate to international level guidance, national level policies, utility management level, and household and community level.
Website: http://www.who.int/globalchange/projects/wash/en/
Partners involved: WHO and DFID
Status: On-going (to be finished in 2017)

Title: Adaptation to climate change in the health sector: Improving engagement, evidence and action in sub-Saharan African countries
Type of document provided: Link to project information

Description: The overall objectives of the programme 'Adaptation to Climate Change in the Health Sector' focus on a strengthened positioning of health issues in the international debate on adaptation to climate change and a higher prioritization at a national level. This project aims to concentrate on the health sector in African and South-East Asian countries by improving Engagement, Evidence and Action
Website: http://www.who.int/globalchange/projects/adaptation-climate-change/en/
Partners involved: WHO and GIZ
Status: On-going (to be finished in 2015)

Paper no. 13: World Meteorological Organization

WMO SUBMISSION TO NAIROBI WORK PROGRAMME IN THE AREAS OF WATER AND HEALTH

August 2014

1 WATER

1.1 Associated Programme on Flood Management (APFM)

The Associated Programme on Flood Management (APFM) is a joint initiative of the World Meteorological Organization and the Global Water Partnership. The APFM facilitates the dialogue to governmental agencies and provides a platform for guidance on flood management policy, strategy and institutional development. It promotes flood risk awareness, provides technical information with a multi-disciplinary approach and supports actions towards implementation of the Integrated Flood Management (IFM) concept.

More specifically, the APFM's goals are to:

- Promote the principles of Integrated Flood Management (IFM)
- Help assimilate IFM within the overall Integrated Water Resources Management
- Identify gaps in present flood management practices, and to stimulate partners to meet critical needs within their available human and financial resources
- Support IFM actions at all levels: national, regional, local and river basin-wide
- Provide a platform for a common strategic vision on IFM issues, and to promote the implementation of effective policies and strategies worldwide
- Promote awareness about flood management issues, build political commitment and trigger action at all levels
- Provide advice and relevant information to institutions and decision-makers on flood management issues.

In terms of practical activities, APFM is operating in three major fields:

1) Compilation of guidance and advisory materials;
2) Capacity building on IFM, and creation of a network on IFM; and
3) Development of pilot projects and support in the implementation of National Strategies for IFM.

The APFM activities are also reflected in the structure and functioning of its IFM HelpDesk, a facility that provides guidance on flood management policy, strategy, and institutional development for countries that want to adopt the IFM concept. Users have the possibility either to request custom-made technical support through the Get Help function or to find flood management solutions by themselves using the literature in the Help Yourself section.

Although freely accessible online, the Helpdesk has been especially conceived for some categories of audience, in particular government agencies in charge of flood management, river basin organizations, bi- and multilateral development agencies in the field of water resources and disaster management, community-based organizations and NGOs engaged in flood preparedness, universities and other capacity building institutions for the water and disaster management sectors.

The good performance of the HelpDesk is made possible by the active support of the Support Base Partners (SBPs), a network of professional institutions and organizations contributing their expertise and technical backup in various areas of activity. These range from advice and advocacy in policy formulation as well as technical issues to facilitation of training courses on IFM to development of tools and capacity building materials.

1.2 Guidance Materials

In terms of guidance materials, APFM has published an IFM Policy Series and a Flood Management Tool Series. This last one constitutes an insight on various specific aspects of flood management targeted to flood management practitioners to help them gain quick access to relevant technical guidance. These Tools incorporate various aspects within the framework of an integrated approach to flood management. The compilation of the tools is an ongoing process and as such these tools should be considered as living documents being updated periodically.

1.3 Capacity Building

The Associated Programme on Flood Management has developed a comprehensive training curriculum on flood management. Over the past years, several training workshops were conducted in various countries. In this regards, APFM is supported not only by the World Meteorological Organization and the Global Water Partnership, but also through contributions from its Support Base Partners, i.e. a network of external institutions supporting the activities of the IFM HelpDesk. Trainings are organized on a demand-driven basis, and individually tailored to the requesting parties and governments. Scope, duration and topics vary but can generally be divided into the following:

- Short vocational trainings or workshops (3-5 days) on the principles and aspects of Integrated Flood Management for policy makers, development planners, and water and disaster management professionals with a priority on the national and basin level;
- Training of trainers workshops (1-5 days) for capacity building institutions targeting vocational training of relevant professionals; and
- National workshops analyzing the current flood management situation and developing a strategic national framework in accordance with the Integrated Flood Management concept.

1.4 Pilot Projects

A series of pilot projects are under implementation together with GWP's Regional and Country Water Partnerships to test and demonstrate the applicability of the principles of Integrated Flood Management. Experiences and lessons learned will be used to prepare detailed plans for regional projects.

1.4.1 Community-based approaches to Flood Management

Building on the successful implementation in earlier APFM pilot projects in Bangladesh, India and Nepal, the experiences gained have been extended in Southeast Asia. Implementation is being carried out in Thailand and Lao PDR in close cooperation with the Asian Disaster Preparedness Centre (ADPC). The aim of this pilot project is to increase flood disaster resilience of flood prone communities in selected vulnerable areas where riverine and flash floods pose a prominent risk. Following the concept of integrated flood management, the project seeks to improve self-help capabilities to reduce the negative impacts of floods, while optimizing the positive effects of floods. The project commenced in 2013 and will be conducted over a period of 30 months.

1.4.2 Integrated Coastal Flood Management

Coastal flood management is seen in the context of flood caused by storm surges and involves early warning as well as long management and flood preparedness. A pilot project is being implemented in the framework of the existing Coastal Inundation Flood Demonstration Project (CIFDP), a joint undertaking of the Joint Commission for Ocean Meteorology and the WMO Commission of Hydrology. At the same time, APFM is also involved in a European Council funded research project titled "Preparing for Extreme And Rare events in 100oastal regions" (PEARL), as part of a Consortium led by UNESCO-IHE and involving various Universities.

1.4.3 Transboundary Flood Management

In the context of integrated river basin management in transboundary basins, the transboundary approach of flood management aims at harmonizing activities in river basins in order to balance both risks and benefits from flooding in the basin. Cooperation with UNECE and Zoï Environment Network has been established in this regard. The selection of areas of implementation is still under discussion.

1.4.4 Reducing the Vulnerability to Flash Floods

This pilot project, implemented in seven countries in Central and Eastern Europe, focused on impacts of and responses to various flood events with a focus on flash floods. During a first phase, twelve events from the seven participating countries were studied and compiled in a summary report. During the second phase, the gaps identified in the earlier phase were addressed, increasing community resilience to cope with the effects of flash floods, with special regard to various aspects of the flash floods including early warning systems and their effectiveness.

1.4.5 Development of National Flood Management Strategies

National Strategies on Flood Management were developed with an integrated approach in support to the Governments of Kenya, Zambia, Thailand and Lao PDR.

2. Integrated Drought Management Programme (IDMP)

General:

2.1 The WMO/GWP Integrated Drought Management Programme supports stakeholders at all levels by providing policy and management guidance and by sharing scientific information, knowledge and best practices for Integrated Drought Management.

While the spatial scope is global, the results are be policy relevant and tailored to specific regional and national needs and requirements. The overarching approach proposed for the Programme centers around four key principles:

1) To shift the focus from reactive (crisis management) to proactive measures through drought mitigation, vulnerability reduction and preparedness;

2) To integrate the vertical planning and decision making processes at regional, national and community levels into a multi-stakeholder approach including key sectors, especially agriculture and energy;

3) To promote the evolution of the drought knowledge base and to establish a mechanism for sharing knowledge and providing services to stakeholders across sectors at all levels;

4) To build capacity of various stakeholders at different levels.

The Programme contributes to drought-related efforts of existing organizations and agencies with regard to:

- Better scientific understanding and inputs for drought management;
- Drought risk assessment, monitoring, prediction and early warning;
- Policy and planning for drought preparedness and mitigation across sectors; and
- Drought risk reduction and response.

More information available at: www.droughtmanagement.info

2.2 Specific activities:

Guidelines

WMO/GWP Integrated Drought Management Programme (IDMP) (2014) ***National Drought Management Policy Guidelines – A Template for Action*** **(D.A. Wilhite).** Tools and Guidelines Series 1. WMO, Geneva, Switzerland and GWP, Stockholm, Sweden.

The National Drought Management Policy Guidelines provide a template for action that countries can use in the development of a national drought management policy and drought preparedness/mitigation plans. The process is structured in 10 steps that can be adapted by countries to reflect their institutional, infrastructure, legal, socio-economic and environmental context.
The approach has influenced the development of drought policies in Brazil, Mexico, Morocco and the USA, of which case studies are included in the guidelines. The guidelines will be continuously updated based on the experiences gained in the guidelines' application. The guidelines respond to a need for action oriented drought policies, which Governments articulated at the High-Level Meeting on National Drought Policies.
Guidelines available at: http://www.droughtmanagement.info/guidelines/

2.3 Regional Programmes:

2.3.1 IDMP Central and Eastern Europe, based at GWP offices for Central and Eastern Europe, is providing practical advice on how droughts can be managed with the goal increase capacity and ability of countries in Central and Eastern Europe for adaptation to climate variability and change by enhancing resilience to drought. Outputs that are coming forward range from • Guidelines for the preparation of drought management plans within river basin management plans according to European Union Water Framework Directive • National consultation dialogues to discuss preparation of drought management plans • Compendium of good practices • Drought information exchange platform • Demonstration projects testing innovative solutions for better resilience to drought • Capacity building trainings and workshops on national and regional levels
More information available at: http://www.droughtmanagement.info/idmp-activities/idmp_cee/

2.3.2 Preparations are ongoing for **two regional IDMPs. One in the Horn of Africa and one in West Africa**, each based in the regional offices of GWP in Uganda (GWP Eastern Africa) and Burkina Faso (GWP West Africa). Both programmes are aiming to close the gap and provide an impetus to existing drought management initiatives in these regions. The WMO Regional Climate Centres and the GWP Country Water Partnerships will play a crucial role to bring the key actors not only from the water and climate communities but also from the agriculture and energy community together.
The **IDMP Horn of Africa** focuses on Eritrea, Ethiopia, Kenya, Sudan and Uganda. Djibouti, Somalia and South Sudan will be considered as for some components of the program.
More information available at: http://www.droughtmanagement.info/idmp-activities/idmp_hoa/

2.3.3 IDMP West Africa will focus its work firstly in targeted localities in West Africa, the countries are currently being identified and then share lessons learned with other neighbouring countries through the Country Water Partnerships and the Regional Climate Centre and other interested stakeholders.
More information available at: http://www.droughtmanagement.info/idmp-activities/idmp_waf/

2.3.4 In **South Asia** the IDMP is collaborating with IWMI and GWP South Asia in developing a **South Asian Drought Monitoring System (SA DMS)**, to monitor drought in Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka.
More information available at: http://www.droughtmanagement.info/idmp-activities/south_asia/

3. CLIMATE AND HEALTH

Global Framework for Climate Services (GFCS) Adaptation Programme in Africa- Overview for Health Partners

3.1 Background

The impacts of climate change are now being observed on all world continents. Africa remains the most vulnerable and faces increasing challenges to improve food security, nutrition and health,

provide adequate water, and protect populations from extreme weather events, due to the shocks and pressures climate change is placing on their sustainable socio–economic growth. African nations must act quickly to understand and manage the risks of climate change and appropriately adapt. Unfortunately, currently, an estimated 70 nations worldwide have inadequate or no climate services1 to provide the basic and essential information for these efforts, and thus these nations remain ill equipped to tackle the impacts of climate variability and change.
The Global Framework for Climate Services (GFCS) was launched in 2012 as a global partnership of climate service producers (i.e. National Meteorological Agencies) and users of climate information and services (i.e. priority sectors of Agriculture, Water, Health, and Disaster Sectors) to work together to improve the quality, quantity, and use of climate and weather services worldwide. This new programme serves to mobilize partners to implement the framework for climate services at national level in order to improve cooperation, capacity, and use of accessible and accurate climate services that can inform climate adaptation.

3.2 Programme Goal

The ultimate goal of the programme is to increase the resilience of people most vulnerable to the impacts of weather and climate-related events through the development, implementation and evaluation of a multi-sectoral Climate Services programme. The programme will help build integrated frameworks for climate services at the national level and focus on supporting the existing needs of the food security, health, and disaster risk reduction to make better decisions for climate risk management and climate adaptation.

3.3 Programme and Partners

This project is governed by a grant agreement signed between World Meteorological Organization and the Norwegian Ministry of Foreign Affairs for a multi-agency Global Framework for Climate Services Adaptation three–year (2014 – 2016), with a total budget of USD 10 million. The focus countries for this programme are Tanzania and Malawi**;** the programme will also have a component in food security and nutrition in Ethiopia. The Recipient Agency will hold responsibility to carry out all the logistics for the implementation of financed and agreed activities.
The programme uses a partnership approach, involving seven international agencies and research institutes:

- World Meteorological Organization (WMO)
- World Health Organization (WHO)
- World Food Programme (WFP)
- International Federation of Red Cross and Red Crescent Societies (IFRC) including Norwegian Red Cross and Red Cross/Red Crescent Climate Centre
- CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)
- Centre for International Climate and Environmental Research – Oslo (CICERO) and the Chr. Michelsen Institute (CMI)

This is the first collaboration between the above agencies on delivering climate services. WMO serve as the lead for the partnership and leads the coordination with local partners: Tanzania Meteorological Agency (TMA) and the Ministry of Climate Change and Meteorological Services in Malawi.

3.4 The Health Problem

This project addresses a two-fold public health problem. First, climate change has real impacts on health priorities in Africa, such as vector and water borne disease, malnutrition, and disaster related threats. The health sector recognizes there is a distinct need to begin to adapt. Some steps

have been taken by Ministries of Health to formulate action plans, such as the Libreville Process for Health and Environment, and Framework for Public Health Adaptation to Climate Change in the Africa Region (AFR/RC61/10). However, secondly, for health policy makers to be able to integrate climate change into health policy, and for health managers and technical professionals to manage climate risks and adapt to climate change, specific capacity and information about the climate and how it affects health at different timescales is needed. Unfortunately, in many highly vulnerable countries such as Tanzania and Malawi, this information is either not available, not being used, or the capacity and necessary cooperation to use available tools is lacking. This presents a barrier to effective climate risk management and climate adaptation.

3.5 Project Organization

A global project steering committee representing international partner organizations, serves to coordinate across agencies and provide technical support to the local implementing agencies. On the climate service provider-side, WMO will strengthen the capacity of the National Meteorological Authorities to provide climate information and services. On the user-side, sectoral partners (i.e. WHO, WFP, CCAFS and IFRC), will work with their respective sectoral authorities to build capacity to mainstream the use of these services into sectoral planning and programming. Research partners (CICERO, CMI) will be working with local researchers, to capture lessons for future programming. For the Health Sector, this project will be implemented by the Ministries of Health of Malawi and the Republic of Tanzania, in partnership with WHO and other national health sector actors.

3.6 Health Project Overview

Over 3 years, this project will explore how health actors in Malawi and Tanzania can better use climate information to inform health planning, research, and public health responses to climate-related health risks, such as cholera, malaria, malnutrition, and disasters.

Health Project activities fall in 7 categories, and take place at both the national and sub-national level.

- Mainstreaming Climate Change into Health Policy
- Inter-sectoral coordination mechanisms for climate information
- Vulnerability and Adaptation Assessment
- Capacity Building
- Developing and pilot testing 2 different climate services for health at the local level
- Awareness raising and risk communication
- Operational Research on health sector needs for climate services

3.7 Desired Outcomes in Malawi and Tanzania:

- **Health policy-makers and professionals become aware** of climate risks to risks as well as the existing policies, tools, resources, and solutions to better manage these risks
- The **Ministry of Health** take ownership to address climate change, and strengthen the continued partnership with National Met Services and other sectors to support these efforts.
- **Health priorities become integrated within UNFCCC National Adaptation Plans (NAPs) and a priority area in the Nairobi Work Programme (NWP)**, in order to improve climate change adaptation.
- **Capacity of health professionals** to identify needs, communicate health risks, and use tailored climate products and services to support health adaptation is increased.

- **Health risks sensitive to climate change are assessed and prioritized,** along with existing capacity to use climate information for risk management.
- **Quality climate products become available and adopted** as public health tools that improve *health research, monitoring and epidemiological surveillance, early warning and preparedness, and health system strengthening,* strengthening core elements of health risk management and adaptation.

3.8 WMO and WHO Joint Office for Climate and Health- A Success Story

The World Health Organization and the World Meteorological Organization have joined forces to tackle the increasing risks to human health posed by weather and climate hazards such as extreme temperatures, floods, droughts and tropical cyclones.

A new WHO/WMO Climate and Health office has been established under the auspices of the Global Framework for Climate Services (GFCS) to promote the coordinated development and use of climate services to improve public health. It will increase awareness, build capacity, and connect meteorological services with experts in the health sector in an active partnership for climate adaptation and risk management.

There have been great strides in both climate and health science in recent years. By working together, WMO and WHO can maximize the benefits of these advances for the greatest possible number of people. Climate change is leading to an increase in extreme events such as heat-waves and heavy rains which have a major impact on human health.

The move comes in response to increasing demand from the health community for improved access to climate and weather products like regional climate predictions, hazard warnings and seasonal outlooks needed to understand and manage health risks related to weather and climate and to cope with a shifting burden of disease due to climate change. The office will ensure that there is in-house health expertise at WMO and a focal point for liaison with WHO and other health partners.

Millions of people each year are affected by extreme weather events such as heat and cold waves, tropical cyclones, floods, and droughts. These events also damage or destroy health facilities and water and sanitation infrastructure, and result in unnecessary deaths and illness. Yet the most significant impacts often occur indirectly and more slowly, such as under-nutrition resulting from crop failure, respiratory diseases from poor air quality, and water-borne and vector-borne diseases. Climate-informed preparedness and prevention can greatly reduce these health risks.

3.9 Climate-smart health systems

Climate-smart health systems and services not only save lives but help increase the efficient use of limited resources by identifying and targeting vulnerable populations. For example, sand and dust forecasts are being used in the Sahel to target meningitis vaccination drives in the areas at highest risk. Seasonal climate outlooks can be effectively used in malaria control campaigns.

However, a longstanding challenge for the health community has been the ability to access, understand and apply available climate information. Likewise, climate services community often does not fully appreciate public health concerns and needs. In the past there was little dialogue between the two sectors. The new climate and health office is an important step to help bridge this gap. Stronger collaboration at the global and local levels is essential if relevant, reliable and user-friendly climate information is to effectively strengthen disease surveillance and improve preparedness for health emergencies and outbreaks of climate-related diseases such as cholera or dengue fever.

The WMO/WHO Joint Office will help to achieve the goals of the Global Framework for Climate services, an ambitious international initiative which seeks to improve and expand climate and weather services such as seasonal forecasts and drought monitors, and support their uptake by key sectors such as *health, food security, water and disaster risk reduction*.

3.10 Global Framework for Climate Services (GFCS)

The joint office will provide support in four main areas. Firstly, it will ensure that the potential contribution of meteorological services is reflected in international health policy fora, such as the World Health Assembly, and forthcoming WHO conference on health and climate in August 2014. It will also propose a strategic roadmap for WMO and the meteorological community to better support the health sector to access and use climate information and services.

Secondly, the Office will provide coordination, resource mobilization, and technical support to demonstration projects and research, beginning with the new Climate Services Adaptation Programmes in Malawi and the United Republic of Tanzania. This initiative will support collaboration between health partners and the national meteorological departments, to make better use of weather information and seasonal forecasts to enhance risk assessment and preparedness for diseases such as malaria, diarrhea and under-nutrition.

Thirdly, the joint office will strengthen coordination and collaborative initiatives between WHO and WMO, and with the wider community of practice for climate service action for health.

Fourthly, the office will provide communications and capacity development by developing awareness raising and technical guidance materials, building on the successful cooperation between WHO and WMO in the publication of *The Atlas of Health and Climate* in 2012, and forthcoming guidance on developing heat-health early warning systems.