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# **Advocacy and Capacity Building for Disaster Risk Reduction and Preparedness in Ghana Project**

## **Final Project Report**

**Prepared by:**

**UNDP**

**February 2017**

## List of Acronyms

CCA	-	Climate Change Adaptation
CREW	-	Community Resilience through Early Warning
CSOs	-	Civil Society Organizations
DRM	-	Disaster Risk Management
DRR	-	Disaster Risk Reduction
DVG	-	Disaster Volunteer Group
EOC	-	Emergency Operations Centre
GFDRR	-	Global Facility for Disaster Reduction and Recovery
GoG	-	Government of Ghana
HFA	-	Hyogo Framework for Action
MDAs	-	Ministries, Departments and Agencies
MMDAs	-	Metropolitan, Municipal and District Assemblies
NADMO	-	National Disaster Management Organization
UNDP	-	United Nations Development Programme
WASH	-	Water, Sanitation and Hygiene
WB	-	World Bank
WRC	-	Water Resources Commission

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“The views expressed in this publication are those of the author(s) and do not necessarily represent those of the United Nations, including UNDP, or the UN Member States.”

## Executive Summary

Disaster management in Ghana has witnessed a significant shift from a response approach to a prevention and risk reduction approach in recent times. In support of ongoing efforts of the Government of Ghana (GoG) to strengthen disaster management in the country, the World Bank facilitated the development of a Disaster Risk Management (DRM) Country Plan for Ghana and provided funding for the implementation of its two components focusing on flood forecasting and early warning system along the White Volta Basin, and an advocacy and capacity building for Disaster Risk Reduction (DRR) and preparedness actions.

The project interventions were designed to complement and build synergies with priority actions identified by GoG and its development partners in accordance with the Hyogo Framework for Action (2005 – 2015). The overall objective of the World Bank's support was to strengthen the institutional capacity of the agencies responsible for flood and disaster risk management in Ghana. Consequently, the project proposed specific activities to contribute to ensuring that DRR becomes a national as well as a local priority with a strong institutional basis for implementation. Other activities supported the identification, assessment and monitoring of disaster risks to enhance early warning. The use of knowledge, innovation and education was also promoted to contribute to building a culture of safety and resilience at all levels. Other interventions were implemented towards reducing the underlying risk factors and strengthening disaster preparedness for effective response at all levels.

The advocacy and capacity building for DRR and preparedness component was implemented by the United Nations Development Programme (UNDP) in partnership with the National Disaster Management Organization (NADMO) under an agreement signed in November 2014 between the World Bank and the UNDP Country Office in Ghana. Funding for the project implementation was provided by the World Bank Group from the Global Facility for Disaster Reduction and Recovery (GFDRR).

This report highlights the key results achieved under the advocacy and capacity building for DRR aspect of the project including the following:

- 6 national and regional level DRR advocacy events supported and 897 participants involved
- 80 people successfully participated in professional training courses on DRR
- 748 people trained and prepared in disaster contingency planning during the National/Regional/District simulation exercises

In the light of challenges and lessons learned from the implementation and monitoring of the project, some recommendations for enhancing the impact of future projects are made.

## 1.0 Project Profile

Project Title	Ghana Disaster Risk Management Country Plan
Project Development Objective (PDO)	To strengthen the institutional capacity of the agencies responsible for flood and disaster risk management in support of Ghana's efforts to achieve the Hyogo Framework for Action for Disaster Reduction
Component	Advocacy and Capacity Building for Disaster Risk Reduction and Preparedness in Ghana
Project Objectives	<ul style="list-style-type: none"> <li>• Advocate for disaster preparedness and risk reduction at national and regional level through high level advocacy and operationalization of the regional platforms for disaster risk reduction</li> <li>• Strengthen capacities in disaster preparedness and risk reduction of government cadres, particularly those performing professional functions at NADMO, other national agencies, regional, and local administration, through the design and implementation of a core training curriculum for their staff.</li> <li>• Foster disaster preparedness at national level through national simulation exercises and enhanced coordination with the international community through the United Nations Inter Agency Standing Committee</li> </ul>
Donor	The World Bank Group
Title of Trust Fund	Global Facility for Disaster Reduction and Recovery
Budget	USD 500,000
Implementing Entity	United Nations Development Programme
Implementation Period	August 2015 – February 2017
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## **2.0 Country Context**

### **Ghana ranks high in exposure to disaster risks**

Ghana is one of the top-ranking African countries in terms of exposure to risks emanating from seismic and multiple weather-related hazards. Situated in one of the world's most complex climatic regions, the country is affected by the climatic forces of the Sahel and two oceans. Various models and projections for climate change have highlighted the country's vulnerability to intense weather conditions as a result of global warming and climate change. An increase in temperature of 1°C has been recorded over the past 30 years and a recent projection estimates temperature increases of 1.7°C to 2.04°C in the northern Savannah belt by 2030.

Historically, the country is exposed to natural hazards such as earthquakes, floods, coastal erosion, droughts, tropical storms and wild fires. In more recent times, the country's susceptibility to floods, droughts, disease epidemics and wild fires has increased, particularly in the Northern Savannah portion of the country. The frequency and complexity of some of these disaster events are also increasing, especially flooding. The country has been impacted by seven major floods in the last two decades. In 2007, floods caused damage to infrastructure and livelihoods in excess of \$130 million and affected more than 265,000 people in the three northern regions, with close to 100,000 requiring assistance in various forms to cope and restore their livelihoods. Ironically, the floods were preceded by a period of drought that destroyed most food crops.

### **The Government of Ghana is committed to a disaster risk reduction agenda**

In recognition of the fact that disaster risks will further be magnified by climate change and result in more localized disasters which will negatively impact on lives and property in both rural and urban communities, the Government of Ghana (GoG) established NADMO through an Act of Parliament (Act 517 of 1996) to coordinate disaster management among governmental and non-governmental actors and build the capacity of communities to respond effectively to disasters. This was a decisive step towards approaching disaster management from a holistic perspective that minimizes the impact of disasters on citizens.

Notwithstanding the well-developed structure of NADMO that favorably positions it to play the lead role in disaster response and preparedness, challenges in terms of the required capacity at all levels and budgetary support have over the years inhibited a clear focus on disaster risk reduction. Hence more proactive steps were required to shift the national disaster management paradigm from a traditionally relief implementation orientation to a preparedness and risk reduction approach. The Hyogo Framework for Action, therefore, offered GoG and development partners a unique opportunity to mobilize resources and expertise for the implementation of interventions in accordance with the framework's priorities for action. The development of the Ghana Plan of Action for DRR was in response to this opportunity.

### **The World Bank support for Ghana Plan of Action for DRR implementation**

In support of the implementation of the Ghana Plan of Action for DRR, the World Bank developed a Disaster Risk Management (DRM) Country Plan for Ghana and allocated USD 1,300,000 as grant

to support two components: strengthening flood forecasting in the White Volta Basin (USD 800,000) and advocacy and capacity building for disaster risk reduction (USD 500,000).

UNDP Ghana has been supporting upstream and downstream activities in disaster management and played a key role in the development of the Ghana Plan of Action for DRR. In an agreement signed between the World Bank and UNDP Ghana Country Office (Agreement No. 7170871) in November 2014, UNDP was mandated to implement the advocacy and capacity building component of the World Bank's supported DRM Country Plan. The specific development objective of this component was to foster advocacy and strengthen institutional capacity at national, regional and local government levels for disaster risk reduction and preparedness.

The National Disaster Management Organization (NADMO) which has responsibility for developing the capacity of communities to respond effectively to disasters, was identified as the main implementing partner to support UNDP in executing the activities proposed under the advocacy and capacity building component.

### **3.0 Disaster Risk Management Status Update**

Effective management of disaster risks has proven to be the best practice in the achievement of sustainable development. It is indicated that every dollar spent on risk management can typically save four to nine dollars otherwise spent in an emergency response when disaster occurs. It is in this regard that Ghana is making an intentional effort to focus more resources on disaster risk reduction instead of reacting to disaster occurrences through relief assistance.

Ghana signed up to the Hyogo Framework for Action (2005-2015) when it was developed under the auspices of the United Nations International Strategy for Disaster Reduction (UNISDR). Since the aim of the Hyogo Framework for Action (HFA) was to substantially reduce disaster losses by building the resilience of nations and communities to disasters, the Government of Ghana (GoG) developed strategies to strengthen institutional capacity in disaster risk management in order to contribute to the achievement of results envisaged under the HFA priority areas of action. The development of the Ghana Plan of Action for Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) was a key milestone in this process. The plan was articulated according to the 5 pillars of the HFA and represented a coordinated national framework that defined interventions to be pursued by GoG and development partners towards making the country resilient to natural and man-made disasters.

#### **UNDP support for implementation of HFA priority actions**

UNDP has been providing technical and financial support to GoG to implement both upstream and downstream activities towards the localization and implementation of the Hyogo Framework for Action. Support for the launch of Platforms for DRR at national and regional levels, review of the National Policy on DRR, and development of the Ghana Plan of Action for DRR were undertaken in a bid to ensure that DRR is a national and local priority as articulated in the HFA first priority area of action.

Also, a country-wide hazard mapping exercise undertaken as well as the implementation of a community early warning system supported the identification, assessment and monitoring of disaster risks as proposed under the HFA second priority area of action. Similarly, in pursuance of the HFA

third priority, a number of awareness and advocacy activities were supported at national, regional and district levels whilst an assessment of current knowledge of DRR in school curricula was undertaken. Gender responsive culture in DRR and training of Disaster Volunteer Groups (DVGs) were also promoted.

As far as HFA fourth priority is concerned, support in the areas of training and development of tools made a contribution towards reducing the underlying risk factors. The preparation and dissemination of building guides for flood-prone areas and review of the National Building Code were also supported to minimize the risk posed by poorly constructed buildings to individuals and the general public.

By way of strengthening disaster preparedness for effective response at all levels as envisaged under the fifth priority of the HFA, support was made available for the review of the National Contingency Plan and for enhancing national capacity for the coordination of emergency response. District Disaster Management Plans were also developed and flood scenarios simulated to test response capability of emergency humanitarian actors. Some disaster recovery interventions were also supported to restore the livelihoods of disaster victims in the northern part of the country.

### **DRM Country Plan has enhanced DRR in Ghana**

The DRM Country Plan and resources provided by the World Bank through GFDRR to support its implementation have made a significant contribution to disaster risk management aspirations in Ghana both in terms of deepening awareness and fostering accountability for risk management. Following its inception, the project has made it possible to leverage networks and other resources to advocate and build capacity for disaster preparedness and risk reduction. For instance, UNISDR's Making Cities Resilient Campaign adopted as an advocacy strategy has successfully rallied multi-stakeholders from Government, Civil Society Organizations and the private sector to closely examine vulnerability factors in the urban space and share perspectives on what needs to be done to enhance urban resilience.

Similarly, the Community Resilience through Early Warning (CREW) project being implemented by NADMO under the supervision of UNDP with sponsorship from the Norwegian government, and the Flood Early Warning System (FEWS) Volta project have contributed to the advocacy agenda by sharing practical experiences from community engagements on how authorities can effectively mainstream DRR in local level planning and enhance community resilience.

The DRM Country Plan project also facilitated linkages with some ongoing interventions. For instance, in the area of fostering disaster preparedness, there was collaboration with the UN Joint Programme on WASH in Disaster Prone Communities in the organization of a joint simulation exercise aimed at improving preparedness and response capacity of stakeholders who participated in the exercise. In some cases, simulation exercises organized at national, regional and district levels took advantage of equipment provided by the CREW project in the Emergency Operations Centres (EOCs) at the NADMO Headquarters and some regional and district capitals.

## **4.0 Project Results and Impact**

The advocacy and capacity building for DRR component of the DRM Country Plan contributed to three priority areas of the HFA: policy support and advocacy (HFA 1), capacity building and knowledge transfer (HFA 3) and strengthening disaster preparedness (HFA 5). The results achieved under each priority and their impact (or potentially impact) on disaster risk management in the country are elaborated below.

### **4.1. Policy Support and Advocacy (HFA 1)**

The objective of the policy and advocacy aspect of the project was to advocate for disaster preparedness and risk reduction at national and regional level through high level advocacy and operationalization of the platforms for disaster risk reduction. In pursuit of this objective, the project organized six high level awareness raising events targeting policy makers and government decision-makers on specific issues related to disaster risk reduction and management in Ghana. These events were organized around the International Day for Disaster Reduction and the UNISDR's *Making Cities Resilient* campaign. The National Platform for DRR and the Ghana Institute of Planners were also supported to discuss, plan and advocate for disaster risk reduction. In addition, the project supported the development of awareness creation materials for dissemination and reinforcement of ongoing national advocacy campaigns on risk reduction and management.

#### **4.1.1 International Day for Disaster Reduction (IDDR)**

Celebration of the International Day for Disaster Reduction (IDDR) on 13<sup>th</sup> October is seen as a vehicle for promoting a global culture of disaster reduction through awareness raising. In an effort to contribute to advocacy for disaster prevention, mitigation and preparedness, the project supported two IDDR celebrations. The theme for IDRR 2015 was “Knowledge for Life” and the celebration centered on the use of traditional and indigenous knowledge to minimize disaster events and their impact on local populations. A brochure was developed to showcase examples of traditional knowledge on early warning signs in Ghana. The material was taken from the *Atlas of Indigenous Knowledge in Climate Change Adaptation* produced as part of a collaboration effort by UNDP, the Environmental Protection Agency (EPA) and NADMO in 2011. The full publication can be downloaded at: <http://bit.ly/1JCIN2I>. Social media (Facebook and Twitter), radio and television discussions were used to publicize the event and also create awareness on the importance of disaster risk reduction in the week preceding the IDDR. Discussions also explored the prospects of developing indigenous and traditional knowledge platforms to complement scientific early warning information. The main event took place on 13<sup>th</sup> October at Anyamam in the Greater Accra Region and showcased a number of activities including drama performances highlighting the danger posed by disasters and how risk reduction can minimize disaster occurrences.

Similarly, IDDR 2016 was celebrated on the theme “Live to Tell” in Accra. The event was commemorated on October 19, 2016 instead of the traditional date of October 13 in order to take advantage of the presence of the UNISDR and ECOWAS delegates who were expected in Accra for a for the development of a DRR Plan of Action for ECOWAS supported the World Bank. The 2016 celebration was used as an occasion to highlight the importance of improved awareness in reducing disaster mortality. Stakeholder understanding of the Sendai Framework for Disaster Risk Reduction (2015 – 2030) was also enhanced. The development of an action plan to replace the Ghana Plan of

Action for DRR and align with the Sendai Framework for Disaster Risk Reduction (2015 – 2030) was advocated for.

#### **4.1.2 Making Cities Resilient Campaign**

Inadequate infrastructure and services, environmental degradation, and growth of informal settlements and slums are increasingly exposing urban population in Ghana to shocks and stresses. In order to investigate, discuss and advance efforts to make cities resilient in Ghana, a multi-stakeholder platform advocacy meeting was organized on July 14 - 15, 2016 in Accra. Inspired by the UNISDR “Making Cities Resilient” campaign, the conference brought together participants from Ministries, Departments and Agencies (MDAs), local authorities within the Greater Accra Metropolitan Area (GAMA), the Academia, Civil Society Organizations (CSOs), private sector, International Non-Governmental Organizations, the Media and professional bodies in the built environment (Planners, Architects, Engineers, Surveyors, etc.) to raise more awareness on the social and economic impacts of common disaster events on vulnerable groups and locations in the city of Accra and the wider GAMA and strengthen the foundation for urban resilience coordination among participating stakeholders.

The two-day conference fostered a better understanding of resilience from various perspectives and underscored lack of inclusiveness in urban planning processes as a limiting factor to resilient development. The critical link between governance and urban vulnerability/resilience was highlighted, especially in relation to waste management and land use planning. To move city resilience forward, recommendations were made towards enhancing inclusive and resilient urban development in GAMA, articulating local perspectives on vulnerabilities and urban resilience, and ways of mainstreaming and coordinating resilience and Sustainable Development Goals (SDGs) in urban development.

Other recommendations include the following:

- ✓ Provision of financing requisite investments – Private sectors, CSOs and etc. should collaborate and share knowledge with MMDAs on innovative approaches for attracting funding from private sector and development partners.
- ✓ The need for a Lead Agency to improve coordination and collaboration of state institutions, developmental partners, private sector, etc. to maximize results.
- ✓ Mainstream the SDG in development planning guidelines developed by the NDPC for MMDAs with measurable indicators.
- ✓ MMDAs and sector ministries should coordinate activities with CSOs and private sector.
- ✓ Sector Ministries should collaborate to develop strategy to use the Plastic Import Levy to tackle waste management problem.
- ✓ Waste to energy projects at the local level should be encouraged
- ✓ Sensitization on waste management and general urban resilience issues

A high level of enthusiasm and openness generated during the discussions which, if properly nurtured, can foster stakeholder commitment towards a more resilient and inclusive GAMA that can be replicated in other parts of the country. Some of the salient issues raised in the conference were rolled over to other fora for further discussion.

#### **4.1.3 Urban Resilience Conference with Local Authorities**

An urban resilience conference under the theme “Opportunities and Challenges for Mainstreaming Disaster Risk Reduction through Inclusive Planning and Effective Coordination” was organized on November 21-22, 2016 in Kumasi for participants from Ministries, Departments and Agencies (MDAs), Metropolitan, Municipal and District Assemblies (MMDAs), other governmental bodies with mandate for ensuring the development of safe human settlements, CSOs, professional bodies in the built environment, academia and the media.

The two-day conference stimulated a broader discussion and advocacy for mainstreaming DRR in local level planning. Critical issues affecting effective inclusive planning and effective coordination among stakeholders were thoroughly discussed from diverse perspectives. Among innovative suggestions for enhancing the mainstreaming of DRR at the local level was to include it as a performance indicator and reward District Assemblies that comply with mainstreaming guidelines which were recommended to be developed by the National Development Planning Commission. Participants at the conference also discussed issues and made recommendations for incorporating hazards, risks and vulnerabilities into local development plans. Other recommendations were for improving disaster preparedness at local level, and closing the gap in early warning dissemination to communities at risk

The conference facilitated a better understanding of how inclusive planning can contribute to disaster risk reduction. Learning from other’s experiences, local authorities, especially District Planning Officers and Coordinating Directors, increased their understanding of how DRR mainstreaming in local development plans can be achieved particularly as Ghana is set to implement the New Urban Agenda.

The following were among recommendations made by participants for ensuring effective disaster risk reduction mainstreaming for resilient urban development:

- ✓ Creation of model cities to serve as torch bearers for other cities/towns to emulate.
- ✓ Strengthening of collaboration among institutions at the decentralized level.
- ✓ Periodic review of Disaster Contingency Plans to incorporate current emerging issues.
- ✓ Global frameworks on environment such as the Habitat III should be made available to enhance education and also to make known the priority areas for partnerships.

#### **4.1.4 Annual Review Meeting of National Platform for DRR**

The National Platform for DRR was established in 2009 as a structure under the National Disaster Management Organization (NADMO) with the sole aim of bringing all stakeholders in DRR under one umbrella to address disaster risk concerns. As part of strengthening advocacy on disaster preparedness and risk reduction, the Platform was supported to organize the 7<sup>th</sup> edition of its annual review meeting in Accra on the 10<sup>th</sup> of December, 2015.

The meeting brought together members of the National Platform (including NADMO Technical Advisory Committees) and representatives of Regional Platforms to take stock of activities implemented during the year in relation to disaster risk reduction and also to discuss plans for 2016. Two members of the Parliamentary Select Committee on Defense and Interior were in attendance to brief the Platform on the status of the new NADMO Bill before the Parliament of Ghana.

The meeting enabled Platform members to take stock of DRR activities implemented in 2015 both at the Regional and National levels. The Platform's advocacy and fund raising strategies drafted to facilitate the implementation of the Ghana Plan of Action for DRR were also discussed together with the activity plan for 2016.

#### **4.1.5 Annual Review Meeting of Ghana Institute of Planners**

The Ghana Institute of Planners submitted a proposal for sponsorship to organize the 45<sup>th</sup> Annual General Meeting (AGM) of members. Further discussions with the institute presented an opportunity to collaborate and further address some of the challenges pertaining to resilient urban development. The institute was sponsored to hold the AGM on November 25, 2016 in Accra under the theme "Urban Resilience and Sustainable Growth". Fifty-six professionals were inducted into membership at the event. As part of its discussions, the meeting explored ways by which members can enhance urban resilience in their professional practice in land use and spatial planning. Members were optimistic that the fortunes of resilient development in the urban space can be turned around through commitment to professional ethics in the execution of their duties.

#### **4.1.6 Awareness Creation Materials**

The project worked with the Public Relations Officers of NADMO and took stock of awareness creation materials already developed and being distributed. This revealed the need to review and update awareness creation materials on floods and domestic fires. Considering that the two disaster events are more severe in the urban areas, especially informal settlements, the project supported the revision of the existing material with input from the Ghana National Fire Service and UNICEF. The materials titled "Household Safety Tips for Flood" and "Household Safety Tips for Fire" have been printed for NADMO to disseminate. In addition, four NADMO PR staff attended a short training on Effective Public Speaking and Communication Strategy in order to build their capacity for effective awareness creation.

### **4.2. Capacity building and knowledge transfer (HFA 3)**

In recognition of the huge toll that natural and man-made disasters take on communities, especially the most vulnerable groups, this aspect of the project aimed to strengthen capacities in disaster preparedness and risk reduction of government cadres, particularly those performing professional functions at NADMO, other national agencies, regional and local administrations, through the design and implementation of a core training curriculum for their staff to address capacity gaps and foster institutional memory despite the high turnover of government staff at both the policy making and technical levels.

#### **4.2.1 Stocktaking of Existing DRR-related Tertiary Education and Adult Training Programs**

The process of designing and implementing appropriate DRR training for government cadres, development partners and non-government organizations began with a stocktaking of existing tertiary education and adult training programs implemented in Ghana. Tertiary and other training institutions running DRR and DRR-related programmes were identified and mapped out, including the topics/themes in the programmes and courses offered by the institutions. A detailed report of the stock of existing DRR-related courses and training programmes in Ghana was produced. The report also contained a database of DRR teaching materials and experts in Ghana.

#### **4.2.2 Harmonized DRR training and capacity building programme**

A national forum was held in Koforidua on October 26 – 28, 2015 for stakeholders to identify the strengths, weaknesses and gaps that exist in the various training regimes involved in DRR as captured by the desk review exercise. The exercise helped identify opportunities to harmonize the content of the various DRR and capacity building programmes being run in the country.

#### **4.2.3 Development of DRR Core Training Agenda**

In order to build capacity of government cadres for effective DRR/CCA in sustainable development and to enable them prepare generic disaster management plans, adequately prepare for and prevent or mitigate hazard impacts, develop and implement sound policy and effective corporate governance, ensure effective communication, coordination, collaboration and cooperation in performing roles and responsibilities, and build community resilience, a DRR Core Training Agenda was developed for diverse learning environments and array of educational approaches to teaching and learning DRR. The eight-module training agenda represents a functional approach to training with emphasis on practical activities and first-hand experience. The Core Training Agenda established the framework for appropriate training materials to be developed in support of the training.

#### **4.2.4 Development of DRR training material, including background reading material**

A series of training materials for disaster risk management learning for short and regular courses for tertiary education and training of government cadres was proposed to be developed in response to the Core Training Agenda. The University of Cape Coast designed a 10-module DRR training manual for training government departments and agencies at various administrative levels and ensure that impacts are minimised by an efficient and effective disaster response. Some of the materials used for the manual development were contributed by UNESCO.

#### **4.2.5 Pilot and test training program in training sessions**

Following the development of the DRR training manual, the University of Cape Coast (UCC) organized a short course comprising four training sessions for government and non-government cadres from October 17, 2016 to November 18, 2016. In all, 80 participants were sponsored to the training based on a participation fee agreed per participants.

Participation in the training sessions cut across government institutions whose line of responsibilities border on disaster management at the policy, planning and implementation levels. The institutions include the media, Ghana Meteorological Agency (GMets), Metropolitan, Municipal and District Assemblies (MMDAs), Disaster Volunteer Groups, and Ministries, Departments and Agencies (MDAs) such as Ghana National Fire Service, Ghana Police Service, National Ambulance Service, Ghana Health Service, Ghana Army and NADMO which had the greatest percentage of attendance as the statutory organization that oversees and coordinates disasters and disaster-related issues in Ghana. Participants were presented certificates of participation signed by UCC, NADMO and UNDP.

Evaluations conducted after the end of each training session indicated a favourable overall assessment of the training except some aspects of the delivery methodology related to limited time for the presentation and discussion of some of the modules presented. Even a formal assessment of the impact of the training on participants' performance on their jobs has not been undertaken, initial feedback from some participants indicated the training was a water-shed experience which has made it possible for them to relate their daily work to disaster risk management.

Among the recommendations made by training participants was the need to institutionalize, scale up and sustain the course for more people, especially NADMO staff, to benefit from it. Sustainability of the training has been a key concern from the onset. One of the reasons UCC was partnered to design the training manual and implement the sessions was the high prospects of continuing the training beyond the pilot phase because it has the capacity in terms of expertise to do so. The University has indicated its desire to take the training forward by modifying the design so that it will be more competitive as an accredited academic course run by the UCC on its own. Negotiations are yet to be made so that an MOU will be signed between UCC and NADMO so that its staff can still access the training under favourable terms in the absence of donor support.

### **4.3. Strengthening disaster preparedness (HFA 5)**

Considering that contingency planning and simulation exercises are important means of fostering disaster preparedness and enhancing coordination among stakeholders, the project committed to implementing one national and three regional simulation exercises to test preparedness and response mechanisms of stakeholders at the national and regional levels. Further discussions with NADMO necessitated the inclusion of three simulation exercises at the district level.

#### **4.3.1 National Simulation Exercise**

Following the revision of the National and Inter-Agency Contingency Plans in March 2016, a table-top national simulation exercise on wide-spread flooding in the city of Accra and more than twenty neighbourhoods caused by intense and prolonged torrential rains coupled with the overflow of water from the Weija dam was facilitated by the IASC for national humanitarian actors (Government and Inter Agency Working Group on Emergencies - IAWGE) at the NADMO Headquarters on April 19, 2016. The 6-hour exercise was part of efforts to strengthen disaster preparedness by testing the existing contingency plans and response mechanisms including coordination among the IAWGE and members of the four participating Emergency Operation Centers (EOCs) i.e. the National EOC, Greater Accra Regional EOC, Greater Accra Metropolitan EOC and Ga South Municipal EOC.

Even though the six-hour exercise benefitted from strong leadership of NADMO and the UN Resident Coordinator, significant gaps were observed in the flow of information between Government counterparts and other humanitarian partners, as well as some confusion about coordination mechanisms. One limiting factor was the inability of all relevant sector ministries to participate in the exercise as this did not allow to measure well the effectiveness of response in key sectors. However, by the end of the intense exercise, the collective efforts of humanitarian actors working together resulted in the production of 22 deliverables whereas 46 injects requested an answer.

#### **4.3.2 Lessons Learned Event**

To promote reflection and learning from the national simulation exercise, a lessons learnt workshop was organized for participants on 20 April 2016 at the NADMO Headquarters. During the workshop, participants and facilitators identified and analyzed five key areas that needed to be further strengthened.

- Lack of familiarity with the National Contingency Plan which had just been updated in March 2016 but still missing a few critical elements.
- Coordination challenges (NADMO/UN/NGO): the coordination mechanisms and communication protocols between the UN Country Team under the leadership of the UN

Resident Coordinator and NADMO need to be formalized in order to enhance effectiveness and efficiency in the life-saving assistance.

- Information is lacking on response capacity in the country (national and international partners) in terms of available resources (human, financial, supplies) by sector and who is doing what and where (NADMO, UN/NGO)
- The absence of a clearly defined tool or methodology for planning of joint needs assessment: joint needs assessment in affected areas was identified as a challenge.
- Humanitarian actors or Government counterparts faced difficulties during the exercise to produce the required communications products (e.g., situation reports, joint press release).

In follow-up actions to key recommendations based on the lessons learnt, the Resident Coordinator's Office has been working with NADMO and the IAWGE to implement actions for further strengthening preparedness planning and coordination mechanisms. Some of the actions taken so far include the following:

- The IAWGE met and drew an action plan to address the recommendations from the lessons learnt workshop.
- The UN Country Team (UNCT) agreed on timeline for implementing recommendations stemming from simulation exercise and tasked the IAWGE to work with DSS on communication strategies to address communication challenges faced by the humanitarian actors.
- In November 2016, existing tools and checklists (among the IAWGE) were compiled to serve as accompaniment to the Inter Agency Contingency Plan (IACP)
- A UN IACP was drawn and reviewed in December 2016. Work on the Standard Operating Procedures (SOPs) is ongoing.
- The UN Resident Coordinator met with NADMO National Coordinator to agree on joint follow-up actions on updating Contingency Plans, planning future simulation exercises, etc.

#### **4.3.3 Regional Simulation Exercises**

Three regional simulation exercises were conducted in the Upper West, Ashanti and Western Regions to assess the preparedness and response capability of Regional, District and Community level stakeholders in disaster risk management, test effectiveness of the existing contingency plan towards disaster response and recovery, and evaluate the co-ordination level among these stakeholders. The actual simulation exercises were preceded by scoping missions to the regions, districts and communities involved to assess the situation and the response capacity of humanitarian actors which were taken into account in the process of developing the scenario for each exercise.

The Upper West simulation was a full-scale exercise on flood organized on December 21, 2015. The exercise involved four districts (Wa West, Nadowli, Lawra and Nandom). Two selected communities in each of districts participated in the exercise. The exercise involved the activation of four EOCs which ensured the participation of the Regional and District Disaster Management Committees.

The Ashanti Regional simulation was a table-top exercise conducted June 3, 2016 based on a scenario on water contamination. The exercise involved Amansie Central and Amansie West Districts but no community members were directly involved. The Regional EOC in Kumasi and District EOCs in

Jacobu and Manso Nkwanta were activated to respond to the emergency as it unfolded by way of injects presented at predetermined time intervals.

The Western Regional simulation was a full-scale exercise on chemical spillage organized on August 31, 2016. Two districts and seven communities took part in the exercise which required the activation of the Regional EOC in Sekondi, the Sekondi Takoradi Metropolitan EOC and Shama District EOC. Unlike the others, there was massive participation of the Ghana National Fire Service, National Ambulance Service and the Ghana Police Service in the exercise because of the danger posed by material involved and other incidents that had potential to escalate violence.

### **Key Issues**

Participants in all the regions indicated that the simulations were important capacity building opportunity for them and advocated for them to be organized more regularly. Some key issues observed during the exercises were similar to those emanating from the national simulation exercise:

*Absence of Contingency Plans:* There were no preparedness plans and Standard Operations Procedures to guide stakeholders during the exercises. Where these existed, they were either not current or participants never referred to them for any guidance throughout the exercises.

*Coordination challenges:* NADMO's coordination is acknowledged but mostly misunderstood to mean ownership of disaster preparedness and response even among stakeholders. Thus, some stakeholders tend to adopt a lukewarm attitude in the processes leading up to the simulation exercise.

*Lack of inventory of available capacities (human, financial, supplies):* Most stakeholders did not readily have information on existing capacities within their agencies. This contributed to some unrealistic decisions taken in the case of the table-top exercise that did not require physical deployment of personnel and equipment.

*Planning of joint needs assessment:* The absence of a standard tool agreed by all stakeholders for joint assessment affected the outcome of deliverables in this respect. EOCs, generally, approached the assessment in different ways which affected both the final product and the time used to complete it.

*Communications:* Information sharing was generally fluid except that poor communication network and bypassing of command structures in some instances challenged communication among stakeholders in some EOCs. Also, required communications products developed were inadequate thus suggesting the need to further build capacities in this area.

### **Key Lessons**

All three regional simulation exercises were followed by lessons learnt workshops the day after the exercise. Lessons learnt from the simulation exercises were shared and key among them were the following:

1. Traditional authorities and the media have significant influence on the successful management or otherwise of local disasters. Good collaboration need to be forged with these groups to ensure their better understanding of emergency response issues for greater support.
2. Following the occurrence of a disaster, it is important to first mobilize resources locally while awaiting external support. In this regard, there is need to preposition relationships with traditionally non-emergency actors in the private sector in order to gain timely access to strategic resources under their control when responding to emergency situations.
3. Effective disaster management requires a multi-sectorial approach. In addition to mobilizing expertise from the various sectors, the Metropolitan/Municipal/District Assemblies should

request all departments and agencies within their jurisdictions to support with needed logistics such as vehicles to augment what they have and ensure release their vehicles during disasters.

4. Political leadership is instrumental in influencing the dynamics of the exercises. Therefore, committed political is essential for successful implementation of an emergency response. Similarly, timely contact with higher authority for support is essential in an emergency response situation before issues overwhelm the district.
5. Team work is fundamental to a well-coordinated and effective response to a crisis situation. It is, therefore, necessary that key decisions taken by the EOC and/or feedback and updates from specific agencies are communicated, affirmed and approved by the EOC chairperson before they are acted upon. This keeps all EOC members on the same page and reduces confusion.

#### **4.3.4 District Simulation Exercises**

Three simulation exercises were organized in Bunkpurugu-Yunyoo District, Dormaa Municipality and Ketu-South Municipality to further strengthen the preparedness and response capacity of humanitarian actors at the district level. The Bunkpurugu-Yunyoo District simulation exercise was a full-scale emergency response to flood that affected three communities in the district. In the case of Dormaa and Ketu South Municipalities, the exercises were table-top simulations on bushfire and cholera outbreak respectively. The three exercises were conducted on May 16, 2016 in Bunkpurugu, May 20, 2016 in Dormaa and September 15, 2016 in Aflao. Only the Regional EOC and the EOC of the affected district were activated to respond in each of the exercises. Key issues observed during the simulations and lessons learnt sessions were very similar to those that emerged from the regional simulation exercises. The scale was rather larger at the district level where the capacity of actors was generally lower.

#### **5.0 Implementation Challenges and Gaps**

Some challenges were experienced in the course of implementing the project interventions proposed. Even though all activities were implemented within the agreed project life-span, these challenges caused some delays and affected the results achieved in some cases. Key among the challenges included the following:

##### **Recruitment of project staff**

Provision was made to engage a project manager and project associate to facilitate the implementation of the project. However, there were a number of challenges encountered in the process of getting the two staff on board. Some candidates did not take the job after the recruitment process was completed and the process had to be repeated. As a result of the delay in filling the positions, project implementation was delayed until 2015 instead of starting in 2014. In order to salvage the situation, other staff had to be assigned additional responsibilities to ensure the project got started while waiting for the project team to get onboard.

##### **Project funding arrangements**

UNDP was required to submit specified deliverables before qualifying to receive agreed amounts of the project funds. In the process, the project became cash-strapped when it ran out of funds without

meeting the batch of expected deliverables. To solve this challenge, arrangements had to be made to use funds from other sources for project implementation until the deliverables are met.

### **Competing demands of implementing partner**

NADMO staff work with multiple partners in delivering their mandate. There were times that competing demands for their time made it impossible to hold meetings or organize activities according to schedule. In such cases, the meetings or activities affected were rescheduled. Where it was difficult to reschedule, the activities did not receive adequate attention which affected their outcome.

### **Collaboration with a wide range of stakeholders**

Some of the project activities such as the multi-stakeholder platform for making cities resilient and the urban conference with local authorities required a lot of consultation and collaboration with multiple stakeholders. It was very challenging to take onboard the challenges and concerns of stakeholders otherwise the event will never be organized. To address this challenge, the project team focused on getting the majority onboard except where the minority were the critical stakeholders on whom the success of the event depended.

### **Inability to implement or monitor follow-up actions**

The project implemented a number of good initiatives such as the DRR training, simulation exercises and urban resilience campaign events that generated a number of action points. Unfortunately, due to the duration and resources of the project, a gap has been created in terms of capacity to monitor commitments established, evaluate preliminary results and preliminary impact, and follow-up on recommendations.

## **6.0 Lessons Learned and Recommendations**

Some lessons were learnt in the course of the project implementation that can guide the implementation of similar interventions in future projects. They include the following:

### **Modification of project interventions can enhance relevance**

There is usually a time lapse between the conception and execution of project interventions within which period significant changes may take place in the project context. Appropriate modifications to plans during implementation can therefore enhance relevance of some activities when there is justification for modification during the time some activities are actually executed. This lesson became evident when the project was organizing the multi-stakeholder platform meeting on making cities resilient campaign and the urban resilience conference with local authorities. Based on changes in the context, the activities had to be adapted to the prevailing situation.

### **Political leadership is critical in disaster management**

During simulation exercises organized in the regions and districts, different levels of success were observed. In regions and districts where the political heads were available and provided leadership to the Disaster Management Committee, the emergency response decisions and actions were of higher quality than in areas where the heads were not available or showed less interest in the exercise.

Participants at the lessons learnt meetings also attributed the degree of success of the exercises to kind of leadership provided by the political heads.

### **Collaboration requires mutual respect**

Differences in organizational culture between project implementing partner institutions involves appropriate compromises and trade-offs in order to achieve and sustain good results. This requires mutual respect for the values, policies, rules and regulations of the participating institutions.

### **Reflection and learning is essential for improvement**

Reflection on what has been done and learning from it offer opportunity for improvement, building on the lessons learned. The series of simulation exercises conducted by the project afforded the facilitators to reflect and learn from the mistakes of earlier exercises and strategize for improvement in subsequent exercises.

### **Good coordination builds synergy and improves results**

Improved coordination among actors can significantly build synergies and reduce duplication of efforts. This was observed during the multi-stakeholder meeting on urban resilience that provided a conducive environment for honest and objective discussion of the issues undermining resilience in the urban space. Poor coordination among actors was prominently cited as a major contributing factor.

In the light of the implementation challenges and lessons learned, the following are recommended to guide future projects:

- Every effort should be made to recruit project staff on time and avoid delayed commencement of project implementation.
- Funding arrangements should be more flexible even if tied to deliverables. It should be possible for funds to be requested in proportion to the deliverables achieved at the time of the request.
- Maintaining a focal person at the implementing partner institution is important but the responsibility of ensuring the implementation of specific activities should be spread based on whose line of duty they fall within.
- Implementation of activities involving a wide range of actors should be carefully planned and implemented timely to accommodate any inevitable delays.
- Deliberate effort should be made to strengthen collaboration and linkages with partners and ongoing initiatives in order to enhance coordination, build synergy and sustain impact.
- Project activities should be designed in a manner that ensures the availability of funds to follow through key issues and actions to their logical end.
- Reflection and learning should be built into every major aspect of the project to ensure continuous improvement and maximum results.

## Annexes

### Annex 1: Results monitoring

#### 1. Overview of deliverables

Serial No.	Title	Lead organization	Author / consultants contributing to the deliverable	Date of final version
i	A detailed inception report, outlining the final work program and approach as agreed with NADMO and the World Bank	UNDP	UNDP	August 2015
ii a	One national DRM platform event successfully organized with summary report highlighting programmatic collaboration in Ghana, achievements and documenting platform events.	UNDP	UNDP/NADMO	June 2016
ii b	Two national DRM platform events successfully organized with summary reports for each event highlighting programmatic collaboration in Ghana, achievements and documenting platform events.	UNDP	Ghana Institute of Planners/ UNDP/NADMO	November 2016
iii a	Two national high level advocacy events for disaster risk reduction, covering a recent national or international campaign, involving national stakeholders, development partners and UN agencies with a summary report	UNDP	UNDP (IDDR2015) / Douglas Kwartey Quartey (Consultant-Report) – (Multi-stakeholder Campaign)	June 2016
iii b	One national high level advocacy event for disaster risk reduction, covering a recent national or international	UNDP	Douglas Kwartey Quartey (Consultant-Report)	November 2016

	campaign, involving national stakeholders, development partners and UN agencies with a summary report			
iv	A report of existing education and adult training programs for government staff, harmonized training and capacity building program	UNDP	Louis Atsiatorme (DAL Consult)	December 2015
v	A series of training materials for disaster risk management learning for short and regular courses	UNDP	University of Cape Coast (UCC)	November 2016
vi	At least four training sessions conducted for government staff and members of national and regional DRM platforms and flood affected communities.	UNDP	University of Cape Coast (UCC)	November 2016
vii a	One UN Inter-Agency Standing Committee (IASC) national simulation exercise on national contingency plans collaboration conducted and documented in summary report.	UNDP	UN Inter-Agency Standing Committee (UNDP, OCHA, UNICEF and OFDA – West Africa Regional Office)	June 2016
vii b	Three UN Inter-Agency Standing Committee (IASC) regional simulation exercises on national contingency plans collaboration conducted and documented in summary report.	UNDP	NADMO/Respective Local Authorities/Alex Bokuma (Consultant for one Regional exercise)	November 2016
viii	A final report, summarizing the project findings and recommendations for further strengthening advocacy for disaster risk reduction in Ghana	UNDP	UNDP	February 2017

**2. Number of people trained and participating in workshop or activities**

<b>Organization</b>	<b>Description</b> (topic, date, location, audience)	<b>Number of people trained</b>	<b>Number / percentage of women</b>
UNDP	2015 IDDR celebration organized on 13 <sup>th</sup> October at Anyamam, near Sege, in the Greater Accra Region on the theme “Knowledge for Life”	189	53 (30%)
UNDP	A national forum organized on October 26 – 28, 2015 at Capital View Hotel, Koforidua for stakeholders to identify existing gaps in the various training regimes involved in DRR	29	5 (17%)
UNDP	7 <sup>th</sup> edition of National Platform for DRR annual review meeting organized at the Accra International Conference Centre (AICC) on the 10 <sup>th</sup> of December, 2015 for members (including Technical Advisory Committees and representatives of Regional Platforms) to take stock of activities implemented during the year in relation to disaster risk reduction and also to discuss plans for 2016.	93	18 (19%)
UNDP	A national forum was organized on December 10 – 12, 2015 at Maccic Royal Plaza Hotel, Koforidua for stakeholders to validate a core training agenda developed by consultants.	22	4 (18%)
UNDP	A regional simulation exercise was conducted in the Upper West Region to test the preparedness and response capacity of the region and selected districts (Wa West, Nadowli, Lawra and Nandom) to a flood disaster on December 21, 2015 with a lessons learnt workshop held on December 22, 2015.	240	26 (11%)
UNDP	An IASC national simulation exercise on Accra flood scenario was organized on April 19, 2016 involving the National EOC (chaired by the Deputy National Coordinator of NADMO on behalf of the Minister of the Interior), Inter-Agency EOC (chaired by the RC) at the NADMO Headquarters, Greater Accra Regional EOC, Accra Metropolitan EOC and Ga South Municipal EOC. The simulation which tested the preparedness of systems and personnel to respond to a major flooding in the city of Accra was coordinated by the IASC and facilitated by	104	17 (16%)

	personnel of UNDP, OCHA, UNICEF and OFDA from the Regional Service Office based in Dakar.		
UNDP	One-day lessons learnt workshop was organized on April 20, 2016 at NADMO Headquarters for the national simulation exercise participants. Under the facilitation of the IASC, lessons learned from the simulation exercise were shared.	73	13 (18%)
UNDP	District simulation exercise organized on May 16, 2016 at Bunkpurugu-Yunyoo District The simulation was a full-scale exercise on flood jointly organized with the WASH in Disaster-Prone Communities (DPC) Programme and involved the activation of the Regional EOC in Tamale, the District EOC in Bunkpurugu and three communities in the district (Binde, Nanjong No.1 and Nanjong No.2). Lessons learned workshop took place at District Assembly Hall in Bunkpurugu on May 17, 2016.	64	2 (0.03%)
UNDP	District simulation exercise organized on May 20, 2016 at Dormaa Municipality. The simulation was a table-top exercise on bush fire and only the Regional EOC in Sunyani and the District EOC in Dormaa participated. Lessons learned workshop was organized for participants at the Dormaa Municipal Assembly later the same day.	24	4 (17%)
UNDP	A table-top simulation exercise on water contamination was conducted in Ashanti Region on June 1, 2016. The regional exercise involved two districts (Amansie West and Amansie Central) and three EOCs were activated (Regional EOC in Kumasi, District EOC in Jacobu and District EOC in Manso Nkwanta). A lessons learned workshop was organized for participants at the Regional Coordinating Council in Kumasi on June 2, 2016.	47	4 (0.09%)
UNDP	A two-day multi-stakeholder meeting was organized at the Fiesta Royale Hotel in Accra, under the theme “Making Cities Resilient in Ghana: The Case of GAMA” from 14-15 July, 2016.	154	55 (35.7%)
UNDP	PR staff from NADMO sponsored to participate in training on Effective Public Speaking and Communication Strategy organized	4	1 (25%)

	by the Ghana Institute of Journalism on September 12-23, 2016 to enhance their capacity in awareness creation.		
UNDP	A test run of the DRR training manual organized on Tuesday, 27 <sup>th</sup> September, 2016 at the Institute for Development Studies Conference Room, University of Cape Coast as a precursor to the pilot sessions. The test run session was participated by personnel from the National Disaster Management Organization (NADMO), Ghana Fire Service and the Ghana Police Service.	13	2 (15%)
UNDP	Full-scale simulation exercise on chemical spillage conducted in the Western Regions on August 31, 2016. Sekondi Takoradi Metropolis and Shama District were involved. Three EOCs were activated at the regional and district levels for each exercise - Sekondi (Regional and Metropolitan EOCs) and Shama District EOC. A lessons learned workshop was organized for participants at the Akroma Plaza in Takoradi on September 1, 2016.	233	28 (12%)
UNDP	Table-top simulation exercise organized in Ketu South District on Cholera outbreak. Only the Regional EOC in Ho and the District EOC in Aflao were activated to participate. A Lessons learned workshop was organized for participants at the Ketu South District Assembly Hall on September 16, 2016	36	4 (11%)
UNDP	A two-day conference organized under the theme “ <i>Opportunities and Challenges for Mainstreaming Disaster Risk Reduction through Inclusive Planning and Effective Coordination</i> ” on November 21-22, 2016 at the Noda Hotel, Fumesua-Kumasi to stimulate a broader discussion and advocacy for mainstreaming DRR in local level planning. Participants for the event were drawn from Ministries, Departments and Agencies (MDAs), Metropolitan, Municipal and District assemblies (MMDAs), and other governmental bodies with mandate in ensuring the development of safe human settlements. Notable among them were Planning Officers and Coordinating Directors from MMDAs, NADMO officials from national, regional and district levels, representatives from CSOs, professional bodies in the built environment, and the media.	61	5 (8.2%)

UNDP	IDDR 2016 celebrated on the theme “Live to Tell” at the Alisa Hotel, Accra on October 19, 2016 and participated by stakeholders including National Platform for DRR members, NADMO staff, UN agencies (including UNISDR Africa Regional Office) and some ECOWAS representatives	150	27 (18%)
UNDP	The Ghana Institute of Planners was supported to organize the 45 <sup>th</sup> Annual General Meeting of members to discuss ways by which they can enhance urban resilience in their professional practice in land use and spatial planning. The meeting took place on November 25, 2016 at the Institute of Local Government Studies, Accra under the theme “Urban Resilience and Sustainable Growth”. 56 newly admitted members were inducted into membership at the event.	250	
UNDP	Training sessions on Disaster Risk Reduction (DRR) organized from 17 <sup>th</sup> October, 2016 to 18 <sup>th</sup> November, 2016 for government and non-government cadres.	80	16 (20%)

Ghana Disaster Risk Management Country Plan										
<b>Project Development Objective (PDO):</b> to strengthen the institutional capacity of the agencies responsible for flood and disaster risk management in support of Ghana's efforts to achieve the Hyogo Framework for Action for Disaster Reduction.										
PDO Level Results Indicators*	Core	Unit of Measure	Baseline	Cumulative Target Values			Frequency	Data Source/ Method	Responsibility for Data Collection	Description (indicator definition etc.)
				2014	2015	2016				
Indicator One: <i>Increased accuracy and timeliness of flood forecasts in the White Volta Basin;</i>										
Indicator Two: <i>Number of beneficiaries, gender disaggregated, receiving tailored flood risk information</i>										
INTERMEDIATE RESULTS										
Intermediate Result: Advocacy and Capacity Building for DRR										
<i>Number of national and regional level DRR advocacy events supported;</i>		Number of events	0	NA	2	4	Annually	Event proceedings	UNDP	
<i>Number of people successfully participating in professional training courses on DRR</i>		Number of people participating in DRR training course	0	NA	0	80	Annually	Course proceedings	UNDP	People participating in DRR courses for five course days

<i>Number of people trained and prepared in disaster contingency planning</i>		Number of people	0	NA	240	508	Annually	Proceedings of training & simulation exercises	UNDP	Number of people trained on contingency planning during the National/Regional/District simulation exercises.
<b>Results Indicators</b>	<b>Core</b>	<b>Unit of Measure</b>	<b>Baseline</b>	<b>Cumulative Target Values</b>			<b>Frequency</b>	<b>Data Source/ Method</b>	<b>Responsibility for Data Collection</b>	<b>Description (indicator definition etc.)</b>
				<b>2014</b>	<b>2015</b>	<b>2016</b>				
Intermediate Result: Strengthening Flood Forecasting in the White Volta Basin										
<i>Number of hydrological and meteorological stations reporting in real time to flood forecasting;</i>										
<i>Flood forecasting information for White Volta available in real time on internet and other relevant media</i>										
<i>Number of districts in the White Volta River Basin with appropriate flood risk maps</i>										