Nile Basin Capacity Building Network

2010

Capacity Building for Local Communities to Effectively Respond to Floods and Droughts

NBCBN-RE

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Capacity Building for Local Communities to Effectively Respond to Floods and Droughts

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Project Title
Knowledge Networks for the Nile Basin
Using the innovative potential of Knowledge Networks and CoP's in strengthening human and institutional research capacity in the Nile region
Implementing Leading Institute
UNESCO-IHE Institute for Water Education, Delft, The Netherlands (UNESCO-IHE)
Partner Institutes
Ten Selected Universities and Ministries of Water Resources from Nile Basin Countries
Project Secretariat Office
Hydraulics Research Institute – Cairo - Egypt
Beneficiaries
Water Sector Professionals and Institutions in the Nile Basin Countries

Short Description

The idea of establishing a Knowledge Network in the Nile region emerged after encouraging experiences with the first Regional Training Centre on River Engineering in Cairo since 1996. In January 2002 more than 50 representatives from all ten Nile basin countries signed the Cairo Declaration at the end of a kick-off workshop was held in Cairo. This declaration in which the main principles of the network were laid down marked the official start of the Nile Basin Capacity Building Network in River Engineering (NBCBN-RE) as an open network of national and regional capacity building institutions and professional sector organizations.

NBCBN is represented in the Nile basin countries through its nine nodes existing in Egypt, Sudan, Ethiopia, Tanzania, Uganda, Kenya, Rwanda, Burundi and D. R. Congo. The network includes six research clusters working on different research themes namely: Hydropower, Environmental Aspects, GIS and Modelling, River Morphology, flood Management, and River structures.

The remarkable contribution and impact of the network on both local and regional levels in the basin countries created the opportunity for the network to continue its mission for a second phase. The second phase was launched in Cairo in 2007 under the initiative of; Knowledge Networks for the Nile Basin. New capacity building activities including knowledge sharing and dissemination tools specialised training courses and new collaborative research activities were initiated. The different new research modalities adopted by the network in its second phase include; (i) regional cluster research, (ii) integrated research, (iii) local action research and (iv) Multidisciplinary research.

By involving professionals, knowledge institutes and sector organisations from all Nile Basin countries, the network succeeded to create a solid passage from potential conflict to co-operation potential and confidence building between riparian states. More than 500 water professionals representing different disciplines of the water sector and coming from various governmental and private sector institutions selected to join NBCBN to enhance and build their capacities in order to be linked to the available career opportunities. In the last ten years the network succeeded to have both regional and international recognition, and to be the most successful and sustainable capacity building provider in the Nile Basin.

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FOREWORD

This report is one of the final outputs of the research activities under the second phase of the Nile Basin Capacity Building Network (NBCBN). The network was established with a main objective to build and strengthen the capacities of the Nile basin water professionals in the field of River Engineering. The first phase was officially launched in 2002. After this launch the network has become one of the most active groupings in generating and disseminating water related knowledge within the Nile region. At the moment it involves more than 500 water professionals who have teamed up in nine national networks (In-country network nodes) under the theme of "Knowledge Networks for the Nile Basin". The main platform for capacity building adopted by NBCBN is "Collaborative Research" on both regional and local levels. The main aim of collaborative research is to strengthen the individual research capabilities of water professionals through collaboration at cluster/group level on a well-defined specialized research theme within the field of River and Hydraulic Engineering.

This research project was developed under the "Local Action Research Modality" which has a main objective to contribute to the capacity building process at local level and enhance the collaboration among the researchers and institutions in the same country. This activity is the core activity of all NBCBN nodes and is contributing to the establishment of the in-country network.

This report is considered a joint achievement through collaboration and sincere commitment of all the research teams involved with participation of water professionals from all the Nile Basin countries, the Research Coordinators and the Scientific Advisors. Consequently the NBCBN Network Secretariat and Management Team would like to thank all members who contributed to the implementation of these research projects and the development of these valuable outputs.

Special thanks are due to UNESCO-IHE Project Team and NBCBN-Secretariat office staff for their contribution and effort done in the follow up and development of the different research projects activities.

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1 INTRODUCTION

The Nile Basin Capacity Building Network for River Engineering (NBCBN-RE) was officially launched in January 2002 in Cairo. This regional Knowledge Network is owned by the Nile basin countries and aims at building the capacity of Water Sector professionals and institutions in the Nile Basin through collaborative research, training and education. During the network has been developing successfully and established in-country networks in six out of the ten Nile basin countries and developed six regional research clusters consisting of 13 regional research groups in which some 180 professionals from all ten Nile basin countries are now participating.

The network was successful in acquiring additional support for the further development through a grant of the Netherlands Government. The project under the name "Knowledge Networks for the Nile Basin (KNNB)" will last till the end of 2009. Among the activities year marked for the Nile Countries is the NBCBN Local Actions Program.

The main objective of this research modality is to contribute to the capacity building process at local level and enhance the collaboration among the researchers in the same country. Although the NBCBN network was set up to stimulate regional collaboration among professionals from the Nile basin countries, experiences from the 1st phase showed that the link between the focus of the clusters and the specific research questions at the country level was missing to a large extent. To stimulate this relation, research at country level was to be supported during the 2nd phase. This activity was to be the core activity of the new NBCBN nodes and was to contribute to the establishment of the in-country network. At the same time this was to lead to the capacity enhancement at regional level through the link to the cluster research activities. Local action proposal included different components of capacity building such as research and/or training activities which were to be supported by seed money from the KNNB project.

The launch of the Local Action Program came at a time when the institutional reforms in Kenya had just been rolled out. The regional authorities in the Country basins are working on their strategies for implementation of their mandates. The imitative thus fit in very well and has the potential to cultivate a symbiotic relationship in the water sector based on the Integrated Water Resource Management (IWRM) approach.

2 LITERATURE REVIEW

General

It is now conventional wisdom (and true as well) that droughts, floods and water scarcities typically reach beyond community boundaries and political borders; they are generally the shared problems of countries and continents. Indeed, for many countries, the water body is the border. About 40 percent of the world's population lives now in river basins shared by more than one country. Scores of communities (think of the Nile basin countries) rely for water on the same over-stressed catchments. It is also why, importantly, people find ways to manage shared catchments much more often by cooperation than by warfare. In short, sound catchments management both requires and impels national, regional, and international action.

But national and supranational strategies alone are not enough. Experience around the world proves that local management is essential to the sustainable flood and drought management. Even if international conflict over flooding is rare, domestic and intercommunal conflict is not. Countries may not go to war over flooding, but governments can fall because of failures to protect their own citizens.

Community-based catchments management must play a critical part with those larger approaches in solving flooding problems. Local flood management programs a democratizing decentralization of decision and accountability, well done, may empower people (particularly the poor and otherwise disadvantaged) to take part in the decisions that define their own futures. And it encourages the integration of traditional knowledge

with innovative science to promote fair and efficient flood management. In these ways, catchments degradation and infringements can be transformed into sustainable sufficiency.

Floods in Kenya

In Kenya, the start of the rainy season is usually associated with torrential down pours. The rain also comes down in drought stricken areas in North and Eastern Kenya. Roads are washed away, and people in the affected areas stranded when river banks burst. The cycle that the inhabitants of this areas go through is defined by one moment of fear of dying from thirst and hunger to another moment of being scared of drowning. The scenario is so complicated that even relief food to the areas is at times not able to be delivered and the food shortages remain for much extended periods. This year (2006), the UN launched a $425m (http://blogger.xs4all.nl/videorep/archive/2006/04/07/85672.aspx) appeal to help feed people across East Africa.

The floods in all cases have resulted into destruction of properties, infrastructure and crops. Floods also necessitate relocation of families and goods, outbreak of water borne diseases, malaria and poor living conditions among others. On the other hand during the dry months the area becomes so dry with no economic activity at all. Kenya has not been doing as well as most countries in the control of disasters related to floods and drought. Available statistics (Martha Karua, 2004) indicate that floods are a major setback to development in affected areas and to date, victims continue to suffer the risk of losing their homes, crops and livestock. The lower regions of Nzoia, Yala, Sio, Nyando, Kendu Bay, Kuja, Awach Tende in Nyanza, and various parts of Western provinces are vulnerable to major floods. Other susceptible areas include Tana River from Garissa to the Tana Delta, Athi River Township and Daua in Mandera District in Kenya.

Although water contributes immensely to economic and social development, water issues are neither articulated in economic policies nor given due consideration by most water users. The last two decades under went a decline in infrastructure development attributed to the low coverage of water supply to a high percentage of the population. Kenya is classified as chronically water scarce with minimal natural endowment of fresh water that allows only 647 cubic metres per capita. That is worrying because it is projected to fall to 245 per capita by the year 2025. Water scarcity is therefore bound to be worse unless the resource base depletion is checked. The Ministry (Martha Karua, 2004) had undertaken sector wide reforms aimed at mitigating major challenges in the water sector which include the basic structures for meeting short term as well as long term challenges in the sector. The Government on its part had taken appropriate measures to construct dykes aimed at controlling floods in the flood prone areas. In the financial year 2003/04 the government was to spend Kshs. 37 million for rehabilitation of Nzoia River Dykes and another Kshs. 47 million in channel dredging, bush clearing and drainage repairs on the Nyando River.

Human settlements aggravate the persistent floods in the affected areas, since the consequences of settlements and man's activities such as deforestation and poor land use contribute to these phenomena. The communities were urged to carry out afforestation and adopt proper farming methods within the watershed. Protection and conservation of catchment areas was highlighted as paramount for the control of floods and other related disasters. She cautioned that short-term emergency measures(Martha Karua, 2004) would not however solve the flooding problem and that dykes and channeling may control only about 17% of the flooding while dams would take 40% and catchment rehabilitation may take about 20% of the flood flow. In other words, the remaining 23% of the flood flow was still to be disastrous to the local inhabitants. Prompt response to early warning, land use planning and evacuation as the most effective ways of living with floods.

3 STATEMENT OF THE PROBLEM

The Lake Victoria South Basin is prone to frequent floods and droughts. As the risk of flooding is a severe hazard to human life, activities and structures, there is need for prevention and protection policies, which aim at reducing the vulnerability of people and property. Though the solution for flood mitigation and prevention seems simple, it involves a vast amount of data and knowledge about the causes and influencing factors of floods and their resulting damage. An accurate prediction and prior warning can greatly reduce the damage costs and loss of life due to a flood disaster.

Floods are mainly a result of quick-flow rather than base-flow, and are usually caused by intense or prolonged rainfall, snowmelt or a combination of these factors. On the other hand droughts are caused by the deficiency of rainfall resulting to low flows and even drying up of the rivers in severe cases.

There is inadequate water resources management and related disaster management capacity in terms of facilities, information, manpower and funding in the Lake Victoria South Basin. Poor land use practices, deforestation and catchment degradation exacerbate the effects of floods and droughts. There are hardly any effective flood and drought forecasting systems operational in the Lake Victoria South Basin; therefore there is a need for the development of local capacity in flood and drought forecasting and early warning for the benefit of all the inhabitants of the basins.

4 OBJECTIVES

The objectives of the Local Action Program is to ***'empower local communities to effectively respond to floods and droughts'***

- Specific objectives:
  - Facilitate In-country network building
  - Mobilise technical and financial support for local action activities
  - Define local needs and intervention on Pilot areas
  - Raise community awareness through training and development of methodologies appropriate for local needs
  - Inculcate a culture of prompt response to early warning
  - Prepare a detailed proposal for enhancing existing flood and drought coping mechanisms
  - Propose viable uses of flood water for sustainable development

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5 MATERIALS AND METHODS

- Contact of prospective network members and institutions was done by electronic mail and phone contacts. In some cases one on one contact was used as we travelled to various institutions.
- Preparation of detail working documents for the full project was done through participation of group members.
- To define local needs and intervention on Pilot areas, the small work groups were sent out to the Lake Basin Catchments. The field Information was acquired through qualitative methods such as:
  - in-depth interviews (IDIs)
  - semi-structured interviews
  - focus-group discussions (FGDs)
  - systematic observation at community and household level
- In the second phase of the local action project a training seminars employing simplified instruction sheets were used.

- Gender role and cultural values were observation and respected throughout the project life.

Table 1: Task allocation for the first phase

Activity	Contacts	Output/time ***Documents in soft copy + PowerPoint version***	Task allocation
Network Documents		• Network guidelines • Network Flyer • Membership records	Dulo, Nyadawa
Field work Reconnaissance and Needs assessment 1. LBDA 2. LVSCR – WRMA 3. Participatory Rapid Appraisal/PLA 4. CBO's ♦ Awach Tende ♦ Ratang'a women's group	Kabok/Asunah, Dr. Abira/Mr. Gor Stephen Angila	1. Project details 2. Project details 3. PRA report / PLA plan 4. CBO Data	Dulo, Okelloh, Odira, Patricia/Maria
Desk work Developing training modules 5. Rain water harvesting 6. Coping with floods (Flood water use)		5. Appropriate RWH technology 6. Flood water training and utilisation technology	Orodi Nyadawa
Proposal drafting			Okelloh, Orodi, Odira
Preparation project report			Dulo

6 COMMUNITY BASED ORGANIZATIONS INVOLVED IN THE STUDY

i. The Kanalo Self Help Group

In other areas of the South Lake Victoria Basin Catchment CBOs are already in place and earmarking projects for collaborative intervention. The Kanalo Self Help Group in Nyangweso, Awach basin, has proposed a community project on their local problem. The area has very poor drainage system which consistently results in floods during the long rain seasons. The floods in all cases have resulted into destruction of properties, infrastructure and crops. Relocation of families and goods, outbreak of waterborne diseases, malaria poor living conditions among others. On the other hand during the dry months the area becomes so dry with no economic activity at all. Given the conditions that exists in the area it would be of great help to the community if the water resources were managed to the benefit of the locals.

The area is at the mouth of Awach Tende River. It originates from the Nyamira highlands as the River Mogusi. It passes through Kisii district and down to Homa bay district where it drains into Lake Victoria. The river takes different names depending on the areas where it passes through; at some points it is called Oluch River.

C.B.O

Kanalo self help group is in Kochia West. The group has a membership of 40, constituted of 30 women and 10 men. Membership of the group is Voluntary and for one to be a member there is registration fee of Kshs.100 and a monthly contribution of Kshs.50 for the management of the groups programmes.

Health

The community has a health centre run by the government. The community reported significant incidences of water related disease attributed to water pollution and mosquitoes.

Impact of HIV/AIDS on the community is reflected on the ratio of 3:1 on members of the group and is the true reflection of adult population composition in the area. The community cites cases of widows who have been settled back to the home village after the death of their husbands who originally worked in the urban centers. The widows are now the sole bread winners in the family are dedicated and hard working.

Land Use

The major land use in the area is for settlement and small scale farming. The individual homesteads are less than 1 acre in average and occurs in the flood plains. They remain unutilized most of the year due to floods. The Lake shores is highly fertile and are not settled hence is used for agricultural activities.

The CBO has acquired some community land along the lakeshore which they are using to cultivate various types of crops. The land is donated by the group members voluntarily and ploughed by the group and after harvesting, whatever is realized is shared with the farm owner at the rate of 10%.

The group uses their saving to prepare the land by either paying people who are their members that are willing to work for payment; members are also encouraged to work on the farms and are paid just like non members. Within the group members there are different talents and therefore the group tries to nature the talents by assigning responsibilities of supervision to an expert person on a particular crop that they would want to grow.

Water Sources

Rain Water: The technology of rain water harvesting seemed to be still new to the community and is practiced only in a few homes and mostly in the nearby schools. The homes where it is practiced uses small tanks and it is a reserve for drinking and cooking only.

During the visit, the few members that we met requested for some training of their members and the community in general on the Rain water harvesting techniques as they had the idea that the flood water could be used to benefit them.

Lake Water: It is the most commonly used in the area for all domestic purposes (ranging from washing to cooking) due to the fact that it for free. As at now the accessibility to the lake water is almost impossible due to invasion of the lake by the water hyacinth which intern lowers the quality of the water depending on the season hence posses a threat to the health of those able to use it as is evident in the locals health records and reports of high cases of intestinal diseases which is easily attributed to the lake water.

During our visit inflow from the catchment into the lake was evidently turbid and a visible brown colour on the lake water.

Flood Scenario

The area lies in a plain that is between two highlands of Kisii and Karachuonyo. The amount of rainfall that is received by the area is harmless to the community (do not result into floods). The area is mostly affected by excess rainfall and run offs from the upper catchment of Kisii and Nyamira. Whenever heavy rainfalls are experienced in the highlands, it takes between one to two days for the lower catchment (lowlands) to be flooded. The community is usually subjected to floods resulting from both the busting of the river banks and back flows owing to the fact that it is sandwiched between two highlands. On flooding the plains takes about four days to recede when it has stopped raining on the highlands.

According to the locals that we interacted with, the area is now vulnerable to a lot of flooding since the time the rice field in the region was abandoned and people started settling on the field.

Coping mechanisms

The community monitor rainfall in the upper catchment, they then prepares for evacuation on individual convenience basis. The vulnerable assets are removed to safer grounds as the family remains in the homes up to the last minute that the actual flooding begins.

According to the group, the community early warning response in the area has improved tremendously in the last few years.

The community has also embarked on trench digging as a means of draining the area, the activity is mostly carried as a group activity.

Schools

The primary school owns a bore hole which is used by the pupils and teachers, table 2. The pupils are allowed to se the water only while in school and at that time they may draw water and carry home in the evening when they are leaving. The bore hole was dug by the Lake Basin Development Authority (LBDA) for the community. The community later abandoned the bore because the water contained little salt compared to the Lake water and did not like the idea of cost sharing to draw water since they could get the water for free from the lake which is not very far away. The primary school also has rain water collection mechanism where concrete tanks have been erected.

Table 2: Task allocation for the first phase

Name	***Currently owned/ Maintained***	***Originally owned/ maintained***	***Quality***	
Bore Hole	Kuoyo-Kochia Primary School	Drilled by LBDA for the community	Little salt	Protected
Wind mill	Kuoyo-Kochia Secondary School	Community	Clean	Piped
Bore Hole	Not operational	A local Women group		Protected
Bore hole	Individual	Individual	Little salt	Un protected

The Secondary school has piped water from the Lake. They have a windmill pump. The pump was originally owned by the community. The community abandoned the pump when the cost of maintaining the pump became too high and the money that was being collected when they drew water was misappropriated, the piped water used to be sold to the community at a fee of 10 cents per 20 litres Jerry can. The local secondary school later on took the management of the pump, they pump the water for use by the school community only and no outsiders are allowed to gain access to the water from the school.

Currently the community is vulnerable and need some water sources since the lake water is not easily accessible due to inversion of the lake by the water hyacinth and the turbity of the water is worrying.

ii. The Ratanga' Women Group

Ratanga' Women Group is in Kanyada West. The group has a membership of 35, constituted of 20 women and 15 men. Membership of the group is Voluntary and for one to be a member there is registration fee of Kshs.100 and a monthly contribution of Kshs.50 for the management of the groups programmes.

Health

The community has a health centre run by the government. The community reported that the impact of HIV/AIDS on the community is reflected on the ratio of its members and is the true reflection of adult population composition in the area. The community cites cases of widows who have been settled back to the home village after the death of their husbands who originally worked in the urban centers. The widows are now the sole bread winners in the family are dedicated and hard working.

Land Use

The major land use in the area is for settlement and small scale subsistence farming. The individual homesteads are less than 1 acre in average. The predominant crops are maize, potatoes and groundnuts.

Water Sources

Rain Water: The technology of rain water harvesting seemed to be still new to the community and is practiced only in a few homes and mostly in the nearby schools. The homes where it is practiced uses small tanks and it is a reserve for drinking and cooking only.

During the visit, the few members that we met requested for some training of their members and the community in general on the Rain water harvesting techniques as they had the idea that the flood water could be used to benefit them.

Flood Scenario

The area is on varying terrain just before the lake flat plains. The region experiences minimal flooding. Whenever heavy rainfalls are experienced in the upper catchments erosion is substantial.

Coping mechanisms

The community has adopted canal digging to protect their farms from water logging and draining the area, the activity is mostly carried as a group activity.

Community Needs

The area is highly arable and improved incomes can be realised by availing appropriate training in rain water harvesting and use for agriculture. The varying terrain also requires education on soil and water conservation. Potential cash crop foods for the area include bananas and groundnuts.

7 PROJECT OUTPUTS

- A database on network members – A data base of current members was set at the secretariat. During the first phase of the reconnaissance the membership was extended through invitations to the individual and institutions. Unfortunately with the delay in follow-up the good will faded and the prodding through concrete steps on the next phase will determine the level of engagement of those who show interest and bringing on board new members.
- The CBOs worked with during this phase were active in local programs and most were economically driven initiatives, with very good prospects of self sustainability.
- The main needs identified included
  - Community education on factors affecting flooding
  - Training on mechanisms for adaptation to flood and drought resilience
  - Training on flood early warning and monitoring
  - Appropriate training in rain water harvesting and use for agriculture for the upstream communities.
  - The varying terrain also requires education on soil and water conservation of the sub basin community.

7.1 Training Workshop

The programme that was followed for the course presentations is shown in the course outline in Annex VI. To avoid eating into the time allocated for presentations and discussions, arrival and registration was done a day before the start of the training. Introduction and expectations were done on the morning of the first day.

Each day's events were recapitulated by one volunteer from among the participants the following day. This was aimed at ensuring that the participants followed the presentations. This was positively achieved from their response during their detailed recapitulations given on a daily basis.

Presentations were organized into four parts:

Presentations which focused on Floods application of IWRM concepts and principles to manage them. Participant experience sharing and short lectures were used. This took 40% of the time allocated for each concept.

Interactive discussions which provided illustrations of the presented concepts and principles.

Practical exercises: group works and discussions, which also included role play. These were mainly focused on the exercises given by the respective facilitator, and the results were presented by each group. The facilitator(s) made the overall comment(s) at the end of this session. It equally took 40% of the allocated time.

Case studies: Ground experiences by NGOs on how communities prepare and recover from flood events, mainly from the Kenya flood prone areas, are shown in Annex IV. A case of the measures that are being put in place by the Government of Kenya was also shared. The participants had been asked to prepare case studies from their various projects.

The course ended with a session where the participants were asked to give their views on what they had achieved, gaps and how they were going to apply the knowledge they had acquired in helping their communities. There was also an evaluation of the course and certificates were issued by the Nile IWRM country representative.

a. Course outcome

Based on the participants' active involvement in the discussions and from their course evaluations, it can be concluded that the course objective of enabling policy makers and senior managers in the water sector to appreciate occurrence, management and impacts of floods and integration of IWRM in managing flood impacts, and the participants' expectations were met. Although most of them had some basic ideas of flood occurrence, use of Decision Support Systems in its mapping and management was a new concept to them. This was evident from the pre and post test which were given at the beginning and end of the training, and, from the evaluation forms. The test was used by the facilitators to gauge the value of the course to the participants.

Trainers

Trainers came from institutions of higher learning, both local and international organizations and NGOs. Most of the case studies were presented by local participants from different Organizations and NGOs within the country. Table 3 below shows the list of trainers who participated in this course.

Table 3: List of resource persons/ Facilitators

	Name	**Title**
1.	Simeon Dulo	UoN/ Course Coordinator
2.	Wangai Ndirangu	Coordinator, Nile IWRM-Net, Kenya
3.	Patricia Ochieng	MMUST
4.	Stephen Olang	IJM
5.	David Ochieng	VIRED
6.	Grace Gor	KANALO
7.	Mary Otieno	M for W
8.	Maurice Nyadawa	JKUAT
9.	Noor Hussein	UNDP
10.	Samuel Gitahi	UNDP

11.	Simon Mutie	WKCDFMP
12.	Julius Kabubi	KMD

7.2 Training materials

Most of the training materials used during the training were training manuals in IWRM, IWRM Tool Kit, lecturer notes and case study material.

This package in power point presentations, case studies and other relevant materials were made available to all participants in soft copy via a recordable CD.

8 COURSE EVALUATION

8.1. Evaluation By Participants

The participants were given evaluation forms at the end of the course to evaluate it.

Analysis of Evaluation responses

1. **Usefulness of the course**

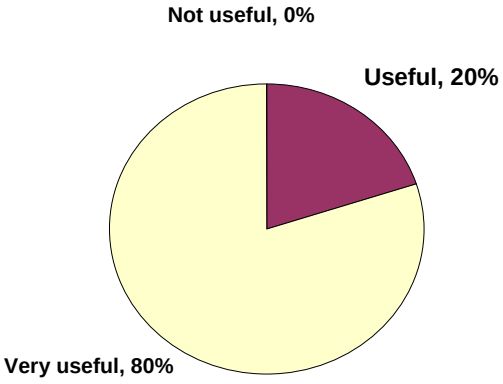

Figure 1: Usefulness of the Course

2. Level of course demand

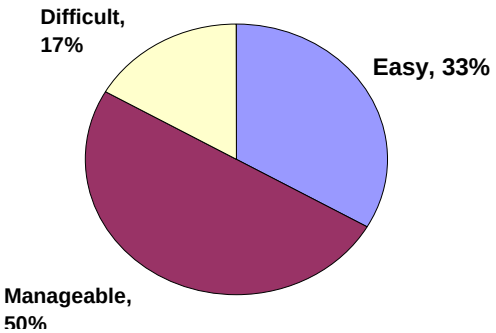

Figure 2: Level of course demand

3. Application of knowledge gained

A majority of the participants indicated they will organize similar workshops/follow-up trainings to share the knowledge gained during the training, carry out capacity building, be actively involved in policies formulation on floods management, apply the skills acquired in their daily work, empower/sensitize their communities in flood preparedness, incorporate the upcoming technology for example the Decision Support Systems (DSS), Flood Early Warning Systems (FEWS) in their projects, apply theoretical concepts into their field work, liaise and collaborate with other institutions and write proposals to donors for funds to manage disasters at their community and National levels.

4. Course rating in terms of standard of teaching and quality of the material

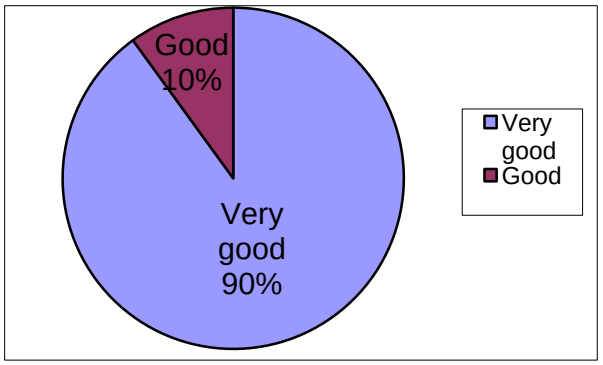

Figure 3: Course rating

5. Course recommendation to others

100% of the participants said they would recommend the course to others

6. Level of understanding of the various topics that were covered

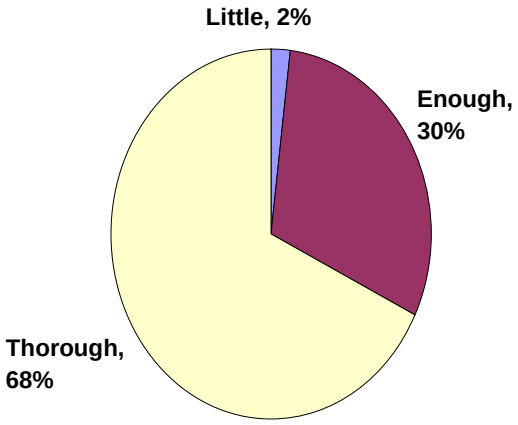

Figure 4: Level of understanding the course topics

8.2. General Comments

The participants felt that the supplementary material should be in both hard and soft copies. They also recommended for a field visit to affected areas and demonstrations on the use of available software for such trainings so that they can easily apply them in their work places. There is need to cascade the knowledge gained to other practitioners in the field of water and disasters.

Detailed responses are shown in Annex vii. Generally, the participants appreciated the different approaches to Flood Management. This was further supported by participants during the final plenary session which is also shown in Annex viii

8.3. Training Workshop Participants

Table 4: Workshop Participants

NO	NAME	COUNTRY	ORGANISATION	ADDRESS	EMAIL	TELEPHONE
1	Grace Achieng	Kenya	Kanalo Self Help Group	651 Homa Bay	achieng@ssy	0722330437
2	Mary Otieno	Kenya	Men For Women International	6885 00300 Nairobi	atermary123@yahoo.co.uk	0733293579
3	Okello Ndwalla	Kenya	NBCBN-RE	51319-00200 NAIROBI	Okelloh11@gmail.com	0720706413
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6	Lawrence Thooko	Kenya	WRMA	45250 00100 NRB	lthooko@yahoo.com	0733862628
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Full Profiles of Research Group Members are available on: The Nile Basin Knowledge Map

http://www.NileBasin-Knowledgemap.com

ANNEX

Regional Training Workshop on

"Flood Management and its Adaptation to Climate Change"

(17th to 21st November 2008)

Nile IWRM-Net

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UNOCHA

UNDP

Cap-Net

Regional Training Workshop on "Flood Management and its Adaptation to Climate Change" (17th to 21st November 2008)

TRAINING REPORT

Group photograph of some of the participants

Acknowledgements

The Kenya chapter of Nile IWRM-Net appreciates the support received from various individuals and organisation in mounting the training course in flood Management and Adaptation to Climate Change. We are grateful to United Nations Office for Humanitarian Assistance (UNOCHA), Cap-Net and Nile Basin Capacity Building Network (NBCBN-RE) for supporting national participants and other logistic costs. We are grateful to the GWP for supporting regional participants from Burundi to this course. We acknowledge Hydro-Options Limited for their role in management and logistics for the course

We are indebted to Jeanine Cooper (UNOCHA), Paul Taylor (Cap-Net), Sheriff (NBCBN-RE) and Muna Mirghani (Nile IWRM-Net), for the useful comments in development of the training.

Finally, and by no means least, to the network members in Kenya for nurturing the idea and planning work to the end.

Dulo Simeon Otieno

Course Coordinator

Preamble

Water is essential for life, development, health, and poverty alleviation. We live in a time where the world faces huge needs and challenges' to ensure better access to safe water and sanitation service to billions. These issues have been addressed by the international community via the Millennium Development Goals (MDGs) and many other global, regional, and local level forums. Countries have also been developing IWRM plans to ensure better water resources management contributes to the achievement of the MDGs.

The problem of the dwindling fresh water resources is being complicated further by the global climate change. In some areas the frequency, intensity and severity of climate events such as floods is becoming highly unpredictable. It is in this recognition that in 1995, the Hyogo Framework for Action (HFA) was formulated to assists governments in setting priorities for disaster management and increase resilience of the vulnerable local communities.

Within this context, resilience building strategies are therefore vital in order to ensure the vulnerable groups are well informed on the adaptive measures and coping mechanisms when water related disasters strike.

The Nile Basin region has been affected by floods over the past years and it is important within IWRM to capacitate water managers with these tools and strategies to effectively apply IWRM principles in managing this water related risk. Water Managers will now need to plan and develop adaptation strategies to ensure our adaptation to climate change. It is therefore important to ensure that we have trained practitioners who can lead in the development of these strategies. It is within this framework that Nile IWRM-Net organized this Training workshop on Flood Management and Adaptation to Climate Change.

The Nile IWRM net is a regional open network that operates through decentralised activities of its member centres interested in the development and implementation of capacity building activities in the countries of the Nile Basin, namely: Burundi, D.R. Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania and Uganda. The network aims to build regional cooperation and compliment the efforts of existing ongoing capacity building initiatives in the region so as to prioritize and enhance capacities in IWRM.

It is expected that workshop participants will be committed to multiply and share learning in these subjects in their own environments. Upon completion of the workshop, a training package will be available to support and facilitate this process.

1. Introduction

The regional training workshop on "Flood Management and Adaptation to Climate Change" was held at the Harlequin Suites Hotel, Nairobi, Kenya from the 17th to 21st November 2008. It was organized by the Nile IWRM-Net with funding from the International IWRM Capacity Building Network (CAPNET), Nile Basin Capacity Building Network for River Engineering (NBCBN-RE) and the Kenya United Nations Office for Coordination of Humanitarian Affairs (UNOCHA). United Nations Development Programme Somalia (UNDP) provided additional resource persons and training materials, while the Global Water Partnership (GWP) sponsored four participants from Burundi to the course. It was supported by the University of Nairobi Flood Management Cluster - Nairobi (Kenya), and Hydro-Options Limited who led the facilitation and logistics process.

As a follow-up, it is expected that similar courses will be replicated in other Nile riparian member countries at a later date perhaps next year. These trainings are necessary due to the need of building capacity on the importance of merging IWRM principles with the ever increasing water related disasters.

1.1 Course objective

The main goal of the proposed training was to enable policy makers and senior managers in the water sector to appreciate occurrence, management and impacts of floods and integration IWRM in managing flood impacts and in addition share experiences in the management of floods.

This entailed the following objectives:

- To enhance basin partnership activities in Integrated Flood Management (IFM) and IWRM Planning and management.
- To share the experiences and recent knowledge on IFM by actors in the Nile basin and facilitate the spread of the approach at different levels.
- To strengthen capacity of the Regional networks in IFM and IWRM application, research and training
- To clarify institutional responsibilities and coordination for flood management
- To bring into line regional approaches and standards for a sustainable flood management program
- To share progress, experiences and references cases for flood management within and outside the region
- To share international experience on flood management
- To promote gender mainstreaming in flood management in the region

1.2 Expected outcome

The proposed Training on floods in IWRM was expected to:

- Train resource person from the region to take the responsibility of IWRM capacity building at regional and country level.
- Strengthen links among Nile IWRM-Net members and be beneficial for the partnership
- Trigger research/linkage action on floods in IWRM challenges in the region through identified shortcomings of water resource management
- Identify missing elements or needed research in IFM
- Prepare/serve future basin partnership activities such as NBI and respond to demands for training and capacity building in IFM.

2. Target group

The focus of the course was at basin level decision makers, managers and professionals from the Kenya. Four participants from Burundi working in agriculture and water institutions also participated. Regional water officers from the six regional offices of Water Resources Management Authority (WRMA) participated. The rest of the participants were from water related NGO's, flood disaster responders and some trainers.

By nature, the course is multidisciplinary targeting water professionals and those working in and responsible for water education and water management related fields management level career as well as decision making positions. **A total of 32 participants of which 31% were women attended the course.** The list of participants is attached in annex II

3. Course presentation

The programme that was followed for the course presentations is shown in the course outline in Annex VI. To avoid eating into the time allocated for presentations and discussions, arrival and registration was done a day before the start of the training.

3.1. Pre-test and post-test examination

A pre-test which contains multiple choice questions was set in advance based on the flood management knowledge. This test was given for twenty minutes to the participants even before formal introduction was done. Each participant was given a PIN number to conceal her identity when he or she is checking her performance on the pretest. The results of the pre-test are stored until at the end of the course. Before plenary, the same test is given to participants and marked and the results are graphically represented together with the Pre-test results. This helps the facilitators to assess whether they achieved in terms of raise flood management knowledge to the participants. The results of pre-test and post-test are shown on ***annex VII***

Introduction and expectations were done on the morning of the first day after the pre-test examination. The expectations that came from the participants are listed in ***annex III***

Each day's events were recapitulated by one volunteer from among the participants the following day. This was aimed at ensuring that the participants followed the presentations. This was positively achieved from their response during their detailed recapitulations given on a daily basis.

Presentations were organized into four parts:

b. ***Presentations*** which focused on Floods application of IWRM concepts and principles to manage them. Participant experience sharing and short lectures were used. This took 40% of the time allocated for each concept.
c. ***Interactive discussions*** which provided illustrations of the presented concepts and principles.
d. ***Practical exercises***: group works and discussions, which also included role play. These were mainly focused on the exercises given by the respective facilitator, and the results were presented by each group. The facilitator(s) made the overall comment(s) at the end of this session. It equally took 40% of the allocated time.
e. ***Case studies***: Ground experiences by NGOs on how communities prepare and recover from flood events, mainly from the Kenya flood prone areas, are shown in ***annex VI.*** A case of the measures that are being put in place by the Government of Kenya was also shared. The participants had been asked to prepare case studies from their various projects.

The course ended with a session where the participants were asked to give their views on what they had achieved, gaps and how they were going to apply the knowledge they had acquired in helping their communities. There was also an evaluation of the course and certificates were issued by the Nile IWRM country representative.

4. Course outcome

Based on the participants' active involvement in the discussions and from their course evaluations, it can be concluded that the course objective of enabling policy makers and senior managers in the water sector to appreciate occurrence, management and impacts of floods and integration of IWRM in managing flood impacts, and the participants' expectations were met. Although most of them had some basic ideas of flood occurrence, use of Decision Support Systems in its mapping and management was a new concept to them. This was evident from the pre and post test which were given at the beginning and end of the training, and, from the evaluation forms. The test was used by the facilitators to gauge the value of the course to the participants.

5. Trainers

Trainers came from institutions of higher learning, both local and international organizations and NGOs. Most of the case studies were presented by local participants from different Organizations and NGOs within the country. ***Table 1*** below shows the list of trainers who participated in this course.

Table 1: List of resource persons/ Facilitators

sn	Name	Title
1.	Simeon Dulo	UoN/ Course Coordinator
2.	Wangai Ndirangu	Coordinator, Nile IWRM-Net, Kenya chapter
3.	Patricia Ochieng	MMUST
4.	Stephen Olang	IJM
5.	David Ochieng	VIRED
6.	Grace Gor	KANALO
7.	Mary Otieno	M for W
8.	Maurice Nyadawa	JKUAT
9.	Noor Hussein	UNDP
10.	Samuel Gitahi	UNDP
11.	Simon Mutie	WKCDFMP
12.	Julius Kabubi	KMD

6. Training materials

Most of the training materials used during the training were training manuals in IWRM, IWRM Tool Kit, WMO applied flood management programme, lecturer notes and case study material.

This package in power point presentations, case studies and other relevant materials were made available to all participants in soft copy via a recordable CD.

7. Course evaluation

7.1 Evaluation by participants

The participants were given evaluation forms at the end of the course to evaluate it. The copy of the form used is attached in ***annex VIII***. Detailed responses are shown in ***annex IX.*** Generally, the participants appreciated the different approaches to Flood Management. This was further supported by participants during the final plenary session which is also shown in ***annex X***

7.2 Evaluation by Facilitators

All the facilitators met a day before the workshop to go through the programme and ensure that the materials were focused, balanced and well distributed among all. This was a very critical step because overlaps and repetition were avoided.

The participants were booked in the same premises where the course took place. This avoided transport complications and enabled the participants to keep time. The group discussions went well, most participants were actively involved. The presentations had good breaks in between in form of questions and controlled discussions.

There was good interaction between the participants and the coordinators/facilitators. Group exercises and discussion questions were distributed a day before to give participants time to reflect.

Based on the pre-test and post-test results, it was evident that the participants' expectation of gaining more knowledge in flood management issues had been achieved. This was attributed to the selection of participants who are directly involved in handling flood issues on the ground.

8. ANNEXES

ANNEX 1: THE COURSE OUTLINE

1. Basic principles of Integrated Water Resource Management (IWRM)

    - Introduces the principles and institutional requirement for effective IWRM programs in the water sector.

2. Introduction to Integrated Flood Management (IFM)

    - Introduces the concept, institutional requirements, stakeholder roles, environmental and sustainability aspects in managing floods.
    - Institutional set up for Flood Management – looks at Comparative examples of legal and institutional structures used in other countries in Africa, Europe, L. America Land use factors in flood management

3. Community preparedness and recovery (Social aspects of flood management)

    - The effective use of excess water and backwater to reduce vulnerabilities and build disaster-resilient.
    - People and Floods - the various social factors determining a community's capacity to anticipate, cope with, resist and/or recover from the impacts of flooding.
    - A highlight of community's vulnerability (poverty and livelihoods).

4. Planning for Floods and Catchment and Management:

    - Define stakeholders and their role in IFM
    - Looks at the case of mobilized Local energies for preventive measures
    - Building societal resilience for sustainability

5. Impact of Climate change and Environmental Aspects of floods

    - Introduce the Impact of climate change on floods and water resources
    - Adaptation to climate change scenarios
    - Putting the environment in IFM through the ecosystem approach
    - Introduces the concept of "sustainable development" has been at the centre of the environment and development debate since the Conference on Human Environment in Stockholm in 1972.
    - Appreciate the impact of flooding on the ecosystem (positive and negative)

6. Technical aspects for flood management:

    - Flood mapping
    - Vulnerability assessment
    - Intervention mechanisms and coping strategies
    - Structural versus non structural approaches

7. Emerging Technologies in flood Management

    - Introduce GIS and Remote Sensing in Flood Management
    - Use of predictive models in catchment management

8. Financing in flood management

    - Financing for Flood Management
    - Emergency funding

ANNEX II: LIST OF PARTICIPANTS

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ANNEX III: PARTICIPANTS' EXPECTATIONS

The flowing were the participants expectations at the beginning of the course

1. impact of floods and how they are managed
2. methods of mitigation and management
3. application of emerging technology
4. more responsive to floods and mitigation
5. coping with floods and benefits
6. improving early warning systems
7. to share experiences on community affected
8. experience and technology on flood management
9. insight on dynamics of climate change
10. be more knowledgeable in water management
11. skills and expertise
12. professional pulling together for community
13. system for flood mitigation
14. integrating the multi disciplinary approach to flood management
15. harmonizing flood management mechanisms
16. how to forecast and predict flood
17. how to manage the flood in urban areas
18. community response over time
19. sharing community experiences from different regions
20. the different professional view points on flood
21. level of beneficiary participation
22. flood management can be co-opted in to the lives of the affected
23. how communities coping with new flood (areas)
24. improve capacity to cope with floods through IWRM
25. community preparedness and recovery methods
26. formulating and implementing policy for water management
27. funding of flood programs
28. definition of floods and where they occur
29. effects of floods and control
30. flood mapping and assessment

ANNEX IV: COURSE PROGRAMME

Day	8:15-9:30	9:30-10:30	10:30-11:00	11:00-12:00	12:00-1:00	1:00-2.00	2:00-3:30	3:30-4:30	4:30-5:00	
SUNDAY 16th Nov		Arrival and Registration						Free Evening		
Monday 17th Nov	Pre-test, Introductions and Expectation	Basic principles of Integrated Water Resource Management (IWRM)	TEA	Introduction to Integrated Flood Management	Flooding in Africa	LUNCH	VIDEO/ Discussion	Institutional set up for Flood Management (Comparative examples from Africa, Europe, L. America)	TEA	Dinner

	8:30-9:00	9:00-10:30	10:30-11:00	11:00-1:00	1:00 2:00	2:00-3:30	3:30-4:00	4:00-5:30
Tuesday 18th Nov	Recap of Day 1	Community preparedness and recovery	TEA	CASE STUDIESNGOs Group Activity/ Discussion	LUNCH	Flood preparedness in Kenya	TEA	Exercise
Wed 19th Nov	Recap of Day 2	Flood institution, policy and stakeholders and coordnation. Participatory approach to FM	TEA	Watershed Management	LUNCH	Structural and non-structural approach to FM	TEA	Case study, Burundi

Thursday 20th Nov	Recap of Day 3	Climate change and Environmental Aspects of floods	TEA	Flood mapping and assessment	LUNCH	Emerging Technologies in Flood Management	TEA	Group Activity/ Discussion G Planning case studyroup
Friday 21st Nov	Recap of Day 3	Decision Support Systems	TEA	Financing in Flood Management	Training wrap up, way forward and feedback from participants	LUNCHEON and CLOSING SESSION	Departures	

ANNEX V: EXERCISES/GROUP DISCUSSIONS

Exercise 1: Flood planning at catchment level

1. Form four teams representing;
    a. Upper catchment residents
    b. Middle catchment residents
    c. Lower catchment residents
    d. The Pundamilia Catchment Development Authority
2. Each team takes 20 minutes to prepare a Flood Preparedness Plan for the whole catchment.
3. Short presentations by each group
4. Plenary draw a summary on merits and demerits of each groups plan.

Introduction

Pundamilia catchment is represented in figure 1. Highlights of the catchment characteristics are as follows;

- Long rains experienced in February to May
- Short rains experienced in September to November
- Upper catchments forest reserve – population of 1,500 traditional community: wild life: illegal logging
- Middle catchments – population of 40,000 - agricultural activities with agricultural processing industrial town ship
- Lower catchments - population of 40,000: small scale subsistence faming, fishing - experiences flooding every rainy season and cycles of droughts every 5 years
-

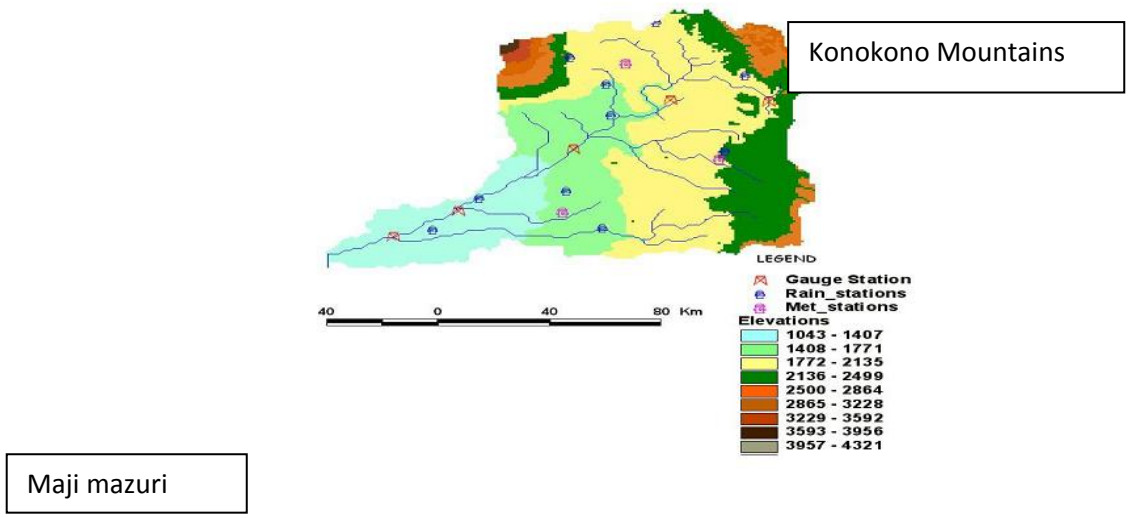


Figure 1: Pundamilia Catchment

In this exercise the participants appreciated the role of stakeholder involvement in planning and holistic approach in flood management

Exercise 2: Hazard Analysis for disaster prioritization

In this exercise five groups representing the 5 drainage basins in Kenya are formed (Tana, Athi, Ewaso Ngiro North, Lake Victoria and Rift valley)

Exercise2.1: List the top five water related hazards that are likely to occur in your water drainage basin within the next 5 years

1. ----------

2. ----------

3. ----------

4. ----------

5. ----------

Examine the list of top 5 hazards that you have made. Do you think they all have the same likelihood of occurrence?

Exercise 2.2.: Probability of Occurrence of Disasters

The population in your drainage area is at risk of each of the top 5 water related hazards your have listed above. However, the potential for any hazard to affect an area is measured by two factors:

1. The probability of occurrence of the particular disaster: What is the likelihood that this disaster will happen in 5 years?
2. The potential impact of the hazard on the area once it occurs?

When we combine these two aspects, we obtain the priority level for this hazard in that area. It helps us to determine the priority hazards that we should focus on based on their probability of occurrence and their potential impact once they occur. We shall therefore undertake a series of activities to determine the disaster hazard profile for the five drainage basins in Kenya

In this activity, we shall first look at probability of occurrence. On a scale of 0 to 3, score the likelihood of occurrence of each of the 5 disasters you have listed within the next 5 years

Probability Score	Score = 0	Score = 1	Score = 2	Score = 3
Probability Criteria	Highly improbable	Improbable	Probable	Very probable

Fill in your score in the table below:

Table 1: Probability of occurrence of the 5 disasters in your area

	Hazard	Probability Score
1		
2		
3		
4		
5		

Exercise2.3. Potential Impact of the Disasters

In this activity, we shall see the potential impact of each of these hazards to the area, and shall use 4 simple criteria and a simple score of 0 to 3 to determine the potential impact of all the 5 disasters/hazards that you have already listed.

Procedure

1. Participants should be seated in basin area teams
2. Each team chooses a rapporteur
3. Each team lists the top 5 disasters that you discussed in your groups
4. Each team scores potential impact for each hazard using the four criteria named in the table 2 below (On a scale of 0 to 3 based on your experience and consensus of team members)
5. Each team then calculates the mean impact score by adding the scores for the four criteria scores and dividing by four
6. Each team places the mean impact score into the far right column of Table Three

Table Two lists an explanation of the criteria used to assign relative impact of the various hazards

Table Two: Criteria for scoring potential impact of hazards

Potential Impact Criteria	Score = 0	Score = 1	Score = 2	Score = 3
Size of incident area	None or negligible	Small part of the district	Large part of District	Entire District

Percentage of population whose health will be affected	None or negligible	Low (Less than 25% of total population)	Moderate (26-75% of population)	High (75-100% of total population)
Potential for lethality among those affected	None or Negligible	Low (less than 25%) chance of being deadly	Moderate (26-75%) chance of being deadly	High (75-100%) chance of being deadly
POTENTIAL DEGREE OF DESTRUCTION OF CRITICAL INFRASTRUCTURE	None or insignificant destruction likely to occur	Limited to a small part of the infrastructure	Large part of the infrastructure	Infrastructure in entire district likely to be affected

Table Three: Potential Impact Score of the Top 5 Disasters likely to occur in your area

Hazards	Size of incident area	Size of population	Potential lethality	Potential destruction of critical infrastructure	Mean Impact score

Exercise 2.4.: Combining the two components of a Hazard to determine the priority hazards for your area

Remember the formula:

Disaster Risk = [Hazard X Vulnerability]

In this exercise, we are going to combine these two scores for each hazard (the probability score and the mean impact score to come up with the hazard priority score

Steps:

1. Each team lists the top 5 disasters for their area
2. Each team transfers the probability score for each hazard from Table 1 to Table 4
3. Each team transfers the mean impact score for each hazard from Table 3 to Table 4
4. Each team calculates the hazard priority score for each of the 5 hazards by multiplying the Impact score by the Probability score

5. Each team lists the resultant hazard priority score for each of the ten hazards in the far right column of Table 4.
6. Now Rearrange the Disasters according to the Hazard Priority Score

Table Four: Hazard Priority Scores

Hazard	Probability score (A)	Impact score (B)	Hazard priority score (A X B) = (C)
1.			
2.			
3.			
4.			
5.			

Question: Based on the combined score, what are the top 3 disaster priorities in your area? What observations can you make for the flood hazard in your drainage basin?

The interesting results of this exercise were that, floods are not a major hazard in many parts of Kenya including the flood prone areas. More pressing issues of soil erosion, diseases and even food security scored more than flood and droughts.

Annex VI: Case studies

Case 1: Local Community preparedness

- Women, children and livestock are evacuated to higher ground.
- Each homestead has a canoe for transport and evacuation during flooding event.
- No ploughing along the shores to raise ground and form embankments.
- Older people are supposed to dig trenches to control the water around the homestead and around the sambas.
- There often big families and limited camping resources making community survival snug on relief food.
- Because there can be no strategic anticipation of adversity or strategic planning done to predict the severity of the flood, the impacts are usually enormous
- Often there is breakdown of family values when all members of a household are hurdled together

Organizational Structures

- International development partners and NGOs
- District development committees
- Provincial administration disaster management committee
- Local flood management committees,
- Local authorities
- Initiatives by local community based organizations
- Inter-ministerial committee

- Ministries of water resource management
- These organizational structures in place to manage floods tend to respond after flooding has occurred and hardly prepares the community

Case 2: Food for Work in western Kenya

Drainage canal

Irrigation Canal

Water retention Ponds

Reclaimed irrigation scheme

ANNEX VII: Pre-test, post-test and Results

Answer **All** Questions

Time: 20 Minutes

1. Which one of the following is the best description of a flood?

a) When an area goes under and remains under water for some time
b) When a river overtops its bank and flows to adjacent ground
c) When inundation causes damage to property and crops, disrupts communication and brings harmful effects to human beings as well as to flora and fauna
d) When water stands on a big ground area with no where to flow and the water level rise markedly
e) None of the above

2. Floods are best classified as:

a) Climatic, geological and geographic
b) slow onset, rapid onset and Flash floods
c) Natural, human induced and complex occurences
d) Weather, climate and geographic
e) All of the above are correct

3. The following are posible consequences of floods except

a) Destruction of Infrastructure;
b) Displacement of people;
c) Death of humans and animals;
d) Disease outbreaks (Malaria, RVF, etc);
e) Better availability of portable water for communities

4. The following are possible causes of floods: True or False (1 mark each)

a) Runoff in excess of the conveyance capacity
b) Deterioration of drainage channels
c) Cultivating in low lying lands
d) Drainage congestion leading to clogging
e) Lack of a Flood Early Warning System (FEWS)
f) Deforestation and land use practices
g) Urbanization and low infiltration rate
h) Living standards of the community
i) Drainage characteristics (Concentration time T_c)
j) Global climate change

5. Flood impacts on all sectors of the economy except

a) Agriculture
b) Environmental degradation
c) Deserts
d) Energy
e) Communications infrastructure

6. True or false regarding floods (1 mark each)

a) Floods can never be fully controlled
b) Floods can be fully controlled

c) Floods are part of the dynamic process of river system functioning and, with rare exceptions, are caused by natural phenomena
d) Floods are recurrent, their severity varies over a wide range, and they are largely unpredictable in terms of magnitude and occurrence
e) Floods brings in more economic benefits than loses

7. The three elements that must be present for there to be a flood are:

a) Rainfall, channel and slope
b) River, slope and reservior
c) Water source, conveyance channel and a flood plain,
d) Dam, water source and slope
e) High ground, slope and rainfall

Results of pre-test and post-test

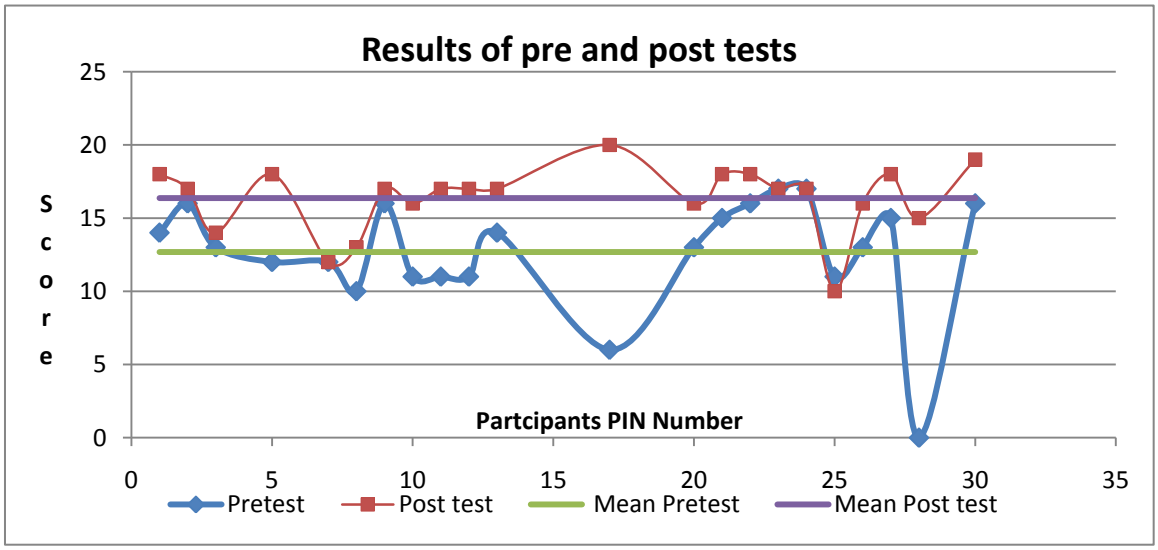


Figure 2: Graphical representation of the pre and post tests

Results indicate that there was a great level of achievement of the flood knowledge by the participants. The most striking case being the case of participants who had a zero in pretest and 15 out of 20 in the post-test. This indicates a positive change in knowledge level and it is a good score for the trainers

ANNEX VIII: Course Evaluation Questionnaire

(Please take a few minutes to complete). The scale is 1: 5

A. Course Impact

1. How *useful* did you find the course?

Not useful ☐ ☐ ☐ ☐ ☐ Very useful

2. How *demanding* did you find the course?

Very easy ☐ ☐ ☐ ☐ ☐ Very difficult

3. In your own words, kindly indicate how you are going to use the knowledge gained in your field of work

……

……

……

……

……

B. Did we get it *right*?

		Too little				Too much
1.	Amount of material covered	☐	☐	☐	☐	☐
2.	Supplementary reading material	☐	☐	☐	☐	☐

3. Practical content/Role plays ☐ ☐ ☐ ☐ ☐

4. Subject Knowledge ☐ ☐ ☐ ☐ ☐

5. Interaction with presenter's ☐ ☐ ☐ ☐ ☐

6. Group work ☐ ☐ ☐ ☐ ☐

C. Course rating

1. How did you rate the overall *standard* of teaching?

Very poor ☐ ☐ ☐ ☐ ☐ Very good

2. How did you rate the *quality* of the course materials?

Very poor ☐ ☐ ☐ ☐ ☐ Very good

3. Would you *recommend* the course to other people?

No ☐ Perhaps ☐ Yes ☐

If no, please give your reason(s).

……..……
……..

……..……
……

D. Individual Sessions

Please indicate your level of *understanding:*

4.1	*Thorough* **Understanding**				*Little* **understanding**
1. Basic principles of IWRM	?	?	?	?	?
2. Introduction to Integrated Flood Management (IFM)	Ž	Ž	Ž	Ž	Ž
3. Flood management comparative examples				Ž	Ž Ž Ž
4. Community preparedness and recovery	?	?	?	?	?
5. Flood preparedness (western Kenya Project)				Ž	Ž Ž Ž
6. Flood institutions, participatory approach	?	?	?	?	?
7. Watershed management for flood control		Ž	Ž	Ž	Ž Ž
8. Structural and non structural approach to FM	Ž	Ž	Ž	Ž	Ž
9. Climate change and its adaptation to FM		Ž	Ž	Ž	Ž Ž
10. Psychological aspects of flood disaster	Ž	Ž	Ž	Ž	Ž
11. Flood mapping and assessment	?	?	?	?	?
12. Emerging technologies in flood management	Ž	Ž	Ž	Ž	
13. Decision support systems		Ž	Ž	Ž	Ž Ž
14. Financing in flood management	Ž	Ž	Ž	Ž	Ž

4.2E. Other comments in general

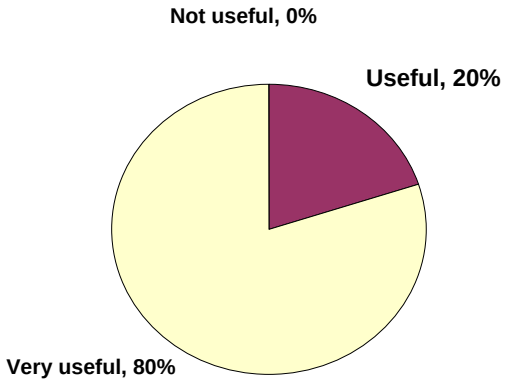
Further comments on any of the above or any other aspects of the course (e.g. relevance of group discussion, software, teaching style, practical work, quality of food, venue,)

ITEM	COMMENT

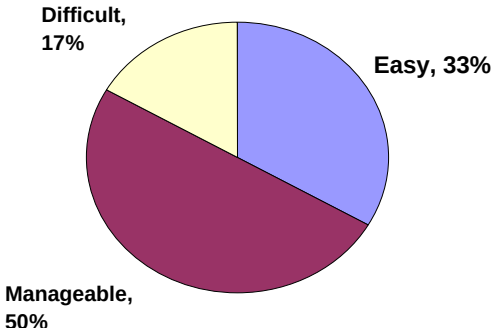
Name (optional) ……..

ANNEX IX: Analysis of Evaluation responses

1. Usefulness of the course



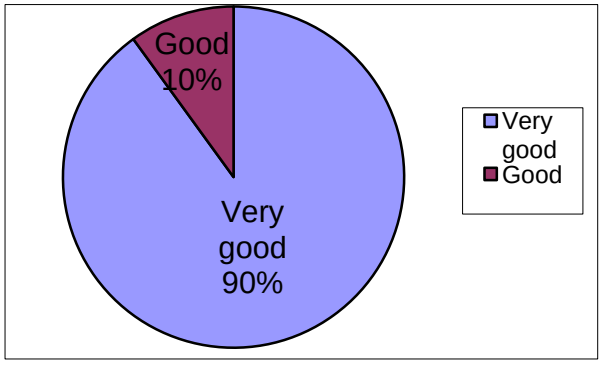
2. Level of course demand



3. Application of knowledge gained

A majority of the participants indicated they will organize similar workshops/follow-up trainings to share the knowledge gained during the training, carry out capacity building, be actively involved in policies formulation on floods management, apply the skills acquired in their daily work, empower/sensitize their communities in flood preparedness, incorporate the upcoming technology for example the Decision Support Systems (DSS), Flood Early Warning Systems (FEWS) in their projects, apply theoretical concepts into their field work, liaise and collaborate with other institutions and write proposals to donors for funds to manage disasters at their community and National levels.

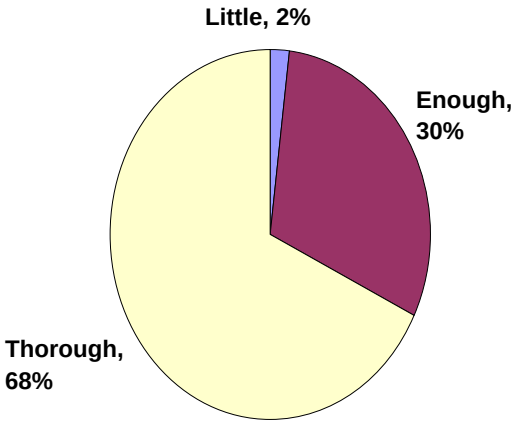
4. Course rating in terms of standard of teaching and quality of the material



5. Course recommendation to others

100% of the participants said they would recommend the course to others

6. Level of understanding of the various topics that were covered



7. General comments

The participants felt that the supplementary material should be in both hard and soft copies. They also recommended for a field visit to affected areas and demonstrations on the use of available software for such trainings so that they can easily apply them in their work places. There is need to cascade the knowledge gained to other practitioners in the field of water and disasters.

ANNEX X: CLOSING SESSION

During the closing plenary, the following key achievements, observations, and requirements as the way forward were made by the participants;

Achievements

- Freshened Understanding on flood disaster management
- Sector responsibilities and role in flood management
- Enhanced knowledge on flood occurrence , impacts and management
- Current Efforts on flood management by various groups
- Appreciated the 'interrelation' concept in flood management
- Enhanced networking among flood management players
- Motivated to think outside the box
- Real case examples on flood management by participants demonstrates the 'yes we can'
- Highlighted the importance of bottom –up participatory approaches
- Marked institutional, policy, and, knowledge gaps and challenges for flood management

Way forward:

Kenya

- Sensitization of decision makers on importance of data
- Nile IWRM-Net to facilitate a session on data and knowledge sharing and management
- Take steps to codify met stations and RGS in our institutions
- Metrological department willing to give free rain gauges to institutions on an agreed procedure
- Water Resources Management Authority (WRMA) are in the process of acquiring monitoring equip and rehabilitating the monitoring stations
- Encourage collaboration between research institutions and WRMA to undertake studies and improve understanding on water and flood management
- Enhance application of research findings to assisting policy and implementation
- All stakeholders to promote participation and dissuade negative practices in particular WRMA encouraged to continue promotion of WRUAs and catchment strategy and wide range consultation
- Expose students at universities and training institutions to field experience through talks, field trips and attachments
- WRMA to map new flood prone areas and develop early flood warning system
- Maintain a mailing list
- Keep in touch on Nile IWRM-Net/Capnet activities on www.cap-net.org

Burundi

- Support institutional development for water resources management – similar to WRMA in Kenya
- Take steps to promote regional data sharing possibly within the on-going Nile basin DSS project
- Advocate for rehabilitation of meteorological equipment
- Use up coming forum and planning processes to emphasize the need for national disaster management institution

Report prepared by:

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2010

Capacity Building for Local Communities to Effectively Respond to Floods and Droughts

The Lake Victoria South Basin is prone to frequent floods and droughts. As the risk of flooding is a severe hazard to human life, activities and structures, there is need for prevention and protection policies, which aim at reducing the vulnerability of people and property. Though the solution for flood mitigation and prevention seems simple, it involves a vast amount of data and knowledge about the causes and influencing factors of floods and their resulting damage. An accurate prediction and prior warning can greatly reduce the damage costs and loss of life due to a flood disaster.
Floods are mainly a result of quick-flow rather than base-flow, and are usually caused by intense or prolonged rainfall, snowmelt or a combination of these factors. On the other hand droughts are caused by the deficiency of rainfall resulting to low flows and even drying up of the rivers in severe cases.

There is inadequate water resources management and related disaster management capacity in terms of facilities, information, manpower and funding in the Lake Victoria South Basin. Poor land use practices, deforestation and catchment degradation exacerbate the effects of floods and droughts. There are hardly any effective flood and drought forecasting systems operational in the Lake Victoria South Basin; therefore there is a need for the development of local capacity in flood and drought forecasting and early warning for the benefit of all the inhabitants of the basins.

Publisher: The Nile Basin Capacity Building Network, 2010

Knowledge Networks for the Nile Basin