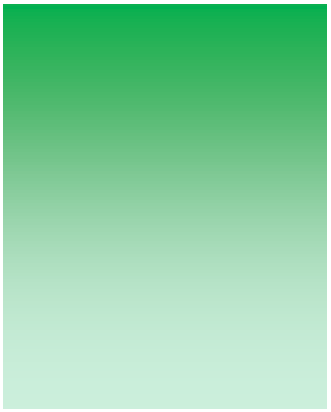
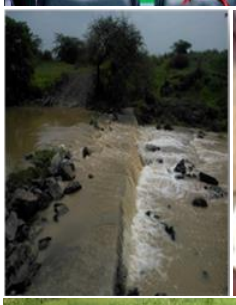
Global Water Partnership South Asia



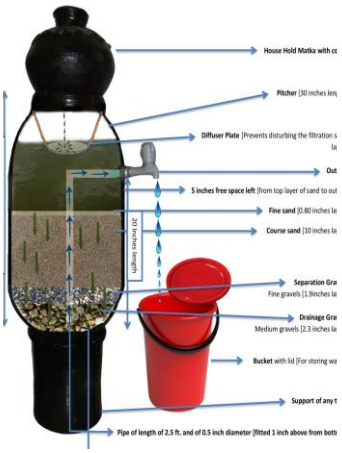



Water security for Development: South Asia in Action

Water and Climate Resilience Programme (WACREP)

Project Completion Report (PCR) Phase I

(October 2013 – March 2015)




GLOBAL WATER PARTNERSHIP SOUTH ASIA (GWP SAS)
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Table of Content

FOREWORD

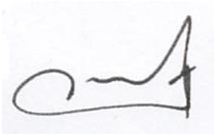
BY MR ISWER RAJ ONTA OF NEPAL,
GWP SOUTH ASIA REGIONAL CHAIR,

In South Asia Climate Change is expected to hit the hardest and will have profound effects on water and food security. Hence, South Asia will need to face the full implications of the increasingly strong interconnections between water and food insecurity; where climate change resiliency and regional integration are crucial. Climate change adaptation in water and agriculture sectors along with coping with disaster preparedness through systematic planning and implementation is the most difficult challenge in the region.

In response, Water and Climate Resilience Programme (WACREP) South Asia was launched at the India Water Week in April 2013. WACREP is a landmark initiative by the Global Water Partnership South Asia (GWP SAS) and it was formulated to improve the climate resilience of South Asian Countries to withstand the impact of climate change. Under this programme, Country Water Partnerships (CWPs) worked with the respective governments and its agencies and provided them much needed planning/technical support.

It is a remarkable achievement to receive substantial resources from Water Climate and Development Programme (WACDEP) Global intuitive, for the South Asia Region. This programme has already been linked up with the regional bodies such as United Nations Development Programme (UNDP), South Asia Co-operative Environment Programme (SACEP) and The South Asian Association for Regional Cooperation (SAARC) Disaster Management Centre (DMC) in implementing its activities. This was a new challenge for the CWPs who were tirelessly worked to achieve the results of the interventions with their partners. As a result of this project, capacities of partners, institutions and stakeholders in the region are being enhanced to integrate water security and climate resilience in development planning and decision making processes. As the Regional Chair, I am very much confident that GWP Office has adequate evidences to showcase and market WACREP among the donor community for resource mobilization, and ensure sustainability of the programme. I extend my sincere thanks to the Country Coordinators and Country Chairs for their remarkable contributions and regional staff for their efforts.

I am sure that this report would be a good portrait of courageous work of our partners and stakeholders, and would further encourage donors to work in the region, where nearly two billion people live.



Iswer Raj Onta
Regional Chair, Global Water Partnership, South Asia

FOREWORD

BY ANGELA KLAUSCHEN
SENIOR NETWORK OFFICER, GWP SECRETARIAT

Climate change is reshaping the planet in a significant way. Rising temperatures, melting ice, and surging seas are just a few of the obvious effects that we are already observing. According to recent climate reports, these events could bring on a whole host of other consequences, including bigger storms, increases in infectious disease, shifts in plant and animal life, droughts, and even increased poverty and civil unrest. In fact, climate change is threatening one of our planet's most precious and necessary resources: ***our water***

But by this we does not mean only the oceans. We are also talking about our freshwater resources - the water we depend on for drinking, bathing, and nourishing our crops, which can't grow in salt water, and for producing electricity and industrial goods. Higher temperatures can increase the chance of drought, making water scarce. Hotter weather also means people, animals, and even plants need to take in bigger volumes of water to avoid dehydration, putting a strain on the water supplies that already exist. On top of that, sea-level rise in coastal areas can allow salty ocean water to contaminate freshwater aquifers, which many coastal communities rely on for their drinking water and irrigated agriculture. Other sectors also suffer from enhanced competition of this vital resource becoming scarcer and scarcer, leading to tensions over water use and necessary trade-offs.

How serious the water problem becomes - along with all the other climate-related effects - depends on whether we will be able to buckle down and start cutting the amount of carbon dioxide and other greenhouse gases we currently pour into the atmosphere. In South Asia, we are already seeing the first examples of how climate change could leave us all thirsty, since it is a climate change hotspot in the world. In this context, the Global Water Partnership's Secretariat is supporting GWP South Asia's project Water and Climate Resilience Programme (WACREP SAS) under its global programme Water and Climate Development Programme (WACDEP).

This programme was weighted high towards the countries in South Asia, namely Bangladesh, Bhutan, India, Pakistan, Nepal and Sri Lanka, and ground level climate resilience interventions have been implemented by respective Country Water Partnerships (CWPs) with their partners, whereas a number of regional activities have also been implemented jointly by the Regional Office in Colombo and relevant CWPs. These ground level interventions were very fruitful, with a large number of stakeholders and local communities benefitting from the project.

I am happy to be associated with this project as the Senior Network Officer responsible for South Asia within the Global Water Partnership headquarters in Stockholm. I would therefore like to extend my sincere thanks to my South Asian colleagues who made this project possible and very successful, the present document giving an excellent picture of this success story.

Angela Klauschen
Senior Network Officer, Global Water Partnership

ACKNOWLEDGEMENT

The WACREP SAS Programme would like to extend its sincere thanks to GWP Chair, Dr Schaefer-Preuss, and former Executive Secretary Dr Ania Grorbicky for incorporating WACREP to GWPO project portfolio from 2013 onwards.

John Metzger, Head, Network Operations, Alex Simalabwi, Global WACDEP Coordinator and Jacques Rey, Head of Network Operations were instrumental in guiding us to develop a fundable project under global WACDEP programme and we extend our earnest thanks to them.

This project was not possible without the support of Catharina Sahlin-Tegnander, Head of Finance and Administration and therefore, we extend sincere thanks to her and her team Peter Nyman, Senior Financial Officer; Sandra Lindholm, Financial Officer at GWP Secretariat.

We are thankful to Steven Downey, Head of Communications at GWP Secretariat who helped us in highlighting the WACREP interventions at global level.

We extend our sincere thanks to Angela Klauschen, Senior Network Officer for South Asia and China who provided us with for her contribution in project implementation.

Our earnest thanks go to Susanne Skyllerstedt, Programme Officer and Ralph Philip, Monitoring and Evaluation Officer at the GWP Secretariat who supported us in project implementation and monitoring.

Special thanks go to the GWP SAS Regional Chair, Iswer Raj Onta for guiding us from the project development to implementation and Programme Sub Committee Members, Dr K. Vijayalakshmi of India; Nilufa Islam of Bangladesh and Sabitri Tripathi of Nepal for their valuable inputs.

The CWPs and their partners were the pillars of this success, who implemented the activities at the ground level. We express our earnest thanks to the CWP Chairs and Country Coordinators.

Special thanks go to Priyanka Dissanayake, Regional Coordinator, GWP SAS who provided the support in timely fund transferring in coordination with International Water Management Institute (IWMI), the host of GWP SAS Regional Office.

We are grateful to the IWMI Finance Team Gamini Halvitage, Financial Controller; Ranjith Samarakoon, Accountant and Nadeesha Rajapaksha, Project officer for the support extended in managing funds.

We would like to acknowledge the editorial support of Diluka Piyasena, Communication Coordinator, GWP SAS who tirelessly reviewed the draft several times to produce this report.

K. L. Induruwage
Programme Manager, Water and Climate Resilience Programme (WACREP),
Global Water Partnership, Regional Office, South Asia.

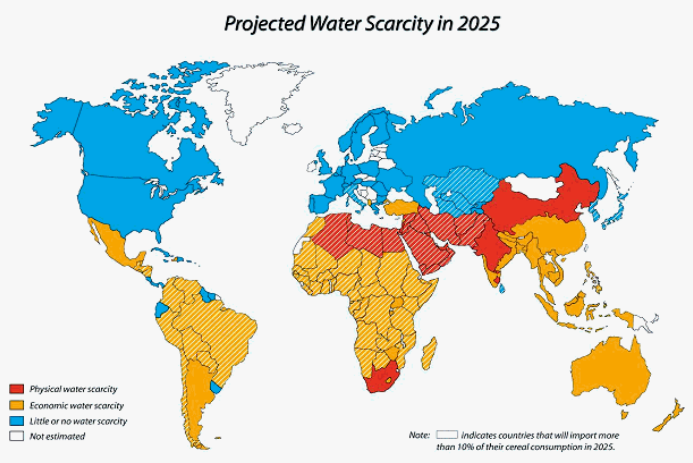
Acronyms and Abbreviations

AADI	Asianics Agro Development International
ADB	Asian Development Bank
APAN	Asia Pacific Climatic Change Adaptation Network
AWP	Area Water Partnership
BhWP	Bhutan Water Partnership
BOD	Board of Director
BWP	Bangladesh Water Partnership
BWIN	Bangladesh Water Integrity Network
BWWN	Bangladesh Women and Water Network
CDM	Clean Development Mechanism
CDKN	Climatic Development Knowledge Network
CEA	Central Environmental Authority
CGIS	Centre for Environment and Geographic Services
CWP	Country Water Partnership
DANIDA	Danish International Development Assistance
DNA	Designated National Authority
DMF	Design Monitoring Framework
EC	Executive Committee
GWP	Global Water Partnership
GWP SAS	Global Water Partnership South Asia
GWPO	Global Water Partnership Organisation
IFPRI	International Food Policy Research Institute
IMT	Irrigation Management Transfer
IPCC	Intergovernmental Panel on Climate Change
IWP	Indian Water Partnership
IWRM	Integrated Water Resources Management
IWM	Institute of Water Modelling
LWP	Local Water Partnership
MDG	Millennium Development Goals.
MWWRA	Maharashtra Water Resources Regulatory Authority.
NARBO	Network of Asian River Basin Organizations
NWP	Nepal Water Partnership

NWSDB	National Water Supply and Drainage Board
OM	Outcome Mapping
PID	Provincial Irrigation Department.
PIM	Participatory Irrigation Management
PPMI	Peoples Participatory Management Institutions.
PRI	Panchayati Raj Institutions
PWP	Pakistan Water Partnership
RBO	River Basin Organization
SACEP	South Asia Co-operative Environmental Programme
SASNET RBO	South Asia Network of River Basin Organization
SAS	South Asia
SAARC	South Asian Association for Regional Cooperation
SAARC DMC	SAARC Disaster Management Centre
SC	Steering Committee
SLWP	Sri Lanka Water Partnership
US AID	United States Agency for International Development
WARPO	Water Resources Planning Organization
WESC	Water and Energy Commission Secretariat
WWN	Women and Water Network
ZWP	Zonal Water Partnership
SPRSS	Summary of Poverty Reduction and Social Strategy
NetWATER	Network of Women Water Professionals

COLLABORATIVE PARTNERS

EXECUTIVE SUMMARY



Climate change is expected to account for about 20 per cent of the global increase in water scarcity and countries that already suffer from water shortages will be hit hardest. The impact of a changing climate will not only affect bulk water availability but also worsen the extremes of drought and floods. According to the water scarcity projection, South Asia, where nearly two billion people or 40 per cent of the world's poor live will face both physical and economic water scarcity in 2025.

In this context, WACREP is a remarkable initiative by GWP SAS Regional Office with the financial support of GWP Secretariat, Stockholm through the generous donations of Department for International Development (DFID) of Government of United Kingdom. The programme officially launched in April 2013 and began its implementation in October 2013.

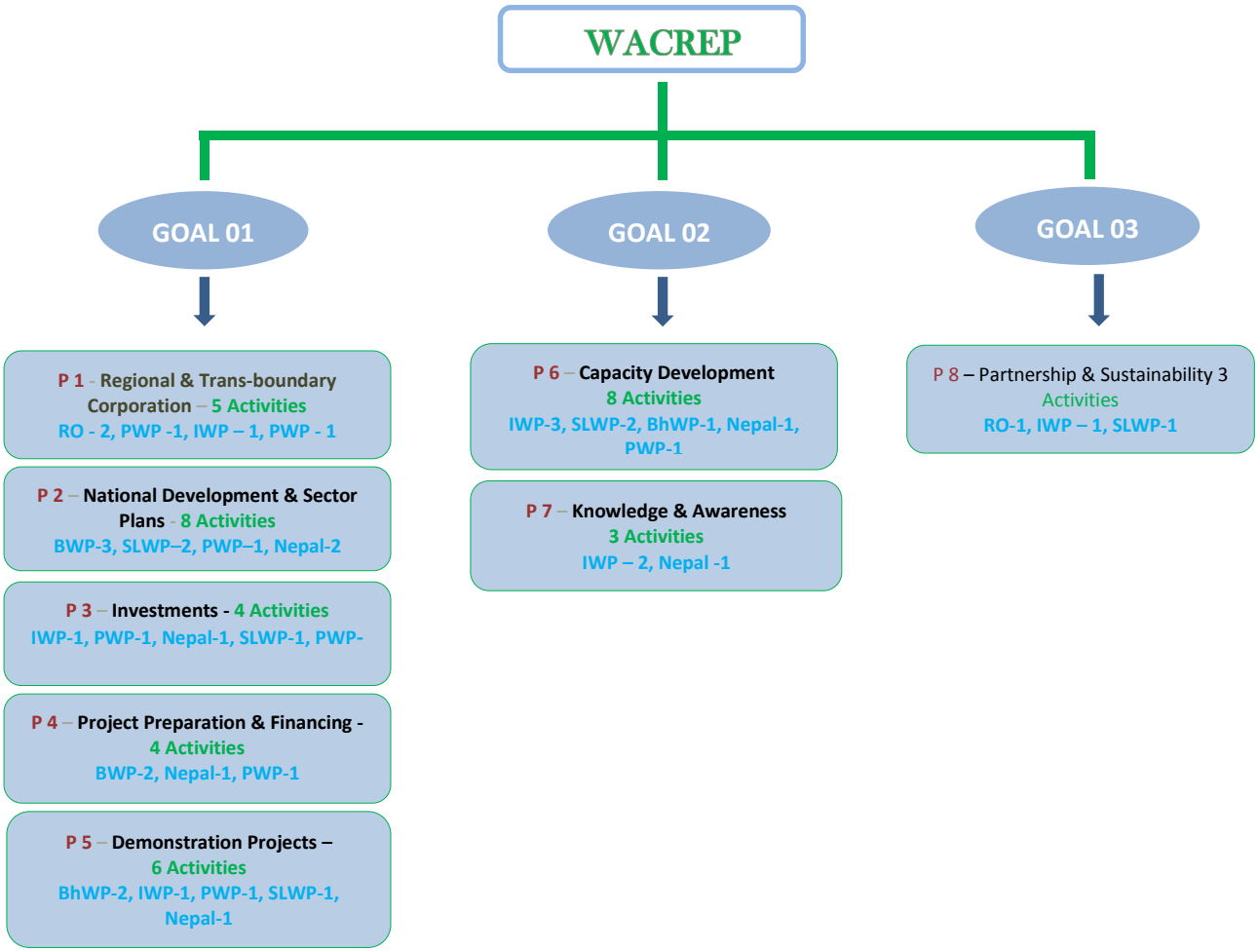
The objectives of the programme are to support countries to;

- develop and integrate "no regret" water security and climate resilience investments into their development plans, budgets and programmes,
- identify solutions addressing critical water security challenges to enhance the climate resilience of countries and communities,
- built knowledge and capacity to enhance water security and climate resilience,
- operationalise the GWP network with strategic allies and stakeholders to integrate water security and climate resilience in development process; with the outcome of improving resilience of South Asian countries to withstand the impact of climate change.

WACREP Phase I was implemented from October 2013 to March 2015, and 38 activities undertaken in local, national and regional levels by Country Water Partnerships as well as GWP SAS Regional Office. The regional actors such as, United Nations Development Programme (UNDP), SAARC Disaster Management Centre (SAARC DMC) and South Asia Co-operative Environmental Programme (SACEP) collaborated in programme implementation. Remarkably 26 partners have collaborated with CWPs and GWP SAS and more partners supported the collaborative partners to implement WACREP Phase I activities. The project has given an opportunity for our collaborative partners as well as the supportive partners to implement much focused projects in their area of expertise at the grassroots level.

In line with GWP Strategy 'Towards 2020' WACREP is directed to achieve three goals which were further divided into eight Work Packages (P1-P8). The three goals are;
Goal 1: Catalyse change in policies and practice,
Goal 2: Generate and communicate knowledge,
Goal 3: Strengthen partnerships.
The figure given below shows the activity numbers which were implemented to achieve each goal.

ACTIVITY DISTRIBUTION AMONG THE GOALS



The lessons learnt from regional WACDEP programmes especially from African continent, and discussions on adaptation to climate change have been incorporated in programme designing as well as implementation in order to achieve the expected goals.

Phase I Achievements at a glance

- Regional Organisations collaborated with CWPs and GWP SAS Regional Office - 4
- National Organisations collaborated with CWPs in implementing activities – 21
- No. of community level organisations promoted - 10
- No. of climate related projects identified for financing at CWP level under micro financing – 11
- No of National agencies supported for assessing the impacts and risks in water security - 5
- No. of field level people trained – 13,571
- No. of Training Programmes - 140
- No. of decision makers supported with enhanced capacity to integrate water security considerations in policy planning or project implementation - 218
- No. of case studies – low investment cost with high impact interventions captured (multiple low cost soil and water conservation structures and peoples participatory projects) - 7
- No. of media features on climate resilience already completed – 3 (rest in the pipeline)
  - Videos – 2 (Maharashtra Story 1, Meghayala and Mizoram film 1) – IWP website
  - News lines – 1 (Bhutan) – GWP SAS RO website,
  - Media workshops for journalists on desert interventions -2 workshops, 130 benefited
- Reports - 22
  - IWRM practices in Tharparker (PWP web site),
  - IWW : Regional Days Programme Proceedings (IWP website)
  - Survey report on "Resilience capability of farmers in irrigated agriculture to cope with impacts of CC" – SLWP website,
  - Proceedings of "South Asia Regional Workshop on Lessons Learnt in Strategy Implementation on CC Adaptation in Water Sector" – GWP SAS RO website
  - Report on "compilation of no or low regret investment options/opportunities : case studies" – IWP website
  - Report on "Augmenting water security and food security of small farmers in the Gundar basins" – IWP Website
  - Documenting farm level/pond level practices which have demonstrated resilience to CC (IWP Website)
  - Assessment of vulnerability to climate change on water resources, commons, agriculture system and animal husbandry in Sinhar watershed in Bhinder Block in Udaipur district of Rajasthan, (IWP website)
  - Proceeding report - "Regional workshop on sharing lessons on current issues and opportunities in addressing Deltaic Regions in Pakistan, India and Bangladesh", (BWP Website)
  - Proceeding report – "A national dialogue on delta issues and their effective solutions to assist Bangladesh Delta Planning (BDP) team in preparation of Delta Plan, (BWP Website)
  - Proceeding report – " National dialogue for financing the investment programme of the 'Bangladesh Delta Plan' (BWP website)
  - Proceedings report – climate change adaptation at community level: the role of micro finance institutions", (BWP Website)
  - Report on Training of Trainer programme on climate change, (SLWP Website),

- Report on "Farmer resilience survey: capability of farmers in irrigated agriculture to cope with impacts due to climate change" (SLWP Website)
- Report on "Proposal development for fund raising" (SLWP Website)
- The training manual – "To support the implementation of 4 LAPS (Local Adaptation Plans) under implementation in a District with particular focus on water resources (in Nepalese – can be obtained on request from JVS/GWP Nepal)
- Climate vulnerability and gap assessment report on floods and drought for lower part of Rapti River in Banke District, (GWP Nepal Website)
- Report – "The preparation of new LAPA (Local Adaptation Plan of Action) and investigate the investment requirement at the village development committee level to implement LAPA, (GWP Nepal Website)
- Report – "Documentation of on-going Climate Change Adaptation projects with particular emphasis on major activities on climate changing" (GWP Nepal Website)
- Report – " Traditional adaptation practices by farmers" (GWP Nepal Website)
- Policy Brief – "A policy brief on impact of climate change on water recourses to support Nepalese team on climate change negotiation (in Nepalese – Copy can be obtained on request)
- Report – "Development of area specific investment through Knowledge and technical support" (PWP website)

- No. of demonstration project completed – 69
  - Rehabilitation of irrigation tanks – 4
  - Construction of new farm ponds – 17
  - Deepening of drinking water Ooranies (traditional drinking water ponds) – 3
  - Installation and demonstration of Bio-sand filters for desert community – 28
  - Installation and demonstration of bio gas water pump for irrigation/drinking water – 2
  - Demonstration of cheap soap making for desert community and distribution – 525
  - Introduction of Napier grass for desert community – 4,000 shoots in two villages
  - No. of ponds excavated for rain water harvesting for (livestock) desert community – 15
- No. of beneficiaries supported in demonstration projects – 20.199
- No. of school children and teachers trained on IWRM – 2,971
- Irrigation Training Institute of Department of Irrigation (DoI) at Galgamuwa and Kothmale, International Irrigation Training Institute of Ministry of Irrigation and Water Resources (MoIWR) and Mahaweli Authority (MA) have introduced CCA to their training programme.
- CCA has now been internalised in Irrigation Department, Irrigation Management Division of the Ministry of Irrigation, Department of Agriculture and National Water Supply and Drainage Board. The CCA programmes are now been organised by these agencies in close collaboration with each other, including Department of Meteorology and Universities.
- Extension Division of Department of Agriculture has opened a CCA unit for holding ToT Programme on CCA for professional staff.

Chapter 1 - Bangladesh Water Partnership (BWP)

BWP was established on 30 September, 1998 to foster integrated water resource management (IWRM) by maximising economic and social benefits without compromising the sustainability of vital ecosystems through an experts group meeting under the initiative of Late Mr Quamrul Islam Siddique, Former Chief Engineer, and Local Government Engineering Department (LGED). Since its establishment, LGED is supporting BWP as the host institution and it also hosted the Regional Secretariat from 2003-2004 for two years. Mr Shahidul Hassan, President, BWP is the Head of the Executive Committee of the BWP and Dr K. Azharul Haq, Vice President leading the activities in BWP.

BWP plays a leading role on issues related to flood management, Climate Change and Adaptation (CCA) and trans-boundary water cooperation in the country and the region. Its initiative and leadership in developing the preparedness plans and framework for action has influenced policies, promoting of best practices, advocacy and knowledge sharing. Promoting IWRM related dialogues at all levels through provision of platforms within the country and using existing regional and global forums has made it an acknowledged and visible water sector proponent by the government and donors. Besides influencing IWRM policy and translating the concepts at ground level, issues of transboundary water sharing and CCA are the priority concerns of BWP.

BWP was the first to host the SAS Regional Secretariat and to organise the South Asia Water Forum (SAWAF) in 2004. It has participated actively in World Water Forums since 2002 and is responsible for texts on South Asia in the Asia Pacific Regional Document at WWF5 in Istanbul in 2009. At the 6th World Water Forum held in Marseille, France, BWP participated in the Women Leadership Preparatory Conference to debate Women's Leadership in Water and to forge concrete solutions. A key contribution to the region was development of a framework to manage flood disasters in the Ganges and Brahmaputra rivers, examining institutional requirements for basin wide flood management by Bangladesh, India and Nepal. It created Youth Forums in three river basins and has undertaken capacity building and awareness creation on IWRM for water professionals, youth and women.

It facilitated the establishment of the Bangladesh Water Utility Network (BAWUN) which is federated to SAWUN and the Bangladesh Water Integrity Network (BAWIN) working on water integrity. The Bangladesh Women and Water Network (BWWN) was also initiated and established by BWP.

Contacts: **Dr K. Azharul Haq,** Vice President, Bangladesh Water Partnership, House NO. 79 (1st floor), Road # 12/A, Dhanmondi R/A, Dhaka-1209, Contact No. 880 4477500213, 880 1819212996, Email: bwp@dhaka.net, Website: www.bwp-bd.org

INTRODUCTION TO WACREP ACTIVITIES

Bangladesh Water Partnership (BWP)

BWP has identified six interventions during the project cycle and one activity under Package 1, three interventions under Package 2 and two activities under Package 4. They are,

Activity No. 1.3.1: To share lessons on current issues and opportunities in addressing Deltaic Regions in Pakistan, India and Bangladesh

Output/Outcome: To promote regional cooperation among the countries for improved water management in deltaic regions for the country

Partners: INSTITUTE OF WATER MODELLING IWM

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:

A two days long regional workshop on "Sharing Lessons and Experiences on Current Water Management Issues, Opportunities and Challenges from Deltaic Regions in South Asia, including Impending Climate Change Impacts" was held in BRAC Centre, Dhaka, Bangladesh, on 28 and 29 March 2014. The workshop was jointly organised by BWP and Institute of Water Modelling (IWM) under the aegis of GWP SAS. The workshop was attended by more than 140 national and international participants. Delegates from Pakistan, India, Nepal, Bhutan and Sri Lanka were also present in the workshop. National delegates included senior officials from Ministry of Water Resources, Bangladesh Water Development Board (BWBD), Water Resources Planning Organization (WARPO) and many other government and non-government organisations, academic institutions and research organisations working with water resource management in Bangladesh.

It is expected that the recommendations of the workshop will help in promoting regional cooperation and influencing the national policies on water and food security with special reference to the climate change impact. This will be especially useful for Bangladesh as the workshop was attended by the top policy makers of Bangladesh Government, including the Honourable Minister of Ministry of Water Resources (MoWR), Secretary of MoWR and high level officials from Planning Commission and other departments that are actively involved in

water sector. It is being expected that the countries that were participated will also be able to actively influence their respective policies in a favourable way. The workshop was specifically targeted on policy issues on environmental flow, augmentation of water availability through regional cooperation and both in country and regional issues on water quality.

Contributing factors, actors, and background

Gathering of nearly all the people with highest authority in water sector of Bangladesh and experiences of experts from the region contributed in initiating this change process. BWP contributed for both accessing knowledge and finance to hold the event successfully.

Other local agencies involved:

IWM was the main collaborative partner for the activity. In addition, Centre for Environmental and Geographic Information Services (CEGIS), MoWR, WARPO, BWBD etc. worked very closely on this.

Lessons learnt:

The recommendations are

(i) environmental flow that is required for restoration and preservation of the ecosystem,
(ii) flood water and rain water harvesting,
(iii) water quality and sanitation
(iv) Regional cooperation.

People we can interview:

- Prof Dr M. Monowar Hossain

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- Engineer Md. Waji Ullah

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- Director General

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Tel: 880-2-9564665, 9552194, 01973355522
Fax: 880-2-9564763
E-mail: dg.bwdb.bd@gmail.com
Website: http://www.bwdb.gov.bd/

Other Information: Web links to reports, news items, photos, etc.


http://www.bwp-bd.org/pdf/wacrep/2_report_conference_bwp_v2.pdf

Activity No. 1.2.1.B: A national dialogue on delta issues and their effective solutions to assist BDP Team in preparation of Delta Plan

Output/Outcome: Developing tools, training materials and knowledge products which will be used directly to support the inclusion of climate resilience in the national development planning process in Bangladesh

Partners: CEGIS
CENTER FOR ENVIRONMENTAL AND GEOGRAPHIC INFORMATION SERVICES

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:

A national dialogue on "Adaptive Approach for Long Term Delta Plan and Innovation for Addressing Water Management Issues in Bangladesh" was held on 28 September 2013 in association with Centre for Environmental and Geographic Information Services (CEGIS). The programme had two sessions including the inaugural and technical sessions. Honourable Minister Mr Anisul Islam Mahmud, Ministry of Water Resources, Government of Bangladesh attended as the Chief Guest.

This National Dialogue was organised to raise awareness and reflect upon critical issues concerning delta areas which will act as a stepping stone in the formulation of the upcoming Bangladesh Delta Plan 2100.

Contributing factors, actors, and background

The Dialogue advocated the inclusion of multi-sectoral views on Delta issues from different agencies. It is being expected that the shared ideas and views through this dialogue will be taken into consideration for preparing the Bangladesh Delta Plan 2100.

Other local agencies involved:

Multi-disciplinary organisations (like Ministry of Water Resources (MoWR), Bangladesh Agricultural Research Council (BARC), Bangladesh Rice Research Institute (BRRI), Department of Environment (DoE), Bangladesh Water Development Board (BWDB), Institute of Water Modelling (IWM), The Netherlands Embassy, Department of Fisheries (DoF), Bangladesh Inland Water Transport Authority(BIWTA), Dhaka Water Supply and Sewerage Authority (DWASA), Bangladesh Agricultural Development Corporation (BADC), Institute of Water and Flood Management (IWFM), Water Resources Planning Organization (WARPO), Food and Agriculture Organization (FAO) International Union for Conservation of Nature, (IUCN) and Bangladesh University of Engineering and Technology (BUET).

Lessons learnt:

Bengle Delta is very dynamic and different in nature and there are several factors that need to be addressed. The dialogue emphasised on integrating local information with the international knowledge gained from Delta plan of other countries. The ideas and views shared through this national dialogue will be taken into consideration while preparing the Bangladesh Delta Plan 2100.

People we can interview: Contact information of Beneficiary community or Government officials:

- **Eng. Md. Waji Ullah**

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Centre for Environment and Geographical Information System (CEGIS)
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- **Dr Sultan Ahmed**

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- **Dr M.A. Matin**

Professor, Department of Water Resources Engineering
Bangladesh University of Engineering and Technology (BUET)
Cell: 88 01718548776
Email: mamatin@wre.buet.ac.bd

Other Information: Web links to reports, news items, photos, etc.

Copy of the report/training manual to be hyperlinked (or sent it to me).

http://www.bwp-bd.org/wacrep.php





Activity No. 1.2.3.A: Establish Bangladesh Delta Knowledge Portal to share experience on delta issues with other deltas.

Output/Outcome: Establishing a Bangladesh Delta Knowledge Portal,

Partners: 

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:

BWP developed its own webpage through establishing Bangladesh Delta Knowledge Portal to share experience on delta issues and to share knowledge base information and activities on delta. This is an initiative of GWP and BWP.

Contributing factors, actors, and background

The IWM was contracted to develop the website.

The webpage will be uploaded with the information generated globally on water management and climate change issues. Around 2,906 subscribers have already visited the site so far from the date of activation, 31 December 2014.

GWP facilitated the work through financial assistance and by providing information on similar websites. As a prelude for establishing Bangladesh Delta Knowledge Portal, the BWP website was established. Development of the delta portal is ongoing and expected to be finalised by end of March 2015 and BWP partner, IWM is assisting with the activity.

Other local agencies involved:

"Bangladeshhosting.Com" Domain Registration and Web Hosting Space Company.

Lessons learnt:

It provides easy excess to data and other related information which enrich knowledge of stakeholders. This is an essential and convenient tool for disseminating knowledge.

People we can interview:

Partners of BWP and all website visitors are the beneficiaries.

- **Prof Dr M. Monowar Hossain**

Executive Director
Institute of Water Modelling (IWM)
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Mohakhali, Dhaka-1206,
Phone: 8823909, Cell: +8801755574250
Fax: 880-2-8827901
Web: www.iwmbd.org

Other Information: Web links to reports, news items, photos, etc.

The website address of BWP is - www.bwp-bd.org

Activity No. 1.2.4: A national level dialogue for financing the investment programmes of the 'Bangladesh Delta Plan 2100'

Output/Outcome: Prepared and shared a comprehensive report on financing mechanism

Partners: CEGIS
CENTER FOR ENVIRONMENTAL AND GEOGRAPHIC INFORMATION SERVICES

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:

BWP in association with CEGIS have organised a day long National Dialogue on Financing Mechanisms for Bangladesh Delta Plan 2100. The Dialogue held on 1 November 2014 under the patronage of Dr Zafar Ahmed Khan, Secretary, Ministry of Water Resources, Bangladesh.

The objectives of the national dialogue were to;

- Prepare a good position paper on the financing mechanisms of the proposed Delta Plan, 2100 of Bangladesh;
- Organise a national dialogue with important stakeholders, to take their feedbacks on position paper and incorporating the recommendations of participants to improve it.
- Finalise the position paper on financing mechanism of Bangladesh Delta Plan.

The draft position paper was shared among the participants for their opinions and the Paper was presented at the Dialogue, to provide quick insights on possibilities for funding modality of the plan. This helped the participants to initiate thoughts for sharing their views and experience.

The national dialogue helped in upgrading the Position Paper as a result to build a basic concept on harnessing the possible financing modalities for Bangladesh Delta Plan 2100. BWP engaged with CEGIS to conduct a national level dialogue to identify the possible financing mechanism for implementation of Bangladesh Delta Plan 2100.

Contributing factors, actors, and background

The perspective of the Delta Plan Bangladesh and the steps towards its development is well-regarded by the planner and concerned authorities of the country.

The approaches that the Delta Plan is taking towards its successful planning in the coming 100 years, have also described in the Paper. The five year planning cycle, financing planning process and five year plan of Bangladesh has described current financial situation along with several financing modalities. From the annual development programme different sectorial investment pattern have been visualised. There are foreign investment sector, public private partnership (PPP), private sector investment, NGO's investment, development partners and international finance institutes directly involved with the financial activities and investment programmes of Bangladesh Government.

GWP provided a knowledge platform for the stakeholders to come together and ensured financing for dialogue. The task was supported by CEGIS.

Other local agencies involved:

Different government, non-government and private organisations, such as Ministry of Water Resources (MoWR), Ministry of Environment and Forest (MoEF), Bangladesh Water Development Board (BWDB), General Economics Division (GED), GWP, Local Government

Division, Board of Investment, Economic Research Group, IWM, Bangladesh Delta Plan and Water Resources Planning Organization (WARPO) attended the Dialogue.

Lessons learnt:

The Bangladesh Delta Plan 2100 can be proven as a successful step towards the development of Bangladesh, subjected to its appropriate implementation.

The position paper has been updated incorporating the constructive suggestions, opinions and criticisms of the participants of the Dialogue. Thus the updated position paper can be considered as a baseline for the planners of Delta Plan Bangladesh and might trigger its implementation through providing financing guidance. It can be opined that Delta Financing is a driving force for successful implementation of the Delta Plan for a broader horizon and for many consecutive domains.

The output of the National Dialogue can be considered as foundation for initiating investments and determining the financing modality. The Bangladesh Delta Plan 2100 can be solidified through its implementation. Thus we all hope for successful, doable and implementable proceedings in the coming 100 years.

People we can interview:

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Other Information: Web links to reports, news items, photos, etc.

Pictures of the Dialogue Day

Copy of the Report : http://www.bwp-bd.org/pdf/wacrep/final_concluding_report_on_national_dialogue_delta_plan.pdf

Activity No. 1.4.2.A: Work with micro-financing institutes to have a dialogue with delta communities (in the form of a workshop), identify the bankable projects and overcome the challenges at village level in implementing climate resilience projects

Output/Outcome:

50 projects brokered in three delta zones

Ten bankable projects have already been identified and the evaluation of rest of the proposal is in progress.

Partners:

Strategic Goal # 1 *– Catalyse change in policy and practice*

Description of the change:

Institute of Microfinance (IMF) and BWP jointly organised a seminar on 15 November 2014 titled "Climate Change Adaptation at Community Level: The Role of MFIs" at the PKSF Auditorium, Dhaka with over 200 participants.

Twelve speakers from different MFIs presented the papers in three technical sessions. They have discussed about different dimensions of climate change and types of adaptation in six different geographical areas of Bangladesh namely;

- River erosion area,

- Flood-prone area
- Char area
- Coastal area
- Haor area
- Hilly area.

Currently there are two funds operating in Bangladesh for climate change adaptation and disaster management – Bangladesh Climate Change Fund and Bangladesh Climate Change Resilience Fund. The Government has sanctioned taka 2,900 crore for these two funds in last six years, one third of which has been preserved for future events of disaster.

Dr Qazi Kholiquzzaman Ahmad, Chairman of IMF and Chairperson of Palli Karma Shahayan Foundation (PKSF) informed the gathering that 43 NGOs are engaged in different projects under supervision of PKSF. About taka 25 crore (US$3.2million) has been given to these NGOs for completion of the projects by the Government. PKSF has 200 crore taka in its own disaster management fund while other associate organisations have taka 400 crore. This money can be utilised whenever it is needed.

PKSF team recently has visited river eroded areas in Gaibandha. People of these areas have been given loan with little rate of interest. Dr Ahmad emphasised that, it is not possible to eradicate poverty ignoring the impacts of climate change. He also expressed PKSF's willingness to work together with BWP for climate change adaptation.

It is too early to document any change. But it has sensitised a large numbers of Micro Finance Institutes and their members about use of Micro Finance to offset climate change impacts.

Contributing factors, actors, and background:
The participants from Micro Finance Institutions were excited about new potential areas for supporting to Climate Change impacts through Microfinance.

As the Micro Finance Institutes are already giving credits for economic activities, the seminar exposed them to new realities of profiting by investing on Climate Change Impact.

Other local agencies involved:
National Development Programme (NDP), Sirajgonj; Society for Social Service (SSS), Tangail; PKSF, Jainta Shinnomul Sangstha (JASHIS), Sylhet; Gono Kallyan Trust (GKT), Manikgonj; DWIP Unnayan Sangstha (DUS), Noakhali; Samaj Kallyan Sangstha Foundation (SKS), Gaibandha; Young Power in Social Action (YPSA), Chittagong; Resource Development Foundation (RDF), Borguna; People's Oriented Program Implementation, Dhaka; Kishorganj Polli Bikash Kendro (PBK); Ashika Manabik Unnayan Kendra, Rangamati; Green Hill, Rangamati; UKaid, DFID; PROSPER,

Lessons learnt:

In order to face the adverse effects of climate change working on the economic activities at the community level is needed. In this case, specific loans and training activities of different kinds may play a vital role. MFIs are more capable than Government in working at the community level. BWP and MFIs can play an important role as they work with people more closely.

People we can interview:

- Executive Director

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Other Information: Web links to reports, news items, photos, etc.

http://www.bwp-bd.org/pdf/wacrep/climate_change_adaptation_at_community_level_the_role_of_mfi.pdf

Activity No. 1.4.3.B: Work with climate change National Focal Points to develop proposals targeting climate funding

Output/Outcome: Strengthened linkages with focal point in government through quarterly meetings and highlight in media potential projects for key hotspots,

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:

A National consultation meeting was held with Climate Change National Focal Points to Develop Proposals Targeting for Climate Funding. The meeting was held in BRAC Centre Inn (75 Mohakhali, Dhaka, Bangladesh) on 13 December 2014 organised by BWP. The daylong meeting included an Inaugural Session, two Technical Sessions and a Wrap up Session. The meeting was attended by 46 climate change focal points of various public and private agencies, researchers, engineers, economist, environmentalists, university faculty members, government officials, development workers, civil society actors, non-government organisations (NGO), community based organisations (CBO), youth and media personnel. Representatives from BARC, BRRI, BWP, BWWN, CEGIS, DoF, FD, ICDDRB, IWM and MoL Eminent Environmentalist and Economists and Chairperson of Palli Karma Shahayan Foundation (PKSF) and Dr Qazi Kholiquzzaman Ahmad from IMF attended the meeting as the Chief Guest of the Inaugural Session of the meeting.\

Researchers presented seven proposals on various climate change issues of the water sector of Bangladesh at two technical sessions. BWP requested the project proponents to address the recommendations forwarded by the reviewers in the session.

The following proposals were presented in the consultation meeting:

- Integrating ecosystem services for resilience of coastal islands in times of climate change.

- Impact of climate change on groundwater salinity: A case study in Naogaon District of Bangladesh.
- Devising adaptation strategies to improve climate change resilience of low income residents of Dhaka City using quantitative tools.
- An innovative planning for improving the river ecosystems in and around Dhaka City.
- Assessment of climate change impact on urban ecosystem due to urbanisation and industrialisation.
- Adaptation to climate change through promotion of aquaculture and fisheries management for the vulnerable households in Barind Tracts.
- Role of women and youth in adapting to climate change: impact on water sector.
- Effects of climate change and regional cooperation on transboundary water quality.
- Improvement of livelihood in adapting to climate change at Char Area: Impact in water sector.
- Effects of climate change on water supply and sanitation system in the Chittagong City and its adjacent area.

The workshop highlighted policy and funding issues and concerns of climate change from global and national perspective. This workshop identified ten projects having robust information and analysis based proposals to address climate change impacts on water sector of the country and global attempts of climate change fights. The workshop covered assorted climate change issues of water sector of Bangladesh including coastal zone, Barind Tract and urban areas.

Lessons learnt:

The proposals have to be more focused on climate change. Health component should be incorporated with the proposed work plan, where ICDDRB can be incorporated as a partner. The study proponent was advised to consider Dhaka City Corporation (DCC) as a study partner. Ecosystem Services will be added with present scope of work of the project. It was agreed by the proponent of the research that water pollution from vehicles will also be included and urban wetland will also be considered. Identifying the suitable adaptation as well as mitigation options to withstand with climate change impacts has learnt. Governance, role of women and youth should be addressed with the projects.

People we can interview:

Contact information of Beneficiary community or Government officials:

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2. **Mr Malik Fida A Khan**, Director, Climate Change and Disaster Management Division, Centre for Environmental and Geographic Information Services (CEGIS), House 6, Road 23/C, Gulshan-1, Dhaka1212, Bangladesh, Dhaka. email: mkhan@cegisbd.com

3. **Ms Begum Shamsun Nahar**, Coordinator, Bangladesh Water and Women Network(BWWN), email: begum rahans@gmail.com

Other Information: Web links to reports, news items, photos, etc.

Photos of the Consultation Meeting With Climate Change National Focal Points to Develop Proposals Targeting for Climate Funding

http://www.bwp-bd.org/pdf/wacrep/Consultation_Meeting_with_Climate_Change_National_Focal_Points_to_Develop_Proposals_Targeting_for_Climate_Funding.pdf

Chapter 2 - Bhutan Water Partnership (BhWP)

RSPN was founded as a citizen based non-profit, non-governmental environment organisation in 1987 to support environment conservation in Bhutan. The Society was registered under the

Companies Act of Bhutan until last quarter of 2009, without proper authority which regulated the non-profit organisation, with a special clause on non-profit entity. With the establishment of Civil Society Organisation Authority (CSOA) of Bhutan, the Society is now registered under Civil Society Organisation Authority as one of the Public Benefit Organisations (PBO).

RSPN works on environmental education and advocacy, conservation and sustainable livelihoods, research and emerging issues like climate change, solid waste and water. RSPN programmes are based on its five year strategic plan and include species, ecosystem, and community based conservation programmes outside of the protected areas system. All of the RSPN's programmes continue to involve students/ individuals in schools, institutions, and communities throughout the country for various project activities. The Royal Society for Protection of Nature (RSPN) currently enjoys the Royal Patronage of Her Majesty the Gyaltsuen, Jetsun Pema Wangchuck. Her Majesty assumed the patronage of RSPN in 2012.

RSPN is governed by a seven-member Board of Directors, comprising representatives from varied sectors according to the requirement of the Civil Society Act of Bhutan. An Executive Director manages the day-to-day affairs of the organisation and reports to the Board of the Directors. Dr Lam Dorji, serves as an Executive Director/Member Secretary to the Board of RSPN.

Bhutan Water Partnership (BhWP) is a consortium of water professionals and concerned individuals from various sections of the society working towards achieving the goals of Integrated Water Resource Management (IWRM). It is a non-profit entity affiliated to GWP. BhWP office is currently hosted in the Royal Society for Protection of Nature (RSPN). In 2001, the Honourable Minister of Agriculture Official launched the BhWP by initiated by PPD of Ministry of Agriculture (MoA). Mr Dasho Sonam Tshering, then Director of Department of Power, and Lyonpo (Dr) Pema Gyamtsho, then Deputy Secretary, PPD, MoA were appointed as Chairman and Co-Chairman of BhWP respectively. Mr Kezang Jamtsho, PPD, MoA was nominated as the Secretary. In 2002, the National Environment Commission (NEC) was appointed by the CCM as the apex body on water resources. With this appointment, the coordination and regulatory functions of the BhWP was theoretically taken over by the commission. In a meeting between BhWP and NEC, it was agreed that BhWP would function as technical body to support the NEC and the water sub

sectors. BhWP Secretariat relocated to RSPN in February 2007 for two years. The NEC once again directed RSPN to host BhWP Programme form September 2011.

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INTRODUCTION TO WACREP ACTVITIES

Bhutan Water Partnership

Under WACREP, Bhutan has identified three activities for Package 5: Demonstrated Projects and Package 6: Capacity Development. The activities are,

Activity No. 2.5.1: To promote efficient water resources management techniques among vulnerable communities in Bhutan thereby reducing poverty,

Output/Outcome: *Increased agricultural production through the use of modern technology on efficient water usage and the food security has been ensured for these villages by this intervention*

Partners: **Ministry of Agriculture and Forests**

Strategic Goal # 1 *– Catalyse change in policy and practice*

Description of the change:

The Lingmutey-chu watershed is one of the small agriculture areas in Thedtso Block under Wanggduephodrang district. The watershed is home to six villages. Farming is the main livelihood of its inhabitants. By local standard, the area has a high proportion of paddy land and a source of pride to the local farmers. The Lingmutey-chu stream is the main source of irrigation and drinking water. Although perennial, the Lingmutey-chu stream does not have sufficient flow to irrigate the whole agriculture land within its catchment. Local farmers experience severs water shortage during the dry season. Conflicts over water sharing between the upstream and downstream farmers are an annual event. The project improved irrigation water supply for 52 households (total no of people 416, out of which 180 women and 92 children) of Wangjokha and Thanggo village under Thedtso Block, which are located at the tail end of Lingmuteychu stream. The project brought an additional 49.73 hectares of paddy land under irrigation. The main objectives of the project are to increase rice production from 1.2mt/acre to 1.6mt/acre and resolve the existing conflicts with upstream users of lingmutey-chu stream. Therefore, the food security has been ensured for these villages by this intervention.

The change is yet to be noticed, the cultivation season begins in May-June 2015 and Ministry of Agriculture and BhWP are monitoring the cultivation pattern.

Contributing factors, actors, and background: *An agreement has been signed on 6 March* 2014 between Ministry of Agriculture (MoA) and BhWP for the WACREP project. The Engineering Division of Department of Agriculture of the Ministry of Agriculture and Forests in Bhutan was the main implementing partner for the project. Ministry of Agriculture implemented the water supply project in collaboration with local community. Constructions were funded by BhWP through a local contractor. The community contributed in labour for trenching the pipeline. BhWP and MoA jointly monitored and evaluated the project activities.

The completed project was handed over to the community in September 2014. Water diverted to Lingmutey-chu watershed from Bajo Yuwa canal which has sufficient flow and capacity to carry the additional discharge without using water pumps. The Wangduephodrang district administration, the Thedtso block administration and the Engineering Sector of Renewal Natural Resources Centre under MoA were the key agencies involved in implementation the project.

Other local agencies involved: Two agencies were involved as local partners. Local Government named Thedtso block Administration and Renewable Natural Resources Research and Development Centre (RNRRDC).

Lessons learnt:

Beneficiaries volunteered for free labour for trenching the pipelines. This voluntary work implies the ownership of the project by local communities. Cost sharing between MoA and BhWP is a good model of Public Private Partnership programme. It was a good lesson on developing partnerships with local communities.

People we can interview*:*

- The Engineering Division, Department of Agriculture, Ministry of Agriculture and Forests, BHUTAN, Email address : karmatshether@yahoo.com
- Contact information of Beneficiary Community : The Gup, Thedtso Gewog, Wangduephodrang District, Bhutan

Glimpse of the Activity:

Trench dug by local community

The intake structure being built

Foundation of outlet structure

Completed structures


Handing over the irrigation project to the communities

Further Details:

http://www.gwp.org/Global/GWP-SAs_Files/Newslines/NewslineSeptember2014(2)%20V1%20.pdf

Activity No. 2.5.4.B: Study the indigenous climate resilience technology

Output/Outcome: Number of traditional adaptation practices collected and good practices documented and shared with communities.

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:

The MoA assisted BhWP for the activity as the authorised body, holds data on places having water and irrigation issues in the country. Information at grass root level on indigenous climate resilience technology is being gathered by the Officers of MoA who are working at the sub-district level and transferred to central level.

In rural communities, conservation can happen as a result of people's faith and belief in religious and cultural practices which has been going on for centuries. Sometimes, it is such beliefs that can bring change in human behaviour and people happen to become pro-environmental. There are evidences to prove that environmental damages caused by the people happen elsewhere but not in the sites where they regard it as sacred places. Therefore people consider protecting such sacred places from degradation.

Contributing factors, actors, and background:

The local leaders play a very important role in the use and management of the local resources. Therefore, having educated on the importance of water resources, the local leaders can now play the key role in the conservation of water resources by influencing local level policies and actions.

Lesson learnt: The knowledge on CCA is not new to farmers and they have their own adaptation techniques to the situation.





Activity No. 3.6.1.C: Conduct Integrated Water Resources Management sensitisation workshop for local leaders

Output/Outcome: Local leaders are trained in integrated approach to water resources management and that will be shared among their community leaders to influence the local policy and plans

Strategic Goal # 2 – Generate and Communicate Knowledge

Description of the change:

69 local leaders from 14 central districts of Bhutan have been sensitised on the importance of conservation of water resource. It was expected that the sensitisation workshop had made them understand the urgent need for proper water resource management in order to save

lives of millions of species. It was also expected that having being sensitised, the local leaders would influence the plan and policies of the districts where water would be the major concerns.

Contributing factors, actors, and background

IWRM sensitisation workshop was held from 26 to 31 December 2013 for the local leaders. The workshop was aimed at educating and providing information on water resources and its management to the Gups (Local leaders). Gups as the head of the Gewog (block) has a very important role and that includes the utilisation and management of the natural resources.

Six Gups and six assistant to Gups participated in the workshop. During the workshop, the participants were sensitised on the water and its issues and discussed the management of water at the local levels. The participants highlighted that water is becoming an increasingly stressed resource and discussions on how to address the problem. Discussions on water related policies were held and they were informed the importance of such policy documents for managing water resources in the country.

Finally the participants were informed of their role in the community, in management of natural resources particularly water. The major concern of the discussions was to mainstream water in local plan and policies and it is expected that water resources in the districts would be properly utilised and managed as a result of this initiative.


Local leaders during the IWRM sensitisation workshop

Other local agencies involved: National Environment Commission people, Hydro-met Dept.

Lesson learnt: It was observed that local leaders are not aware of water related issues, policies etc. and they do not consider forest fire, water issue, grazing, road construction and mining etc. are interlink with the water issues. Some local leaders are not aware of that water resources have to be protected in an integrated manner. The training helped the leaders for unconventional thinking and focus them to work in integrated manner.

Chapter 3 – India Water Partnership (IWP)

India Water Partnership (IWP) is a non-profit organization with a goal of promoting Integrated Water Resources Management (IWRM) in India. It has been accredited by the GWP as one of the CWPs of GWP.

Core areas of IWP

IWP has been active in promotion of Integrated Water Resource Management (IWRM) principles and practices through its network partners to support national development priorities. Some of the core priority areas are; promoting IWRM approach effectively through workshops and consultations to address adaptation to climate change with the support of zonal water partners across the country; encouraging use of innovative low cost water saving technologies by the farming communities; sustainable natural resource management; integrated domestic water management; promoting Area Water Partnership (AWP) for river basin management; conflict resolution on water sharing; inter-state trans-boundary water sharing issues; gender mainstreaming, Involving youth in sustainable water management and to empower young people to become agents of change.

India Water Vision-2025 by India Water Partnership

IWP prepared "India Water Vision-2025" during 1999 based on the projections for country's water demand in 2025. As per India Water Partnership India Water Vision, the total estimated demand for water (gross) for 2025 is 1027 BCM. In order to meet this demand, water availability will have to be increased from around 520 BCM in 1997 to more than 1000 BCM in 2025. For meeting additional demands, investment requirements have been estimated to Rs. 5000 billion during next twenty five years or about Rs. 200 billion per year. The India Water Vision-2025 is well cited in a number of national and international documents/reports/ scientific research papers.

IWP's contribution in National Water Policy-2012

IWP board members and its network partners actively contributed during 2010 and 2011 in the brainstorming sessions organized by Ministry of Water Resources, Government of India

to review the draft National Water Policy-2002. IWP was well represented in the Drafting Committee of National Water Policy-2012.

IWP organized a side event on 13th April, 2012 during India Water Week-2012 on "Approach of Draft National Water Policy (DNWP), 2012 in Context of Climate Change". Objective of the side event was to examine how the Draft National Water Policy (2012) reflects on the issue of climate change to address water and food security. The event was attended by Govt. of India officials, academia, policy makers, State Government Officials, NGOs and GWP representatives. Recommendations of the side event were sent to the Ministry of Water Resources, Government of India and some of them have been included in the National Water Policy 2012 under Section 4: Adaptation to Climate Change.

Contacts

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INTRODUCTION TO WACREP ACTIVITIES

IWP identified eight activities under WACREP and the details are given below;

Activity No. 1.1.2.A: India Water Week 2015: Regional Day Programme of GWP-South Asia (GWP-SAS) on "From Risk to Resilience: South Asia Regional Framework for Sustainable Water Management"

Output/Outcome: Informed and shared the understanding of key issues and challenges in water resource management in South Asian region from a Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) perspective.

Main Partners:

Supporting Partners:

Strategic Goal # 1 – *Catalyse change in policy and practice*

Description of the change:

IWP in collaboration with GWP SAS, WAPCOS Ltd., SAARC DMC and APAN organised the Regional Day Programme of GWP-SAS during India Water Week 2015 on the theme "From Risk to Resilience: South Asia Regional Framework for Sustainable Water Management". The event drew upon the regional experience, knowledge and case studies to discuss how increasing water efficiency can help to create a society that is more resilient to climate change and natural disasters. The objectives of the programme were;

- To assess and identify key issues and challenges in water management and sustainable development in the context of climate change in South Asia,
- To maximise social, environmental and economic welfare (three pillars of sustainable development) resulting from water management,
- To map out pathways that will help to realise the potential of SAARC countries in developing its water resources and draw a regional framework for addressing the issues of water management in the context of climate change and disaster risk reduction.

Contributing factors, actors, and background*:*

IWP, SAARC DMC, GWP-SAS, WAPCOS Ltd. and APAN were the partners of this event. SAARC DMC played a major role along with IWP and invited delegates from SAARC Member States and also contributed financially to this event. IWP invited delegates from GWP-SAS region as

well as from GWP, Sweden and from India and coordinated the whole event with the support of WAPCOS Ltd. GWP-SAS was the major financial contributor as well as provided technical support. APAN too contributed financially and technically.

Other local agencies involved:

India Water Week-2015 Secretariat contributed both in-cash and in-kind. The Secretariat waived of registration fee of all the invited delegates and provided hall facilities along with audio-visual aids including media coverage.

The key recommendations of the workshop are;

- SAARC member states should emphasise on a regional framework which should lay special emphasis on developing resilience and reducing risks;
- Technology and innovations needs to be harnessed as well as shared for the benefit of present as well as future generations;
- There is a need to set-up a South Asia Water Forum to exchange water related experiences and knowledge regularly;
- Develop better drought management systems through better monitoring and early warning system at national and regional level;
- Knowledge sharing with South Asian nations is important in present climate change scenario;
- There is need for data sharing and exchange of expertise from SAARC member countries as well as beyond the region like China and Central region;
- Develop ecosystem based approach for combating climate change impact and natural disasters;
- Scale up the cooperation at the multilateral level.

People we can interview:

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Website: www.cwp-india.org

Other Information: *The Proceedings report can be downloaded/viewed from IWP, GWP-SAS and APAN website and by clicking* http://cwp-india.org/Events/pdf/India Water Week-2015 - Proceedings Report Regional Day Program of GWP South Asia.pdf

Activity No. 1.3.1.A: Compilation of a set of no/low regrets investment options and opportunities

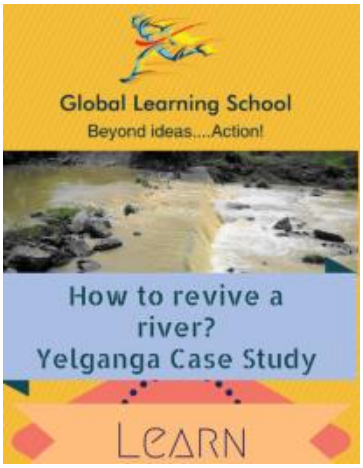
Output/Outcome: Documentation of evidence based success stories on grassroots initiatives for water security for advocacy and replication (Report and Video documentation)

Partner:

Strategic Goal # 1 *– Catalyse change in policy and practice*

Description of the change:

Water security is essential for building resilience of the community against climate variability and extremes. IWP with the support of Institute for Development Initiatives (IDI) documented seven success stories on the water management initiatives to tackle the problem of water scarcity in severely drought affected parts of State of Maharashtra. These initiatives have the potential of replicating on a wide scale in similar geographical conditions in other parts of India. These stories have also been documented in a video film titled "Water Harvesting for Climate Resilience: The Maharashtra Story" which is available on YOUTUBE as well as IWP website.



One of the success stories i.e., revival of a stretch of Yelganga rivulet has been picked-up by Indian Environment Network for use as a learning guide. Such successful experiences would enable IWP's network partners to design appropriate structures to withstand drought and mitigate the effects of climate change in their respective areas of operation.

Contributing factors, actors, and background:

IWP /GWP SAS, with the support of IDI, captured low cost grass root level initiatives which transformed the socio-economic status of people in drought prone areas of Maharashtra. This study is based on seven successful cases, which have particular relevance in the context of India's National Water Policy, 2012.

The State of Maharashtra is a hotspot of climate change, with drought being a recurring calamity, particularly in its Marathwada region. There were successive droughts in 2012 and

2013, and people had to depend on water supply through tanks for drinking purposes. All wells had dried up which caused severe damage to crops. The drought in 2013 was even worse than the drought that took place in 1972. Grass root level NGOs like the *Vanrai Foundation* has pioneered social mobilisation and development of low cost technology for water harvesting. Documenting such successful experiences would enable IWP's network partners to design appropriate structures to withstand drought and mitigate effects of climate change in their respective areas of operation.

Highlight of case studies captured in this intervention and replicability of the findings under climate stressed context:

- With the help of the Vanrai Foundation, people of Gawadewadi Village solved the problem of water scarcity in their village by undertaking soil conservation structures such as gabion walls/ stacked stone-filled gabions tied together with wire (1), earthen Bunds (7), stone bunds (3), loose boulder structures (50 ha), vanarai bunds/empty cement or fertilizer bags to be filled with soil or sand and erected as a bund (13), check dams (16), percolation tanks (5) and underground bunds (3). Chronically dependent on water tanks for supply of water, today this village does not require any water supply from outside the village.
- Kadwanchi Watershed, having three barren villages, was transformed by investing in land improvement and drainage line treatment. The land improvements included Continuous Contour Trenching (CCT), agro-forestry and other infrastructure. Drainage line treatment included constructing check dams, gabion structures and other measures.
- In Babhulgaon Village, 12,179ha of land were transformed by introducing agro-forestry and investing on drainage improvement structures, such as farm bunds (an embankment built around the periphery of farmland to prevent run-off).
- Village Umravati was introduced with "earthen stream bunds" to prevent the top soil erosion which led to productivity improvement.
- Through multiple measures of soil and water conservation and installing systems of artificial well recharge, people of Bazar Wahegaon recharged 250 bore wells and 150 open wells, enabling assured irrigation of crops. The village was able to withstand drought during the last three years.
- The roof-top rain water harvesting systems installed by the Watershed Committee of Bazar Wahegaon in the local schools, temples and public buildings helped in conserving rain water for drinking and washing purposes. The harvested water is sufficient to meet the requirements during the summer months.
- The success story of revival of Yelganga rivulet to address chronic water scarcity through a fully community initiated process is inspiring and worth of replicating. The intervention was fully financed through voluntary contribution of labour and material financed by the village communities of the three participating villages. The project was initiated by Jaldoot, a local voluntary organisation.

All the selected case studies have multiple low cost soil and water conservation structures and varying extent of peoples' participation at every stage. These initiatives have led to very encouraging results and have demonstrated the potential of replicating on a wider scale on similar geographical conditions in other parts of India.
The film was uploaded on paryavaran.com and had 134 views of members of the Indian Environmental Network (viewing is restricted to members). The film is also available on YouTube and so far had 322 views. It can also be viewed on IWP website. 50 copies of the film have also been distributed. Softcopy of the report has been circulated to all partners of IWP network.

Other local agencies involved:
Each of the intervention was supported technically and organizationally by a Government or Non-Government Organization, the details of which are available in the report.
Institute for Development Initiatives (IDI), New Delhi.
A 406, KAIRALI, Sector 3, Plot 10, Dwarka,
New Delhi 110078 Tel +91 11 25099576

Lessons learnt:

The study was conducted in six villages. There are limitations such as the case studies are drawn from small grassroots level organisations, which are mainly engaged in organising communities, mobilising funds and executing the projects. They do not maintain systematic baseline or results tracking information, unlike in projects funded by government or international agencies. It had led the team to do a considerable level of in-depth probing to understand the technology and the impact of the interventions.
The lessons learnt from the case studies as follows;
i) Demand- generation at the grassroots is essential for collective action,
ii) An organisation which is willing to work with people, offering them low cost technologies, are capable in mobilising peoples' energies for collective action,
iii) Low/no regret investments are much more cost effective and efficient than projects which have high investments,
iv) The experiment has shown sustainable results and is amenable for replication in similar situations,
v) The adoption of supplementary irrigation facilities during dry spells and practice of good agronomical interventions have enhanced the adaptability, food security and socio economic status of the community.

Lessons Learnt for replication
i) Participatory net planning, including drainage survey, along with base line survey,
ii) The formation and successful operation of Commodity Interest Groups for assured better returns to farmers,

iii) Promotion of agricultural diversification, with a major shift from food and fibre based crops to vegetables, grape and pomegranate,

iv) Strong leadership and community solidarity enabling the project to take decisions based on local and collective wisdom,

v) Availability of technical support to complement water shed development works with improved agronomic practices.

People we can interview:

Contact information of Beneficiary community:

- *Vanrai Foundation,* 498, Parvati, Aaditya Residency, Mitramandal Chauk, Pune 411 009, Maharahstra, Tel: 020-24440351, email: vanraitrust@rediffmail.com
- *Krishi Vigyan Kendra, Jalna* At and Post Kharpudi, Jalna – 431 203

Phone: +91–2482–235586, 238266
Fax: +91-2482-232726
e-mail: tokvkjalna@indiatimes.com

- *Social Forestry Wing, c/o* **Office of the Deputy Conservator of Forest (Territorial) Aurangabad**, Van Bhawan, Osmanapura Opp. S.S.C. Board Station Road, Aurnagabbad - 431001 Phone 0240-2334701
- *Kishor Shitole,* **"Jaldoot",** Plot No.66, Satara Parisar,

Rly. Stn. MIDC, C/o. Hotel Mount View Campus, Aurangabad, Maharashtra, Pin-431010.
Email: shitolekishore@gmail.com Contact no. 98220 99881.

- Each of the villages studied has a Watershed Committee, but do not have access through e-mail or phone. They can be contacted through the promoting institutions or through the concerned Panchayats.

Other Information: Web links to reports, news items, photos, etc.

www.cwp-india.org; Documentary Film: http://cwp-india.org/VideoGallery.html

"Water Harvesting for Climate Resilience: The Maharashtra Story"

The full report can be downloaded from IWP website under WACREP Phase-I under Work Package 3 or

http://cwp-india.org/WACREP/wacrep_phase1/Report on success stories for rain water harvesting and water security in Maharashtra.pdf

Photos of climate resilience interventions captured during compiling case studies

A Typical Vanrai Bund

Gabion Structure

Continuous Contour Trench

One of Kadwanchi's Cement Bunds

Farm Bund Work in Progress

Babhulgaon's Open Wells now brim with Water

Stabilisation Pit for well recharging inlet pipe

recharged dug well with

Activity No. 2.5.2: Augmenting Water security and food security of small farmers ~~in the~~ by rehabilitating or constructing five water harvesting tanks, constructing 25 farm ponds in Chittoor district of Andhra Pradesh and Kolar district of Karnataka. Construction of three dug out ponds (Ooranis) for drinking water in Ramnathapuram district of Tamil Nadu

Output/Outcome: Storage capacities enhanced for irrigation and drinking purposes in the drought prone areas of Andhra Pradesh, Karnataka and Tamil Nadu due to the rehabilitated irrigation tanks, constructed farm ponds and deepened Ooranis (drinking water ponds).

Partner:

Strategic Goal # 1 *– Catalyse change in policy and practice*

Description of the change:

The change was possible due to the activities planned and implemented under WACREP by IWP in collaboration with DHAN Foundation. Water storage capacity of existing old tanks were enhanced, new farm ponds were constructed for irrigation and Ooranis were deepened and cleaned for drinking. These activities were carried out through community institutions.

Contributing factors, actors, and background

IWP through GWP-SAS, WACREP facilitated DHAN Foundation to implement climate change adaptation practices in highly drought prone villages of Andhra Pradesh (11), Karnataka (6) and Tamil Nadu (7). At first the needs assessment was done and then the physical works in association with the local level village institutions, Vayalagams were undertaken.

To cope-up with the variability of rainfall in climate risk prone villages of South Indian States of Andhra Pradesh, Karnataka and Tamil Nadu; 10 community institutions (locally known as Vayalagams) promoted by DHAN Foundation under WACREP Phase-I are engaged in rehabilitation, renovation and construction activities. In addition, another set of activities were also taken-up through existing Vayalagams and federations constituted by DHAN Foundation. The major works undertaken were; (i) construction of 17 new farm ponds in farmers' field (ii) Rehabilitation of four irrigation tanks and (iii) renovation of three drinking water Ooranis (traditional drinking water ponds). All these activities were undertaken by community institutions (Vayalagams) which are village level association of farmers, women and landless families. One of the most interesting and encouraging factor was that the community also contributed both in kind and cash for implementing these activities.

The descriptions of activities are given below:

Rehabilitation of Irrigation Tanks: DHAN Foundation has completed the rehabilitation of supply channels, tank bed deepening, construction of pond inside a tank bed, repair and improvement to tank sluices in four irrigation tanks out of five planned in four districts of Tamil Nadu namely; Virudhunagar; Ramanathapuram, Shivgangai and Madurai. The rehabilitated tanks have created 10,000 Cum of water potential benefitting 400 households covering 1,000 persons (550 men and 450 women).

The works completed under rehabilitation components in IWP/GWP-SAS WACREP include the following:

No	Name of the Work and Village	WACREP contribution INR	People Contribution INR	No. of Households (HHs)/persons benefitted *
1	De-silting supply channel, eviction of encroachment, selective deepening of tank bed, Mugavur Kanmoi, Narikudi Block, Virudhunagar District, Tamil Nadu	112,800	16,700	80 HH (110 Male + 100 Female)
2	Alwarkootam Tank dead storage and pond in tank system to cope with water scarcity, Alwarkootam, Tirupulani block, Ramanathapuram District, Tamil Nadu	100,000	48,000	100 HH (130 Male + 110 Female)
3	Poovakanikanmoi Tank - repair to tank sluice, selective de-silting of tank bed, Poovakani, Manamadurai block, Sivagangai District, Tamil Nadu	53,000	25,000	120 HH (160 Male +120 female)
4	De-silting supply channel and deepening tank bed of Kurinchakulam Kanmoi, T. Veppankulam Panchayat, Tirumanagalam block, Madurai District, Tamil Nadu	100,000	50,000	100 HH (150 Male + 120 female)
Total		365,800	139,700	550 Male + 450 female

***** In some of the villages, young males and females have migrated and leaving elders at home, hence the average household size is 2 to 4 people.

Construction of Farm Ponds: Farm ponds play an effective role in agriculture, especially during poorly distributed monsoonal rains. Farm Ponds are the dug-out ponds in individual farm to build coping and resilience capacity of poor farmers, who otherwise end up in making crop losses due to lack of adequate water.

Under the IWP/GWP-SAS WACREP, DHAN Foundation completed construction of 17 new Farm ponds out of 25 planned - 11 in Chittoor district of Andhra Pradesh and six in Karnataka.). More than 135 members of 17 families are benefiting by constructing these farm ponds.

On an average, each newly constructed farm pond has a potential to hold 450 -700 m^3 of water storage in order to support supplementary irrigation for second crop in normal rainy season and/or protective irrigation at times of monsoon failure or during water scarcity. Each farm ponds cater to the need based irrigation of farmers having farm holding of varying sizes ranging from 1 to 3.5 ha. Out of WACREP funding, Indian Rupees 320,000 have been disbursed to 17 small/marginal farming family. Each of them has also contributed nearly 25 to 50 per cent cost of the constructed farm pond to create a water storage potentially adequate enough to overcome the negative impacts of Climate Change to these farming families.

Deepening of Drinking Water Ooranies:

Three villages which face acute drinking water shortages were selected from the coastal area, under WACREP for implementation. Shortage in drinking water imposes drudgery on women as they walk long distances to fetch water. DHAN Foundation completed deepening of three drinking water Ooranies as planned in Ramanathapuram and Sivagangai Districts of Tamil Nadu. Under each Oorani about 1500 – 2000 cu. m water storage potential has been created to harvest clean rainwater during North East monsoon in order to meet the drinking water needs of three selected villages. Approximately 25 to 50 per cent of cash and in-kind contribution came from the beneficiaries. The three Ooranis (one in each village) deepened under WACREP Phase I are benefitting 595 households (1,785 persons).

No.	Name of the Oorani, Village	WACREP contribution in INR	Community Contribution INR	Number of households benefitted
1.	Kadamankulam Oorani, Kadamankulam village, District Ramanathapuram, Tamil Nadu	120,000	40,000	170
2.	Ranisethupuram Oorani, Rani Sethupuram village, District Ramanathapuram, Tamil Nadu	167,250	62,750	375
3.	Narayanathevar Oorani, Rajakkalkudiyiruppu village, Shivangai district, Tamil Nadu	100,000	79,000	50
	Total	**387,250**	**181,750**	**595**

Other local agencies involved:

Village level Gram Panchayat and Block Development Office of the project block in giving “No Objection Certificate” to execute physical works and Vayalagam (Tank) Farmers’ Federations of Mudukulathur, Punganur, Narikudi, Tiruchuli, Kolar and Manamadurai promoted by DHAN Foundation in the project districts.

Lessons learnt:

DHAN Foundation implemented this activity though a consultative process with the target group. It formed and nurtured user groups/associations and insisted on financial contribution by the target group to the extent of 20 to 50 per cent of the cost of the facilities generated. Collaboration and commitment from the government, village panchayat were needed to evict encroachments in water ways, water bodies and agriculture lands. Involving Youth, Women and Farmers' from planning to implementation and post project is one of the strategies for sustainability of the project.

People we can interview:

Contact information of Beneficiary community:

- Mr N. Ramakrishnan, President, Mugavur Kanmoi Vayalagam, Mugavur village, Virdhunagar District, Tamil Nadu, Mobile: +91 9442439834
- Mr B. Radhakrishnan, Secretary of Vayalagam Rajakkal Kudiyuruppu village, Ramanathanpuram district, Tamil Nadu, Mobile: + 919791287155
- Mr Muniyasamy, President of Kadambankulam Vayalagam, Kadambankulam village, Virdhunagar District, Tamil Nadu, Mobile: +91 9788054862

Other Information: Web links to reports, news items, photos, etc.

The full report can be downloaded from IWP website: www.cwp-india.org under WACREP Phase-I Project Reports under Work Package 5 and also by http://cwp-india.org/WACREP/wacrep_phase1/Augmenting Water security and food security of small farmers in Andhra Pradesh_Karnataka_Tamilnadu.pdf

Glimpses of the Interventions are provided in following pages:


View of the Kadamangalam village oorani, Ramanathapuram District, Tamil Nadu

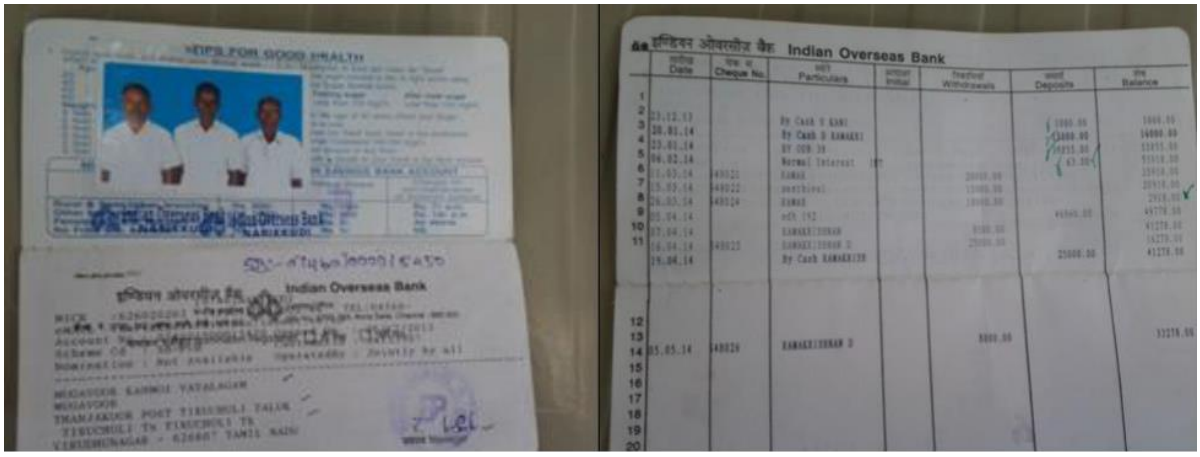
Name Board in front of the Oorani Ramanathapuram District, Tamil Nadu

IWP Monitoring and evaluation team interacting with the village community

Renovated feeder channel in Mugavur Kanmoi village, Virdhunagar District, Tamil Nadu

Pictorial representation of feeder channel, Mugavur Kanmoi village, Virdhunagar District, Tamil Nadu

Mr Ravi Shankar Behera, Consultant, India Water Partnership (GWP-India) inaugurating the Sign Board in the village and interacting with the President of Mugavoor Kanmoi Vayalagam



Bank passbook of Mugavoor Kanmoi Vayalagam

Renovated Ranisethupuram Oorani showing bore wells in the oorani, Ramanathapuram District, Tamil Nadu

Sign board –Ranisethupuran Oorani, Bank pass book of the Rainsethupuram Oorani, Vayalagam, Ramanathapuram District, Tamil Nadu

Activity No. 3.6.1.A:

i) Creating a knowledge platform for advocating and bringing about changes in the reservoir operation schedules (ROS) of the major dams in Wainganga, namely Sanjay Sarovar and Gosikhurd Dam

ii) Documenting farm level/pond level practices which have demonstrated resilience to climate change as a reference guide used to enhance capacity

Output/Outcome:

i) A more realistic reservoir operation schedule developed taking into account recent changes in the micro-climate of the region;

ii) Documentation of farm level practices which have potential for climate change adaptation,

Partner:

Gomukh

Strategic Goal # 1 *– Catalyse change in policy and practice*

Description of the change:

- A modification of the Reservoir Operation Schedule (ROS) for Gosekhurd Dam into a dynamic schedule, mainly with an inclusion of a flood cushion and its accommodation in the schedule of water releases in the monsoon.
- A verbal commitment from the project authorities; every time water is released from the reservoir, the cumulative impact of the natural flood and the dam release from spillway would be continuously communicated to the village Panchayats and district authorities located along the river.
- Creation of a procedure/platform whereby the community would here onwards, interact, discuss and negotiate such matters with the government authorities connected with the Wainganga river system.
- Modifications in Government Resolutions (GRs) related to leasing of tanks to fishing cooperatives, which are favourable to the fishing community.
- The farm-level and pond-level cases, which were documented in this study have been accepted by surrounding villages as accepted policy for replication.
- Increase in communication and outreach at state and international level (e.g. celebration of fish migration day).
- A confidence has been generated among people to believe in their own ability to further replicate practices resilient to climate change.

Contributing factors, actors, and background

- Confidence building: Members of Gomukh Environmental Trust for Sustainable Development and the Wainganga Area Water Partnership (AWP) worked constantly and consistently with the community in order to build the confidence of the community.
- Peer level interaction with government officials allowed the community to empower themselves and their specific village level organizations.
- Government officials recognised the merits and advantages of having such interactions
- The stakeholders (fishing communities, forest dwellers and farmers) have now taken pride in their traditional knowledge and techniques and recognised their merits and relevance to the climate change impact.

Background

According to the Central Water Commission's (CWC's) preliminary report on the "Effect of Climate Change in India (2008)", it has been predicted that there will be a rise in rainfall intensity and extreme rainfall episodes in Central Indian river-basins such as Godavari River Basin and its tributaries. The Wainganga River basin is known as an assured rainfall zone and receives about 114cm of rainfall each year, spreading over six months from the South West and the North East monsoon winds. It has been predicted that there will be an increase in rainfall and its intensity and an increase in temperature by around 0.5 degrees to two degrees Celsius by 2030. Today, a commonly observed phenomenon in Central India is that the dry spells in the monsoons have considerably increased, despite the average rainfall values not showing appreciable change.

The Wainganga Basin has over 24 major and medium dams, the discharges from which need to be coordinated to avoid 'shock floods' due to unplanned/unexpected releases from large reservoirs, and to ensure storage of water for drinking water supply and irrigation. The Reservoir Operation Schedules (ROS) currently followed in the region are based on the 100 year (normal) time series of meteorological data collected by the Indian Meteorological Department. Since the weather patterns have changed discernibly during the last two decades and more, rapid change is predicted for the next 40 years, thus ROS needs to be more sensitive and dynamic to make it possible respond to the impacts.

The economy of the Wainganga sub-basin is known for its near complete dependence on agriculture, forests and fisheries, with over 80.37 per cent of the community involved in these occupations. Agriculture, forests and fisheries are an integral part of the natural agro-climatic system and extremely sensitive to climate change. Historically, it has largely been perceived that traditional practices in agriculture and fisheries were responsive to nature and had the

potential and flexibility to adapt to climate change. However, the systems currently followed in the Wainganga sub-basin have considerably changed for the worse from the traditional management practices. The choice of species, time of seeding, harvesting, etc. have slowly shifted to market based management and have adopted non sustainable practices like using dynamite or poisoning river water for harvesting fish. With the advent of Climate Change and the loss of traditional agriculture and fisheries management practices, livelihoods dependent on them have been severely affected. It is therefore necessary to document the existing strategies that could be 'climate-responsive' and, identify new techniques or management practices which have the potential to survive in the changing climate scenario thereby increasing the resilience of the community.

Actors

Government Departments of Maharashtra and Madhya Pradesh, Staff of Gomukh Environmental Trust for Sustainable Development, Members of Wainganga AWP, village communities of (Nagpur, Chandrapur, Gondia, Gadchiroli and Bhandara districts of Maharashtra), Shrishti Trust (Gadchiroli district), Bhandara Nisarga va Saunskruti Abhyas Mandal, Fisheries Cooperative Societies, Water Users Association, M B Patel College, Sakoli, J M Patel College, Bhandara District, Zilla Praishad Primary schools in Arjuni Morgaon block (Gondia districts) contributed to the programme.

Under GWP SAS supported WACREP Project, IWP facilitated Gomukh Environmental Trust for Sustainable Development, Pune to study the Reservoir Operation Schedule. Further to document various resilience techniques that can help the increase resilience or provide valuable data towards developing resilience strategies in similar areas around in other parts of the country. Gomukh Environmental Trust for Sustainable Development, Pune - formed the Waingana AWP (WAWP), has involved the partners of WAWP in negotiations and discussions with government officials by holding formal and informal meetings in villages. Also by developing case studies related to climate change impact resilience.

Main agencies involved

- Gomukh Environmental Trust for Sustainable Development,
(Prof Vijay Paranjpye)
92/2, Durga, Ganagote Path, Erandwane, Pune 411 004
Tel: + 91 20 – 25673324 / 08380003155
E-mail id - paranjpye@yahoo.co.uk / gomukh.ntrust@gmail.com

- Wainganga Area Water Partnership
C/o Mr. Manish Rajankar
2278/1, Ward No. 06, Near S Jaiswal College, Arjun Morgaon,
District: Gondia – 441701 (Maharashtra)
Mobile: 09423118307

Lessons learnt:

On Reservoir Operation:

The meetings held with both the villagers and engineers have highlighted that flood management has a much larger objective which is disaster management. However, the technologies and systems of information and communication are inadequate to avoid disasters. However, an effective information dissemination system related to flooding can be developed, which can be utilised by the decision makers.

The 'Reservoir Operation Schedules' currently in use are static, as they have not been changed since the time when the Detailed Project Reports (DPR) were prepared. Therefore it is recommended that with the Real Time Flood Statistics (RTFS) in place, a dynamic Reservoir Operating Systems (ROS) can be easily worked out every year, keeping in mind the provision of a "flood cushion" as an objective along with irrigation and hydropower generation. Together these two procedures will form a Real Time Decision Support System (RTDSS) that will help optimise the operations of the reservoirs in the area as well as improve flood management significantly.

There is no 'Flood Zoning Map' for the entire basin, inclusive of detailed maps for each of the major dams which have a design spillway with a discharge capacity greater than 3,000 m^3 of water. So, flood disaster levels should be predetermined and concrete pillars with level markings should be built in villages close to the embankment, the flood zoning maps to be accessible to all village Panchayats in the Zilla Parishad.

Flood control should be stated as an objective in the design parameters so that the ROS can then contain a reasonable flood cushion. The ROS is a Standard Operating Procedure (SOP) which means that it can be used as a key tool towards mitigating floods in the Wainganga river basin.

On Farm level/pond level practices:

Sand bed or river bed agriculture (Gal Par Agriculture) and pond bed fisheries are great traditional techniques for increasing systemic resilience to climate change impact. The area exposed during the lean season i.e. the area between the contour of the reservoir being full and the contour indicating lowest drawdown level (from October to May), is potentially suited for a combination of sand bed farming and freshwater prawn and fish harvesting. Cultivating or fishing in such areas (especially in a tank bed where silt is confined to a limited area) is highly productive since there is a high proximity to water and access to highly valuable micro-nutrients and humus, which is difficult to come by in normal agricultural land. Watermelons, musk melons, cucumber, are regularly grown in tank beds. Sometimes, there are conflicts occurs between the sand extractors and gal par farmers. There are about 180 villages along

the river and approximately 500 villages on Malguzari Tank that practice sand bed or Gal per agriculture. Till the last decade, *Gal per* agriculture was not encouraged by the Irrigation Department, Government of Maharashtra since it was presumed that it would hamper storage capacity and/or increase siltation in the large dams. However the government has since come to realise the benefits of letting farmers practice this type of agriculture. The Irrigation Department, has now regularised such farming or agriculture practices, and has even started collecting land revenue on it. Although an exhaustive full population survey has not been undertaken, it has been estimated that approximately 85,000 households officially pay the land rent to the Irrigation Department at Indian Rupees 200 to 300 per hectare.

A. Beneficiaries of flood control (i.e. ROS modification)

Approximately 180 villages having an average population of 500 persons each will be rural beneficiaries (i.e. approximately 90,000 persons). Similarly, six towns namely, Bhandara, Pauni, Tumsar, Wadasa, Armori and Gadchiroli located on the banks of Wainganga with a population of nearly 200,000. Therefore, total number of potential beneficiaries will be 290,000.

B. Nearly 90,400 households benefited through sand bed/ tank bed/ Gal per agriculture and fisheries and from tank restoration. Beneficiary overlapping can be seen in these activities as households involved in all kinds of riverine activities and those residing in the immediate riparian area are directly or indirectly benefited through these activities.

People who can be interviewed regarding the programme:

- Mr Manish Rajankar,
Member of Wainganga AWP and other members of the Partnership,
Tel: 9423118307

- Mr Shivlal Nagpure
Post Mohgaon, Mukkam rengepar,
Tal.Tumsar, dist.Bhandara – Sarpanch,
Rengepar Village,
Tel: 9767219296

- Mr Keshav Gurnule
Wadasa town (especially regarding floods / disaster management)

- Mu. Shankarpur, Post Visora,
Tal. Desaiganj (wadasa),
Dist. Gadchiroli,
Tel: 9420144035

- Mr Sudhir Katariya
Madhya Pradesh (Also regarding floods / disaster management)

- Mr Wani
Executive Engineer (Irrigation Project Investigation Circle, Bhandara District, GoM)

- Mr Wankhade
Engineer (Irrigation Project Investigation Circle, Bhandara District, GoM)

- Mr Dilip Pandhare
Local resident, Opp. Gramin Rugnalay,
Mu. Navegaon Bandh, Tal. Arjuni Morgaon, dist. Gondia,
Tel: 08275480199

- Mr Nandal Meshram

Local resident: Mu. Jamdi, Post – Dhabetekdi,
Arjuni Morgaon, Gondia Tel: 9422681871

Some Photographs

Ladaji Island where farmers are engaged in sand bed or river bed agiculture

The Gosekhurd Dam in Bhandara Dist. for which, modifications in Reservoir Operation Schedules would be recommended

Sand Bed and River Bed Agriculture during dry season

Sand Bed and River Bed Agriculture during dry season

Unique practice of growing silkworm (Tassar Silk) on the forest tree species 'Ain' hich can withstand all the vagaries of climate change.

Other Information: photos, web link etc.

The full report is available on IWP website under WACREP Project Reports under Work Package 6 and can be viewed by http://cwp-india.org/WACREP/work_package6.html

Activity No. 3.6.2.D: To train at least of 500 farmers in Climate Resilient Farming Practices For Sustainable Agriculture Practices

Outcome/Output: Increased understanding of farmers to implement efficient farming practices and water conservation measures.

Partner: Development Alternatives

Strategic Goal # 2 – *Generate and Communicate Knowledge*

Description of the change

Training on sustainable agriculture management practices has helped the farmers to adopt efficient water and soil conservation measures in the semi-arid region of Bundelkhand. Some of these practices include drip/sprinkler based irrigation, line sowing, raised bed technique, seed treatment, shade net, improved seeds, breeder seeds, agro-forestry and agro-horticulture models.

Close interactions with agriculture experts and institutions has not only enhanced their knowledge but has also increased their information accessibility. They are now updated with latest government schemes and have largely benefitted from them.

The intervention led to improved management of water and land resources, reduced risks of climate variability and has increased acceptance levels of new agricultural technologies. At the start of the trainings few farmers had adopted seeds of improved varieties. However, regular trainings have led to wider adoption of the improved seed variety and other practices. Lastly, this has also created a cadre of master trainers who are not only adopting sustainable agriculture practices, but are also motivating other farmers from nearby villages for large scale uptake.

Contributing factors, actors, and background

Bundelkhand, a semi-arid region in India has fragile geophysical conditions and is highly prone to the impacts of climatic variability. The Bundelkhand region comprising seven districts of Uttar Pradesh and six districts of Madhya Pradesh state is one of the most backward regions of the country. The semi-arid geography is highly perturbed with variable climatic conditions intensified by erratic precipitation trends, high evapotranspiration losses, high run off rates,

and poor water retention capacity of the soil and large area of barren and uncultivable land. In addition to undulating terrain and climatic variability the drought prone region suffers from high socio economic vulnerabilities marked by increased climatic sensitivities and low adaptive capacities. Bundelkhand region is a chronic drought prone region of India.

Bundelkhand faces two major problems i.e. inadequate and erratic rainfall and low water retention capacity of the soil. Variability of monsoon as a consequence of changing climate coupled with break-down of natural resource management practices are the key factors leading to frequent occurrence of droughts. Climatic changes have increased frequency of extreme weather events during past 15 years and raised the vulnerabilities and risks. The region witnessed continuous meteorological, hydrological and agricultural drought for six years in the period 2003-2009 (Inter-Ministerial Central Team, 2008). The continuous drought years in Bundelkhand have severely affected the agriculture productivity and subsequently weakened the livelihood systems.

Considering the inadequate and erratic rainfall in the Bundelkhand region coupled with impacts of climate change, the GWP SAS under WACREP Project entrusted IWP to take up the task of training the farmers on climate resilient and sustainable agriculture practices with the support of Development Alternatives.

Therefore, by considering the need for training farmers on climate change resilient strategies, natural resource management, and conservation agriculture in Bundelkhand region, a series of trainings were conducted to train 500 farmers on climate resilient and sustainable agriculture practices. It is worthwhile to mention that approximately 100 women participated in these trainings and keenly learnt resource efficient farming methods. Objectives of the training workshops were to;

- Increase the climate change understanding of farming communities in semi-arid region of Bundelkhand.
- Educate the farmers on climate change adaptation and increase their adaptive capacities against climate risks.

With the six training programmes organised under WACREP, the farmers were taught about the fundamentals of climate change as well as the different adaptation strategies for climate resilient farming through field demonstration and exposure visit in the Demonstration and Training Resource Centre-TARA gram Pahuj, Gaushala, Datia and Central Soil and Water Conservation Research and Training Institute, Datia. These workshops also provided a platform for knowledge sharing and exchange of experiences between famer participants from different villages of Datia District. Several success stories on adaptation practices were also shared by the speakers to motivate farmers.

Scientific experts from different research institutions such as National Research Centre for Agroforestry, Jhansi, Central Soil and Water Conservation Research and Training Institute, Datia District, Krishi Vigyaan Kendra, Datia district, IWP and Development Alternatives participated in training the farmers. They were trained on soil and water conservation measures, low input technologies, improved irrigation practices, agroforestry, allied agricultural activities etc. Furthermore, the scientists also discussed about climate change, its impacts and the importance of climate change adaptation. These discussions were facilitated to increase the climate change understanding of the farming communities. The training programmes emphasised on;

- Conserving agricultural practices: during these trainings, resource experts explained the right techniques and procedures for different conservation agriculture practices such as developing bunds, mulching, line sowing, intercropping and tillage activities.
- Irrigation practices: trainings discussed about irrigation technologies which help farmers in water conservation and obtaining high yields while giving special emphasis to micro-irrigation practices.
- Organic farming: discussed how different organic manures such as compost, vermicomposting, green manure and farm waste can increase the humus content in soil, thus increasing the binding capacity and reducing the run off in Bundelkhand region.

Agroforestry: The scientists gave special emphasis to agroforestry as a unique solution for providing various environmental and climatic benefits. The farmers were taught about the importance of forests and fodder resources in the region. It was emphasised the importance of agroforestry as a means to gain economic returns and decrease vulnerability to climate change.

Special emphasis was given on women who are the backbone of agriculture and farming in Bundelkhand. They were encouraged to participate in decision making processes and to share their experiences in farming. Women were enthusiastic about adopting the techniques which they learnt at trainings. A farmers' manual was developed in Hindi to guide farmers further on sustainable and conservation agriculture practices.

Details of various trainings provided to the Farmers

Programme Title	Date	Location	Venue	Participants	Total Attendance
Farmer's Training on Sustainable Agriculture	4 March 2014	Pahuj	DA, TARAgram	Farmers	74
Farmer's Training and Exposure Visit on Sustainable Agriculture	28-29 April 2014	Orchha/Pahuj/Gaushala	DA, TARAgram	Farmers	45
Farmer's Training on Sustainable Agriculture	24 June 2014	Datia	CSWCRTI	Farmers	100
Farmer's Training on Sustainable Agriculture	25 June 2014	Datia	CSWCRTI	Farmers	100

Farmer's Training on Sustainable Agriculture	24th July 2014	Datia	CSWCRTI	Farmers	81
Farmer's Training on Sustainable Agriculture	25th July 2014	Datia	CSWCRTI	Farmers	100
Total	-	**-**	**-**	**-**	**500**

Other local agencies involved*:*

- Dr S. P. Tewari, Central Soil and Water Conservation Research & Training Institute, Datia, Mobile: +91 09752272901

- Dr Ramesh Singh, National Research Centre for Agroforestry, Jhansi, Uttar Pradesh, Mobile: + 91 09453624811

- Dr Nishi Roy, Krishi Vigyaan Kendra, Datia, Madhya Pradesh, Mobile: +91 09415587899

People we can interview:

Contact information of Beneficiary community:

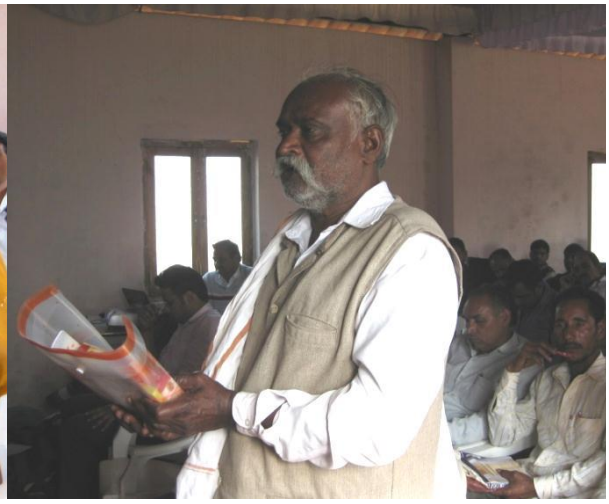
1. Mr Rajpratap Khushwaha, Nauner village, Datia (+91 097179746695)
2. Mr Narendra Singh Parmar, Pathari village, Datia (+91 09755303711)

Note*: Since the number of beneficiaries is large, the name and mobile number of one beneficiary each from two project villages has been provided.*

Lessons learnt

Close interactions with farmers during the trainings revealed that lack of information on new and upcoming technologies for sustainable agriculture is an important limiting factor. In order to upscale soil and water conservation strategies in Bundelkhand region, there is a need to educate farmers through successful demonstrations and participatory practices. Integrating environmental concerns in village plans play an important role in aligning sustainable agriculture practices with their planning processes.

Women farmers learning on rain water harvesting for soil and water conservation



Elderly farmer sharing his experiences of climate change impacts observed by his community over last 30 years

Scientific experts from NRCAF, KVK and CSWCRTI Interactive PowerPoint presentations educating the farmers on climate resilient practices

Participants at one meeting

Another venue

Other Information: Web links to reports, news items, photos, etc.

The full reports are available on IWP website under WACREP Project Reports under Work Package 6 and can be viewed by clicking http://cwp-india.org/WACREP/work_package6.html

Activity No. 3.6.3: Climate adaptive planning, capacity building and training programmes.

Outcome/Output: Enhanced capacities of village level planners on integrating climate change adaptation in their existing plans and integration of climate change adaptation in village level plans

Strategic Goal # 1 *– Catalyse change in policy and practice*

Partner: 

Description of the change

Engaging local communities for integrating climate change concerns in development planning is important in addressing local concerns of climate change and increasing climate resilience. Bottom-up analytical and participatory processes helped vulnerable communities of two villages out of eight project villages of Datia district in identifying local climate change vulnerabilities and respective adaptation strategies. Climate adaptive planning processes adopted in Datia district of Madhya Pradesh under the WACREP initiative, enhanced capacities of village level planners on integrating climate change adaptation in their existing plans. Furthermore, linking the decentralised climate adaptive planning processes at panchayat level with development planning at district level helped in the uptake of locally developed climate adaptive plans at district.

Contributing factors, actors, and background

Keeping the importance of community based climate change adaptation in mind, IWP with the support of Development Alternatives launched WACREP in Datia District of Madhya Pradesh part of Bundelkhand. The initiative focused on enhancing climate change adaptive capacities of local communities by increasing their understanding of climate change resilience. The initiative aimed to integrate climate change adaptation in the village level planning processes of the communities to design their village level plans from a climate resilient lens. The following activities/tasks were undertaken;

1. Climate change vulnerability assessment for Datia District

In order to achieve climate resilience in planning processes, a detailed assessment report was developed to identify key climate change vulnerabilities in Datia district of Madhya Pradesh. These bottom-up vulnerability assessments identified people or places in the district most susceptible to harm due to climate change. It also provides recommendations to help district planning in Datia to design adaptation strategies for climate resilience of vulnerable sections of the society.

2. Capacity building for integrating climate change in village and district planning processes

In order to integrate climate change adaptation in village planning processes, the initiative built the capacities of Panchayati Raj Institutions (PRIs) on climate change issues and adaptive planning strategies. The participants learned about the fundamentals of climate adaptive planning as well as directly engaged in group activities to develop climate responsive plans of their respective villages. Similarly, to synergise village development plans with district planning, district level sensitisation workshop was organised to increase awareness of district officials on issues of climate change. Tools and methodologies developed for mainstreaming climate change adaptation in development planning were shared with district officials during the workshop. These tools will help the district officials to develop climate proof plans and integrate them in district planning processes.

3. Integrating climate change adaptation in village planning

Through a series of consultations and participatory exercises, village level climate adaptive plans were developed for Pathari and Nauner panchayats. Communities identified village level vulnerabilities and highlighted adaptation strategies for them. The participatory exercises used three guiding factors (i.e. problems, solutions and means of implementation) for development of climate adaptive plans for the village.

Other local agencies involved:

1. Panchayati Raj Institution (PRI) of Nauner and Kamher Panchayats, Datia District
2. Datia district (CEO, DPC, line departments)

Lessons Learnt

In order to address global issues such as climate change at local level, there is a need to identify local climate change vulnerabilities and response strategies. This can only be enabled through engagement of local stakeholders and decision makers. This helps to integrate cross-cutting concerns of climate change in local planning processes. Climate adaptive planning at sub-national level is crucial in increasing resilience against climate risks.

Furthermore, implementation of climate adaptive plans is possible through ownership of district and village level planners. Identification of linkages with on-going Government schemes help to identify budgetary resources and helps to link village priorities with district priorities.

People we can interview

Contact information of Beneficiary community:

- Mr Rajpratap Khushwaha, Nauner village , Datia (+91 097179746695)
- Mr Narendra Singh Parmar, Pathari village, Datia (+91 09755303711)

Participatory Climate Change Adaptive Planning, Datia District, Bundelkhand Region, Madhya Pradesh

Other Information: Web links to reports, news items, photos, etc.

The full reports are available on IWP website under WACREP Project Reports under Work Package 6 and can be viewed by clicking the link
http://cwpindia.org/WACREP/work_package6.html

Activity No. 3.7.1.C: Assessment of vulnerability to climate change on water resources, commons, agriculture systems and animal husbandry in Sinhar watershed in Bhinder Block in Udaipur District of Rajasthan. (Identification of adaptation options for agriculture systems, animal husbandry and forests will enable boundary actors to undertake climate resilient behaviour)

Output/Outcome: Vulnerability Assessment and basket of sustainable adaptation options for Semi-Arid Regions of Udaipur District, Rajasthan is available

Partner: AFPRO Action For Food Production

Strategic Goal # 2 *– Generate and Communicate Knowledge*

Description of the change:

The impact studies and vulnerability analysis of climate change on water resources, commons, agriculture system and animal husbandry have been carried out to identify the adaptation options in the Sinhar watershed of Bhinder block, Udaipur district, Rajasthan which is a semi-arid region.

The village level and cluster level meetings with core group members for review and planning of sustainability, outcomes, experiences and scaling-up the learning were conducted regularly. The linkages with different government departments for sharing learning were established.

As a result of the awareness programmes organised and different interventions undertaken in the targeted ten selected project villages of Bhinder block, changes were observed in following three practices.

Changes in community practices: Pasture land maintenance was never being a common practice except protecting it with a fencing wall. With the benefits shown in demonstration plots people started with soil and water conservation measures in their pasture lands. They started constructing earthen field bunds to check run-off and to create moisture in their pasture and agriculture fields. Revival of growing important minor millets such as Mal/Ragi (*Eleusine coracana*), Jawar (*Sorghum bicolor*), and Barley (*Hordeum vulgare*) were started by few farmers. These traditional varieties were used to grow in this semi-arid region nearly two decade ago but gradually shifted the focus only to maize (*Zea mays)* and wheat (*Triticum aestivum)*. The programme made the farmers to realise that those traditional varieties can be grown again in the current climate change scenario.

Inclusion of more water harvesting and soil conservation measures in MGNREGA action plan at local level. Different soil and water conservation measures, especially construction of staggered trenches, gradonies and thawlas etc. resulted increase in grass production (about 46.33 per cent increase in production in the demonstration plots of pasturelands) and in water table in the wells on the down side of treated pasture lands, which have been noticed by local Panchayat. With the Government's declaration for inclusion of private lands also for MGNREGA programme, local Gram Panchayat followed the similar type of activities for the rest of the pasture lands. The project motivated local government officials to replicate the soil and water conservation practices in villages adopted by WACREP programme.

The third change is the behavioural changes noticed within the community and Community Based Organisations (CBOs) like Self-Help Groups (SHGs) and core groups etc. Farmers started linking water related issues with climate change; linkages of water availability in wells with water recharge possibility, checking rain fall status and run-off. Initiating climate smart agriculture practices as a result of Farmers Field School (FFS) are some of the examples.

The impact assessment and vulnerability analysis helped the community to identify negative impacts on land and water bodies associated with agriculture and allied livelihoods. This can be seen in changes occurred on account of following;

- Revival of traditional crops Mal/Ragi (*Eleusine coracana*), Jawar (*Sorghum bicolor*), Barley (*Hordeum vulgare*) and concept of mixed cropping on different categories of land to save at least one or two crops;
- Adoption of decentralised water harvesting in upper levels using low cost structures;
- Establishing linkages with government departments including Rajasthan Collage of Agriculture (RCA-Udaipur) under the Maharana Pratap University of Agriculture and Technology (MPUATE), Veterinary Department, Government of Rajasthan etc. and share their knowledge and experience with FFS groups;
- Local Panchayet committee decided to include low cost water harvesting structures and location specific soil and water conservation measures in Panchayat level action plan under MNREGA; and,
- Due to increase in production on the pasture lands, the farmers have now started investing time in developing pasture lands, which used to be mostly neglected earlier.

A "Farmers Experience sharing workshop" is planned March 2015 with the selected farmers from both project villages and non-project villages to share the WACREP interventions and their outputs. Representatives from University of Agriculture, Department of Veterinary and Agriculture and local NGOs are expected to attend the workshop. However the same could not be organised due to non-receipt of financial support from GWP SAS under phase 1 activity planned in Q1 of 2015.

Contributing factors, actors, and background

1. The above changes occurred mainly due to following actions carried out by IWP with the support of Action for Food Production (AFPRO). The major contributions to the change are the community participation and creation of awareness. Contribution of local Agriculture University (MPUATE), local Panchayats, Veterinary Department Sr. Geohydrologist and Agronomist (Retired) from Rajasthan College of Agriculture (RCA) played an important role in the change through the following process;

- The process involved undertaking "impact studies and vulnerability analysis" of current and future climate change on water resources, commons, agriculture system and animal husbandry.
- Analysis of lessons from Government supported Integrated Watershed Management Programmes and agricultural development activities which were put in practice by the community of the project villages.
- Community sensitisation, village level and cluster level meetings with core group members during Participatory Hazard Mapping and historical transect. Focus Group Discussion (FGD) on weather variability and associated losses. Sensitisation of community on climate change was attempted by organising cultural programmes like praising Goddess Earth and its associated benefits, welcoming "Weather God", chanting and welcoming Lord Ganesha (who signifies wealth) etc.
- Identification of existing climate change adaptation options in the Sinhar watershed of Bhinder block, Udaipur District, Rajasthan which is a Semi-arid region.
- 71 youth and progressive farmers were trained on good agricultural practices; water management practices and livestock management through various training programmes. Sharing of their experience motivated the other farmers to apply the same agricultural Practices in their own lands. Farmers were advised to identify suitable varieties of crops as per local conditions and for water management, including ground water recharge.

Following ground level activities have been taken up to involve the community in identifying the basket of options for livelihood solutions in the context of climate variability in 10 villages of Sinhar Watershed.

2. Village level meetings: As a part of continuous process, total 78 village level meetings were conducted during the project period as a part of regular monthly meetings in all the 10 selected villages and also with core group members. In the meetings the WACREP project objectives and its activities were shared, discussed and periodical review on the progress was made. These meetings helped in enhancing more participation of the group members in decision making and creating interest about different activities under WACREP.

3. Mass awareness campaign on Climate change and livelihoods: It was decided to design awareness programmes on climate change using folk dance, drama, nukkar natak (street show), etc. in local language linking it with their tradition, culture and mythology. This made the village community more aware about climate change and its linkages with their livelihoods and also created the programme more interesting and attractive to the community. Folk artists and singers from the local communities were selected, trained on the theme and script prior to performing cultural programmes. The three hours programme on different issues was performed in the evenings in six villages with a gathering of people from 10 selected villages as well as from the non-project villages. The awareness programme became very popular among the community and consequently National Bank for Agriculture and Rural Development (NABARD) has initiated a similar awareness programme in their different watersheds programmes using the same cultural group. The programme was also well appreciated by the IWP M&E team members during their visit to project area.

4. Focused Group Discussions: Under the guidance of different subject matter specialists, issue based focus group discussions were held with different interest groups - pasture group, goat users group, agriculture group and water group etc. formed under the project. Management of community-led initiatives for protecting pasture lands, crops and livestock, water resources planning and management, enhancing water availability and fodder production in the midst of adverse climate variability were discussed.

5. Participatory Rural Appraisal (PRA): A participatory natural resources mapping was conducted with the reference communities and stakeholder groups in the 10 selected project villages using Participatory Rural Appraisal (PRA) tools and techniques. Information and primary data collection on climate change linkages with agricultural practices with livelihood, water and livestock status were conducted. Resource maps and climate hazard maps for all villages were generated during the PRAs.

6. Participatory Technology Development Approach (PTDA): For preparing an effective plan and designs for different activities in a participatory approach, a PTDA exercise was followed with the beneficiaries. The group members discussed the issues and problems of their respective pasture lands with regards to location of maximum soil erosion points, drainage lines, run-off lines, waterlogged areas, production rates etc. Different location specific low cost structures were planned jointly after conducting a detailed topographical survey in all the three pasture lands and finally implemented accordingly.

7. Creation of Farmers Field Schools (FFS): Capacity building of farmers' community on improved technology to enhance the productively particularly in Kharif and Rabi season, which totally depending on monsoonal rains is vital. The continuing practice of using old aged cropping pattern resulted in drastic reduction of crop productivity or sometimes complete

crop failure. This demands to sensitise the farmers on monsoonal behaviour and to adopt the appropriate technologies for better crop production.

Accordingly, FFSs were created under WACREP and three groups were formed to demonstrate on agriculture, water and livestock. The FFS is described as a platform or a "school without walls" for improving decision making capacity of farming communities and stimulate local innovation for sustainable agriculture, livestock and proper management of irrigation. It is a participatory approach to extension, whereby farmers are given opportunity to make a choice in the methods of production through discovery based approach. The following activities were undertaken under FFS;

1. Farmers Field School on Agriculture (FFSA) – training 26 farmers
2. Farmers Field School on Livestock (FFSL) - training 35 farmers
3. Farmers Field School on Water management (FFSW) – training 10 farmers

The FFS were supported by different experts, representatives from the State Government and their line Departments.

a) FFS Agriculture:

26 progressive farmers were selected from 10 villages for undertaking "Climate Smart Agriculture" project. The farmers who were interested in new initiatives, actively participate in various training programmes, willing to share their experience with other farmers in non-project villages and also motivate others to apply good agricultural practices were selected for the project. The identified practices were;

- Inter cropping/mix cropping agricultural practices to balance/increase the productivity in case of climate variation;
- maintaining the plants gap and plants quantity per hectare;
- use of Farm Yield Measurement in summer time;
- seed treatment for healthy crop;
- weather based farming decisions to reduce the risk of crop failure;
- type of agriculture practices to be followed in case of late on-set of monsoon or heavy rains;
- Use of organic fertilizer to reduce consumption of chemical fertilizers, etc.

Demonstrations on agricultural practices were conducted for both 'Rabi' and 'Kharif' crop seasons during 2014 under the guidance of experts (Agronomists from Agriculture College). The farmers, members of FFS and non-members from the project villages took keen interest to follow the techniques due to encouraging results. In 2014, the onset of monsoon was too late and the FFS group was advised to grow mixed crops with Maize and Urad (*Vigna Mungo*)

or Maize and Soyabean (*Glycine Max). So* if the maize crop got dried due to scarcity of water, Urad or Soyabean would survive and will give sufficient yields. It occurred as planned and the farmers benefited from Urad and Soyabean. After the training under FFS, the farmers started growing vegetables for both own consumption and for sale. The group was advised to grow a heat tolerant seed wheat variety to get higher yields, as fluctuation in minimum temperature during flowering of wheat affects in wheat production. Also the temperature fluctuations during January and February became very common in the region.

b) FFS Water:

Water users group consisting of 10 farmers were formed and a well renovation at Chuna ka wela (Kheda fala) was selected for demonstration. The well is shared by five small and marginal farmers and irrigate almost a hectare of farm field. Renovation of the well with parapet wall facilitated in enhancing the storage capacity of the well and beneficiaries are planning to grow minimum three crops of varieties. Participatory irrigation and management systems were introduced to the farmers to promote judicious use of irrigation water.

Training of FFS water group was conducted at village -Chuna ka wela. Objectives of the training were to enhance the capacity of farmer group on collective management of water by following different methods for ground water recharge systems and developing a habit of judicious use of irrigation water.

c) FFS Livestock (FFSL):

A Goat users' Group (GUG) have been formed with 35 goat farming families and five persons identified as **"buck managers"** selected by the group itself who will take the responsibility of managing the bucks and facilitate the services to all FFSL members. Five *Sirohi* breed bucks were purchased and distributed to the buck managers. A proper management system have been jointly developed by the group for managing and maintaining bucks - terms and conditions for availing the services of *Sirohi* bucks for breeding purpose and removing all the existing indigenous varieties of bucks from the village to avoid in-breeding etc. *Sirohi* goats are dual-purpose animals, being reared for both milk and meat. The animals are popular for their weight gain and lactation even under poor quality rearing conditions. The animals are resistant to major diseases and are easily adaptable to different climatic conditions. Kidding of *Sirohi* breed normally takes place twice a year, normally as twins and sometimes as triplets and the growth rate is very high.

8. Pastureland development: The project area is a habitat for small and marginal families, mostly Scheduled Tribes (STs) and Other Backward Castes (OBCs). People in the area depend mainly on agriculture and allied activities for sustaining their livelihood. Increased variability in precipitation and heavier rainfalls after longer drought spells enhances the exposure of the already degraded lands to soil erosion. The pasturelands in the project area are therefore highly vulnerable and neglected. Effect of climate changes especially moisture deficit and high

temperatures on fodder productivity are mostly seen through a reduction in plant density, plant cover, reduced plant diversity and species replacement.

8.1 Physical work in pasture lands through demonstration: The WACREP has promoted protecting 26.2ha of pasture land in three villages including one community pasture in village Rayla (9ha treated), two joint private pasture land in village Kamaliya (11.7 ha) and Chuna-ka-wela (5.5 ha) respectively with community participation using bio-physical and social fencing. This component plays an important role in protecting plants and grass during growth and provides protection against browsing attack and in-turn results in better growth for biomass production. Physical works like fencing for protection using vegetative fencing and stone fencing, Continuous Contour Trenches (CCTs), Staggered Contour Trenches (SCT), Thawlas, Gradonis etc. carried out in all the three pasture lands in three villages. The Soil and Water Conservation (S and WC) measures within the pasture land was taken-up to check run-off, soil erosion and conserve more water to create moisture in soil to help in fodder growth even during dry seasons. Total 184 families are directly benefiting from the physical structures undertaken on the pasture lands.

For better production and also to protect soil erosion, seed of *Karar (Dichanthium annulatum)* and *Hamata (Stylosanthus hamata)* species of grass were distributed to the group members of all the three pasturelands for sowing in the pasture lands and on bunds of CCTs/SCTs.

In the demonstration plots, the average production rate of fodder increased by 46.33 per cent at the end of first year, in comparison to previous year. The rest of the farmers in the area and the local Panchayat is planning to follow the same practice by looking at the impact after the first year.

Other local agencies involved:

- APNA SANSTHAN

16, Swami Nagar, Near Parmananda Ashram,
Bhuwana; Udaipur -313 001,
Mobile No.: +91 8107509351
Email: apna_sansthan@rediffmail.com

- **Main agency involved:**

Action for Food Production (AFPRO)
25/1-A, Institutional Area, Pankha Road,
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Phone: + 91-11-28525452, 28522575 Fax: + 91-11-28520343
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- AFPRO Regional Office

1185, Sector – 11, Hiran Magri,
Udaipur – 313 002,
Rajasthan
Email: aro.udr@afpro.org
Tele: + 91 (0294) 2583506

Lessons learnt:

- At village and Hamlet level regular interaction with community to trigger thinking processes in terms of weather variations and their impact on their livelihood, looking for reasons behind is one tool which can help to percolate down the manifestations of climate change to farmers' level (who are the main people to get directly affected).
- Climate change issues need to be translated in terms of weather variability for community understanding and folk media can play an effective role in translating these ideas at grass roots level. .
- FFSs assists in the revival of traditional practices and blending them with modern scientific approach in agriculture, water and animal husbandry which can help in evolving sustainable options for climate change adaptation (CCA). Thus there is need to evolve 2nd phase of "Community Sensitisation and Collection Action Programme on Climate Change Preparedness" with minimum implementation period of five years at ground level.
- If progress is to be made for reducing poverty, it is very essential to help the poor communities on CCA. They are extremely vulnerable to climate change at local level. Therefore more awareness and similar type of activities needs to be mainstreamed at all levels.
- FFS is a participatory approach for extension, whereby farmers are being given different options in the methods of production through discovery based approach.
- Transfer of technology to individual farmers particularly under low literacy scenario is very complicated. Therefore the best system for capacity building on appropriate technology would be is the FFS.

People we can interview:

- Shri Onkarji, S/o Shri Bheraji
Village: Rayla, Panchayat: Bhoopakhera
P.O. Bhoopakhera, Via – Bhinder – 313 603, Tehsil: Vallabhnagar
District: Udaipur; Rajasthan (M: +91 9571729280)

- Shri Kaluji, S/o Shri Bagghaji
Village: Rayla, Panchayat: Bhoopakhera
P.O.: Bhoopakhera, Via – Bhinder – 313 603, Tehsil: Vallabhnagar
District: Udaipur; Rajasthan (M: +91 8107369422)

- Shri Loger, S/o Shri Punaji
Village: Veripura, Panchayat: Bhoopakhera
e.mail: apna_sansthan@rediffmail.com
P.O: Bhoopakhera, Via – Bhinder – 313 603, Tesil: Vallabhnagar
District: Udaipur; Rajasthan (M: +91 9001759343)

- Shri Dhanraj, Village : Nagliya
P.O: Bhopakhera, Via – Bhinder – 313 603,
Panchayat: Bhoopakhera,
Tehsil: Vallabhnagar, District: Udaipur;
Rajasthan (M: +91 8107192065)

- APNA SANSTHAN
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Bhuwana, Udaipur -313 001,
Mobile No.: +91 8107509351

Photographs of the Different activities

Vegetable cultivation under Farmers Field School (FFS) - The FFS has been created under WACREP to educate and train the farmers to adopt new technologies for better crop productivity with less use of water

FFS (Livestock) – Buck Managers with bucks. The FFS (Livestock) has been promoted under WACREP with the purpose to produce high variety of livestock for better milk production, meat and wool production

Resource Mapping Training at Dhawadia, one of the 10 Project villages under WACREP

Capacity Building Training for Women

Dr Veena Khanduri, Executive Secretary-cum-Country Coordinator, IWP interacting with the women of the project villages during one of the M&E visits

View of Gradonis at the time of construction (Kamalia village)

Hamta and Karad grasses were grown on Gardonis after the construction (Kamalia village)

Construction of Continuous Contour Trench (CCT) – construction at Chuna Ka Wela village

Hamta and Karad grasses were grown on CCT after the construction in Kamalia and Chuna Ka Wela villages

Farmers sowing *maal* (small millets) crop and grains instead of wheat:

Construction of Cattle Protection Trench (CPT) in progress at Raila Village

View of a Thawala at Chuna Ka Wela village

Other Information: Web links to reports, news items, photos, etc.

The full report can be downloaded from IWP website : www.cwp-india.org under WACREP Phase-I; under Project Reports; underwork Package 7 or click the following links to download/view all the reports under Work Package 7: http://cwp-india.org/WACREP/work_package7.html

Activity No. 3.7.1.A: A study on coping mechanisms adopted by rural communities on their traditional wisdom and their relevance for adaptation to climate change, examining how science can add value to traditional/indigenous wisdom and vice versa

Output/Outcome: *An actionable document on traditional wisdom as far as they are relevant to climate change adaptation.*

Partner:

Strategic Goal # 1 *– Catalyse change in policy and practice*

Description of the change: This document highlights instances of traditional practices of local communities to tackle various issues related to their livelihoods, particularly in the context of problems posed by climate change. The document will increase awareness regarding traditional wisdom as an important resource for climate change adaptation

Contributing factors, actors, and background:
Dissemination of this document among policy makers, opinion leaders and network partners of GWP and IWP will contribute extensively to the desired change.

Under this activity, Traditional Coping Mechanisms adopted by rural communities and their relevance for adaptation to climate change in North-East India (Meghalaya and Mizoram) were studied. The key tasks under this activity were;

a) To document the traditional, indigenous and local knowledge which are useful for climate change adaptation; to explore its relevance to help people to adapt to climate change;
b) To come-up with specific recommendations on scientific innovations/interventions required for selected traditional knowledge and practices to cope-up with climate change impacts in North East India (Meghalaya and Mizoram States).

The following were the outputs of this activity:

i) Documentation of seven case studies on traditional knowledge and practices of the people of Meghalaya and Mizoram which have served as coping mechanism against livelihood challenges relevant to climate change adaptation and drawing how science can add value to the traditional knowledge and practices and vice versa.

(ii) A short film documenting the traditional practices in Meghalaya which act as coping mechanisms against livelihood challenges posed by the climate change.

Lessons learnt:

1. Harnessing of traditional wisdom, local knowledge and community involvement in protection, conservation and development of sacred forests, which has been initiated in Mawphlang, is a model for conserving natural resources including sacred forests and community forests in Meghalaya and other parts of India. Situated amidst deforested and barren hills, this green oasis protects the source of water supply to rural and urban settlements, preserves a diversity of flora and fauna, many of which are threatened, and provide a carbon sink. This is also one of the first carbon-credit sites in the North Eastern part of India.

2. Bridges formed by training the roots of live trees to cross turbulent streams and rivers is a marvel of bio-engineering skills of rural people. Though they take several years to be complete and remain functional for several centuries with hardly any operational and maintenance costs. As there are many villages which are cut off from the rest of the world during the monsoon months due to the absence of bridges and culverts, bio bridges serve as an appropriate and zero cost technology. As the bio engineering skills are becoming extinct, there is a need to preserve the skill. The bio-bridges are environment friendly and leave no carbon footprint and are, therefore, relevant for climate change adaptation. It is encouraging to note that Government of Meghalaya has plans to bring living root bridges under the ambit of rural connectivity roads programme.

3. In several villages in the North-East India despite the efforts of government - Natural springs are the only sources of drinking water supply in hundreds of villages, to provide safe drinking water to all rural habitations. The gravity based rural water supply systems are not successful in habitations which are on high elevations. Conservation and further development of natural springs, following traditional practices, can solve much of the drinking water supply problems in North East and other parts of India. It is quite gratifying that the village community of Mawlingbna is planning to preserve their springs and begin commercial production of bottled water by following scientific principles.

4. Using bamboo pipes for drip irrigating horticultural orchards and also for drinking water is a zero-cost, environment friendly and climate change adapting traditional technology that is becoming almost extinct due to several factors like non-transmission of the knowledge to new generations, non-availability of bamboo, , subsidies offered for other models of drip irrigation etc. The traditional technology can be improved through modern technologies that enhance the durability of bamboo. Strategies for preservation of bamboo forests by discouraging the destructive use of extraction of bamboo shoots and other practices through collaborative efforts of village communities and the Forest Department will go a long way in preserving the traditional practice.

5. The self-directed efforts for conservation of local fish species undertaken by the village community of Nongbareh provides a model of preserving, conserving and development of threatened species of chocolate Mahseer fish, a local species which once abounded Meghalaya's water bodies, but has now becoming threatened due to over-exploitation, environmental degradation and changes in the climate. It is a matter of satisfaction that the Government of Meghalaya is encouraging similar efforts in other parts of the state to develop

fish resorts through community involvement. The Fisheries Department is providing technical and financial support for establishing reserves for threatened species of chocolate mahseer fish.

6. The traditional use of bio indicators for predicting the micro weather in Mizoram can add value to the science based weather prediction systems. In many other parts of India, traditional knowledge of weather is an element that helps farmers to plan their agricultural operations. Dr Swaminathan Research Foundation has taken steps in Tamil Nadu to incorporate traditional weather prediction systems into the science based weather forecasting to make the latter more sensitive to micro weather and provide the information in a more usable form to the village community.

7. Food grain production in Mizoram will continue to come from shifting cultivation, as less than 2 per cent of total geographic area in the State is under wet rice cultivation. Traditional jhum, closely regulated by village institutions to sustain the fallow cycle for regeneration, and following multi crop based cropping system with total absence of external inputs, was fully organic and continues to be the foundation of agriculture in the State. The traditionally regulated jhum cultivation system was environmental friendly and climate smart, but the reduction in the fallow cycles has resulted in forest degeneration. Traditional science linkage for an appropriate policy framework is required to take the practice back to its past sustainability levels.

All the documented cases has been captured through a short video film prepared by IWP and IDI under title "Traditional Coping Systems for Climate Resilience – Examples from North East India"'. The duration of film is 18 minutes and the same has been uploaded on YouTube as well as on IWP web site. The video film will be used as a training tool.

The way forward is that the traditional wisdom if preserved and fortified by modern technology, and find space in the official climate change adaptation strategies, can provide cost effective and efficient adaptation actions. Dovetailing of traditional wisdom and modern technology will be very fruitful and beneficial. The documented cases focus on different facets of the coping mechanisms of tribal communities, drawing their strength from traditional wisdom.

People we can interview:

The Presidents and Secretaries of Village Councils in the study area can be interviewed.

Only the Mawphlang village community can be contacted on email:
tamborlyngdow70@gmail.com

Prof Saroj K Barik of North Eastern Hill University who helped us in this study can also be contacted via: sarojkbarik@gmail.com

Some photographs taken during the study are given below:

Supply of Drinking water from a spring to Sibbari (South Garo Hills) Primary School through Split Bamboo Pipes

Multi- crop based shifting cultivation on the slopes of Saitual village in Meghalaya

Bamboo shoots on sale on the road from Tura to Baghmara

Other Information: Web links to reports, news items, photos, etc.

The full report can be downloaded from IWP website : www.cwp-india.org under WACREP Phase-I; under Project Reports; underwork Package 7 or click the following links to download/view all the reports under Work Package 7

http://cwp-india.org/WACREP/work_package7.html

Chapter 4 – GWP Nepal/Jalsrot Vikas Sanstha, (GWP Nepal/JVS)

Jalsrot Vikas Sanstha (JVS), Nepal, is a non-profit, non-government, non-political and professional organization and is incorporated under Association Registration Act 2034.

Global Water Partnership Nepal (GWP Nepal)

Global Water Partnership Nepal (GWP Nepal) was established in July 1999, as a partner of Stockholm based Global Water Partnership (GWP) and initiated to promote networking in water resources and promote IWRM. The members of GWP Nepal have consensually decided to designate JVS as the host institution for GWP Nepal. This decision was guided by the concerns of sustainability and the significant networking characteristic of the country water partnership.

The Executive Committee of JVS/GWP Nepal represents a multi-disciplinary team with backgrounds in planning, engineering, environmental science, resource economics, law, political science, sociology, Psychology, public administration and management. Dr Mrs Vijaya Shrestha is the President of JVS/GWP Nepal.

The membership of GWP Nepal has grown from five in 1998 to a total of ninety nine (99) in 2002; Fifty six (56) are individual and forty three (43) are institutional, includes Government Water Agencies, Non-governmental organizations, International Organizations, University/colleges/educational institutions and Private organizations.

Contacts:

JALSROT VIKAS SANSTHA (JVS), Nepal/GWP Nepal
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INTRODUCTION TO WACREP ACTIVITIES

Nepal Water Partnership (GWP Nepal)

GWP Nepal/Jalsrot Vikas Sanstha (JVS) has undertaken seven activities under WACREP (Package 2-7) related to climate change with focus on water resources in collaboration with Government of Nepal (GoN) and Government Institutes (Therefore, partners logos has not been mentioned as per the other chapters). The activities are;

Activity No. 1.2.2: To support the implementation of four Local Adaptation Plan for Action under implementation in a District with particular focus on water resources in Nepal

Output/Outcome: Implementation of four LAPAs supported in project areas,

Strategic Goal # 1 *– Catalyse change in policy and practice*

Description of the change:
Bardiya is one of the most vulnerable districts of Nepal to climate change and Government of Nepal is implementing local adaptation plan for action (LAPA) in five Village Development Committees (VDCs) of the district. Thus to support the implementation of those actions GWP Nepal provided the training.

Training material was prepared and four trainings were conducted in Gola, Patabhar, Manau and Khairi-Chandanpur VDCs of Bardia District in Mid-Western Development Region. The training helped to raise awareness and build the capacity of local people on adverse effects of climate change on water resources. The Government of Nepal (GoN) has been implementing LAPA in those selected VDCs and GWP Nepal/JVS intended to complement the activities of the GoN. Altogether 107 people were benefitted from the training and as a result of the training, local people understood the relationship between CC and its impact, nexus between climate change and water resources, highlights of the climate change policy, National Adaptation Programme of Action (NAPA) and LAPAs, climate change adaptation and potential adaptation activities for water resources, and potential adaptation technologies for water resources. Thus the training helped them to build capacity to adapt to climate change impacts.

Contributing factors, actors, and background
Government of Nepal has implemented a total of 70 LAPAs in 14 districts of the country and additional 30 LAPAs are being prepared. Still local people are not aware about the adverse

impacts of climate change. In this perspective, GWP Nepal has selected four VDCs of Bardiya Districts where LAPA has been introduced by the Government. GWP Nepal/JVS supported the efforts of government by organising training on CC impacts which has greatly contributed to understand and implement LAPA elements and provided a basis for building climate resilience.

Other local agencies involved:

The trainings were conducted in close coordination with Village Development committee (VDC). VDC provided the venue for trainings and VDC secretary were also present at the trainings.

Lessons learnt:

- Although the Government of Nepal has developed local adaptation plans, there is still the need of additional support to build capacity of climate vulnerable communities for their effective implementation.
- Policy design would be more realistic if it is done by involving more and more stakeholders at all levels.

People we can interview:

Contact information of Beneficiary community:

Dhruva Raj Poudel,
Vice Secretary, Khairi Chandanpur VDC,
Bardiya District, Nepal.
Tel 00977 84-420144 (DDC Office Bardiya)

Other Information: Web links to reports, news items, photos, etc.

Training of local people of four VDCs of Bardia district of Nepal

The training manual is in Nepali Language and it is available with JVS. Copies of the same can be obtained from JVS/GWP.

Activity No. 1.2.3.C: GWP Nepal to prepare a climate vulnerability and gap assessment report on flood and drought for lower part of Rapti River in Banke District

Output/Outcome: Climate vulnerability and gap assessment report presented to key stakeholders, including National Government in Nepal,

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:
Eight VDCs were identified that are being affected severely every year by the flood and conducted focus group discussions. The study findings were presented among the stakeholders of Banke District comprising representatives from governmental offices, affected VDCs, I/NGO and media in a consultative workshop. The workshop also provided valuable information and suggestion for the project.

Contributing factors, actors, and background
The project area is subjected to normal to heavy flooding every year. In addition, construction of the barrage and river control works downstream has exacerbated the risk due to the constricted flow. Furthermore, effect of climate change has also complicated the situation. But it's very difficult to draw flood control strategies based upon only a little information on basic qualitative data. So with the objective of identifying problems due to Rapti flood and effect of climate change, the initiative was undertaken by GWP Nepal. Similarly, the initiative also studied the means to manage and share water resources in international rivers and suggested solutions for addressing critical flood and drought challenges to improve capacity for climate resilience. The study was conducted to help the policy makers to develop proper plans and policies to control flood and possible impacts in the area.

Other local agencies involved (if any):
GWP Nepal normally works with Government of Nepal and its relevant line agencies and Department.

Lessons learnt:
There is an increasing vulnerability to water related disasters due to climate change and other human interventions but coping mechanisms are not up to date and adequate.

People we can interview:
Contact information of Beneficiary community or Government officials*:*
Goverdhan Singh Samjhana,

Chairperson, Red Cross Society- Banke,
Nepal.
Tel: +977-81-520255/52266 (Red Cross Society- Nepalgunj)

Moharam Muketi,
Secretary,
Gangapur VDC, Banke, Nepal, 520195/96 (DDC Office Banke)

Other Information: Web links to reports, news items, photos, etc.
http://www.jvs-nwp.org.np/climate-vulnerability-and-gap-assessment-report-flood-and-drought-lower-rapti-river-basin-case-study

Devastation of agricultural land in Holiya Village

Flood affected area and abandoned Customs Office

Flood affected agricultural Land on the Right Bank of Rapti

***Activity No.* 1.3.1.C: To prepare one new LAPA and investigate the investment requirements at the Village Development Committee level to implement LAPA**

Output/Outcome: *New LAPA prepared and investment requirements to implement LAPA known.*

Strategic Goal # 1 *– Catalyse change in policy and practice*

Description of the change:

A new Local Adaptation Plan of Action (LAPA) is being prepared in Lamatar VDC of Lalitpur district. GWP Nepal/JVS has detailed out the impacts of climate change, potential adaptation activities on water resources to support the climate vulnerable people to adapt to the change. The LAPA was formulated on the basis of LAPA Framework and it consists of seven steps as follows;

- Climate change sensitisation,

- Climate vulnerability and adaptation assessment,
- Prioritisation of adaptation options,
- Developing Local Adaptation Plans for Action,
- Integrating Local Adaptation Plans for Action into planning processes,
- Implementing Local Adaptation Plans for Action,
- Assessing progress of Local Adaptation Plans for Action,

During the process, affected resources were identified, vulnerability of the VDC was assessed and after listing the adaptation options, they were grouped and prioritised. Consultation with VDC office, local community leaders, organisations and local people were conducted. The climate change sensitisation was done in VDC and ward level programmes through posters, banners and the experiences sharing. During the sensitisation programme, causes of climate change, its impacts, local-national-international initiations for adaptation were briefed to the participants. One of the major objective of sensitisation programme was facilitated the local people to gather climate change impacts and the vulnerability assessment including to prepare adaptation plans. For the Community Based Vulnerability Assessment, Focus Group Discussions (FGDs) in all nine wards of the VDC were conducted. In each FGD, discussions were focused on climate change impacts, major problems of the communities and climate adaptation plans for five years using various methods and tools. After preparation of the adaptation plan, a workshop was also conducted for the dissemination to relevant government and non-government agencies as well as the donors and development partners soliciting the funding/investing opportunities.

Contributing factors, actors, and background (Who or what contributed to the change? What was the GWPs role?)

People in the project area, Lamatar VDC of lalitpur district were suffering from climate change impacts. Major effects were observed in local water resources as they were drying day by day. So it was necessary to prepare an adaptation plan to address the issues and identify potential adaptation interventions. Thus, GWP Nepal prepared a LAPA and prioritised climate adaptation plans that will be implemented in upcoming phase.

Other local agencies involved:
The LAPA was prepared in cooperation and consultation with VDC. VDC worked as a nodal point and provided full support in organising meetings and consultations.

Lessons learnt:
Water issues in the peri-urban areas are critical, greatly impacted by climate change, and need to be solved through extended collaborative approaches.

Other Information: Web links to reports, news items, photos, etc.

http://www.jvs-nwp.org.np/local-adaptation-plan-action-lapa-lamatar-vdc-lalitpur-district

Focus Group Discussion (FGD) at ward level

FGD with Dalit (regarded as untouchable and marginalised) women

FGD at ward level

FGD at ward level

Activity No. 1.4.2.B: GWP Nepal to document on-going climate change adaptation projects with particular emphasis on major activities on climate financing

Output/Outcome: Activities on climate financing recognised.

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:

GWP Nepal/JVS carried out a study in order to document the climate change adaptation projects and activities and analyse funding availability and gaps on climate financing in Nepal. Based upon the study, a document titled "Climate Change: Adaptation Projects and Major Activities on Climate Financing in Nepal" was published by GWP Nepal. The document describes all the climate change initiative of Nepal along with description of climate change funds within or outside the convention regime.

As per the document, policy, institutions and coordination mechanisms to address the impact of climate change are in place. National public finance (government revenue), carbon finance

and international public finance (multilateral and bilateral funds) are the key sources of finance in the country. Approximately, 30 development partners are working here for enhancing resilience capacity of people to climate change. Still there are perennial issues related to funding gap and complex process for accessing the available funding and there are possibilities to rectify them.

Contributing factors, actors, and background

There are a number of projects and funds in Nepal for enhancing the resilience to climate change, but there has not been exact documentation of such projects nor has anyone tried to identify the gaps on climate financing. GWP Nepal took the initiative to study the status of climate financing in Nepal and published a book documenting all those projects and gaps.

Lessons learnt:

1. The adaptation funds and other similar funds should ease the accreditation process so that national institutions could directly access funding sources to provide benefit to poor and vulnerable groups with low capacity countries like LDCs,
2. In order to effectively operationalise the climate change budget code, Ministry of Science, Technology and Environment (MoSTE) must take initiative to facilitate and institutionalise the process,
3. The Least Developed Countries (LDCs) like Nepal should be exempted from the obligation of proving additional co-financing for climate finance for adaptation activities by recognizing data, shortage, poor data management practices, less research studies on their part and also less adaptation projects implemented or under implementation.

Other Information: Web links to reports, news items, photos, etc.

http://www.jvs-nwp.org.np/policy-brief-water-resources-and-climate-change-inputs-climate-change-negotiation

Activity No. 2.5.4.C: Document traditional climate change adaptation practices by farmers,

Output/Outcome: Number of traditional adaptation practices collected and good practices documented and shared with stakeholders

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:

GWP Nepal/JVS attempted to document the traditional adaptation practices developed and used by farmers for the last several years. This activity acknowledges the value of traditional practices by documenting 22 climate change adaptation practices by farmers. It is believed that the challenges exacerbated by climate change can cope up with the combination of both modern technology and traditional strategies.

This study document gives an insight of appropriate techniques, technologies or practices developed, used and disseminated to adapt to and/or build climate resilience. In total, it has documented 34 adaptation activities. The adaptation activities were found to differ from place to place although some of the activities such as use of earthen canal, water harvesting concrete ponds were found to be replicated.

Nepal is one of the most vulnerable countries in the world and at present many funds are being invested to identify the adaptation practices. Still, the farmers in Nepal are developing and implementing several practices to adapt to climate change knowingly or unknowingly. Therefore GWP Nepal conducted this study to document such practices and it is expected to be helpful for other farmers to solve similar type of problems posed due to climate change.

Contributing factors, actors, and background

Farmers are the people who directly work with the environment (soil, water, air and plants) from generation to generation and hence they are the keen observer of the climate change and its uncertainty. With their long experience in farming, they have developed themselves and practiced the traditional knowledge to cope with the changing environment in their farming systems. This knowledge is generated through series of testing and hence is very significant for the policy makers while formulating the strategies for climate change adaptation at local and national level. Therefore, GWP Nepal conducted this study and documented the traditional practices of climate change adaptation by the farmers of Khokana as well as other parts of the country.

Lessons learnt:

1. The traditional knowledge could be modified as per the demand or need and can be implemented to cope with the climate extremes

2. Although climate change adaptation plans are not implemented, farmers are already coping with such problems to minimize the effects from climate change.

Other Information: Web links to reports, news items, photos, etc.

http://www.jvs-nwp.org.np/traditional-climate-change-adaptation-practices-farmers-nepal

Plastic pond ***Water harvesting concrete pond***

a b

a. Shift from paddy to vegetable farm ***b. bedding farming practices***

Activity No. 3.6.2.B: To train about 100 farmers on conserving and promoting sustainable use of water resources with focus on agriculture and irrigation

Output/Outcome: *Capacity of 100 farmers on conserving and utilising water enhanced by 3-4 training workshops,*

Strategic Goal # 2 *– Generate and Communicate Knowledge*

Description of the change:

GWP Nepal/JVS prepared a training material for farmers which was finalised after peer review. 110 farmers (male 61 and female 49) of Khairi-Chandanpur VDC of Bardia district, Binauna VDC of Banke district (both from Mid-Western Development Region) and Khokana VDC of Lalitpur district (Central Development Region) were trained using the same material to enhance the awareness and build capacity for the conservation and sustainable use of water resources on agriculture and irrigation sectors.

Economy of Nepal is highly dependent on agriculture and agricultural production is immensely dependent on monsoon. Nevertheless climate change has affected the monsoon rainfall in the country thus affecting agriculture production. Therefore with the objective of enhancing capacity of farmers for conservation and sustainable utilisation of water resources, GWP Nepal took the initiative to train nearly 110 farmers. After the training, farmers were aware on climate change and its impact on water resources and ultimately in agriculture and irrigation. They also received information about water need by several crops so that the water could be utilised wisely and agricultural production could be enhanced. Additionally, they were also aware about the importance of irrigation canals up to the end users. Furthermore, farmers were also trained on strategies to conserve and manage water resources.

Mr. Prakash Paudel, former DG, Department of Water Induced Disaster Prevention (DWIDP) at training

Mr Kamal Raj Gautam, Agro economist at training

Contributing factors, actors, and background

Local people in Lalitpur, Bardiya and Banke districts face drought and flooding, thereby affecting agriculture production. Additionally, the existing irrigation canals were also inefficient. Thus, GWP Nepal/JVS organised need-based training to those farmers of three districts. This training helped the farmers to learn multipurpose use of water and ways for sustainable utilisation of water resources.

Lessons learnt:

Crops in any farm land must be planted considering and analysing its water requirement.

People we can interview:

Contact information of Beneficiary community:

Dhruva Raj Poudel,
Vice Secretary,
Khairi Chandanpur VDC,
Bardiya district,
Nepal. Tel 00977 84-420144 (DDC Office Bardiya).

Deepak Rijal,
Lead,
Kathmandu, Nepal.
Tel: +97 9841952181
rijal.deepak@gmail.com

Other Information: Web links to reports, news items, photos, etc.

Report is in Nepalese language and a copy can be obtained from JVS/GWP Nepal.

Mr Prakash Paudel, Fmr DG, DWIDP at training

Trainings on sustainable utilisation of water

Activity No. 3.7.1.B: GWP Nepal to prepare a policy brief on impact of climate change on water resources to support Nepalese team on climate change negotiation

Output/Outcome: Policy brief on impact of climate change on water resources for Nepal prepared and shared with relevant government agencies

Strategic Goal # 2 *– Generate and Communicate Knowledge*

Description of the change:

In order to support the Nepalese delegation attending the United Nations Framework Convention on Climate Change (UNFCCC) negotiations, GWP Nepal/JVS prepared a policy brief on impact of climate change on water resources. A national level consultative workshop was held in order to solicit the suggestions for the report before finalising the report. The report was peer reviewed by high level officials from Ministry of Science, Technology and Environment (MoSTE), Water and Energy Commission Secretariat (WECS) and National Planning Commission (NPC).

Contributing factors, actors, and background (Who or what contributed to the change? What was the GWPs role?)

Ministry of Science, Technology and Environment (MoSTE), Water and Energy Commission Secretariat (WECS) and National Planning Commission (NPC) are the supporting organizations. GWP Nepal prepared the document.

Lessons learnt:

Nepal needs to make a study for establishing the real baseline emission factor for the end users and move forward by developing standardised baselines.

Other Information: Web links to reports, news items, photos, etc.

http://www.jvs-nwp.org.np/policy-brief-water-resources-and-climate-change-inputs-climate-change-negotiation

Mr Iswer Raj Onta, Chair, GWP SAS with his remarks Mr Surya Nath Upadhyaya, Secretary General during the consultation programme

Chapter 5 – Pakistan Water Partnership (PWP)

The Pakistan Water Partnership (PWP) was established in February 1999 as the country partner of Global Water Partnership (GWP). PWP is a Public Limited Company registered under the Pakistan Companies Act 1984, with a large number of key stakeholders from Government Organizations, Public and Private Sector, NGOs, Women and Youth Groups, and Civil Society having impact on, or impacted by, water and its uses in the country.

PWP is mandated to provide a neutral platform to all water stakeholder institutions, organization, departments and individuals for discussing national, sub-national and local water issues to build consensus at different levels. It has to promote the concepts and principles of IWRM in the country in order to meet the growing scarcity of water resources, increasing deterioration in water quality and the looming threat to environmental sustainability. In order to carry out its mandate, Pakistan Water Partnership PWP maintains close relationship with official agencies like the Planning Commission; Pakistan Water and Power Development Authority (WAPDA); Ministries of Water & Power; Environment; Agriculture and Provincial Agriculture and Irrigation Departments, Provincial Irrigation and Drainage Authorities (PIDAs), United Nations agencies and Non-Government Organizations (NGOs) in the water sector for sensitizing on judicious use of water resources to gain maximum benefit through the integrated water resources management in the country.

Pakistan Water Partnership PWP is governed by Board of Directors which is headed by a Chairman. Mr. Naseer Ahmad Gillani is the current Chairman of PWP and PWP Secretariat is based in Islamabad. Mr. Sardar Muhammad Tariq, Executive Director/CEO of PWP is the head of the Secretariat.

Contacts:

Pakistan Water Partnership (PWP),
710, Street 22, I-8/2, Islamabad, Pakistan.
Tel: +92 51 486 0895 Fax: +92 51 486 0896
Email: pwp@pwp.org.pk

INTRODUCTION TO WACREP ACTIVITIES

Pakistan Water Partnership (PWP)

PWP has identified 6 interventions during the project cycle and one activity each under Package 1-6. They are,

Activity No. 1.1.1.D: Strengthen track 2 diplomacy among Afghanistan, India and Pakistan for better co-operation on climate change resilience (Indus and Kabul River)

Output/Outcome: Increased co-operation among Afghanistan, India & Pakistan governments and water/climate experts

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:

Three Track II diplomacy Regional Cooperation meetings with India, Pakistan and Afghanistan were held under this activity in Dubai and Nepal. The first meeting was held in Dubai, UAE on 18 June 2014 and experts of Afghanistan, India and Pakistan participated at the meeting. The second meeting was held in Kathmandu, Nepal on 15 to 16 September 2014. The third meeting initially planned to be held in Tashkent, Uzbekistan on 24 to 25 November 2014. But due to non-availability of permission from the Uzbekistan Government to hold it in Tashkent, this meeting was re-scheduled and eventually held in Dubai on 29 to 30 January 2015.

These three meetings provided opportunities to water and climate experts from Afghanistan, India and Pakistan to review water and climate change related issues of all three participating countries and plans for future collaborative activities. These meetings helped articulate why cooperation is needed and defined the benefits of cooperation. The participants listed down main partners / mapping of the organizations in each country, developed and filled in the template of identified agencies/ stakeholders, identified technologies/approaches having potential for adaptation and participants agreed to prepare 3 to 4 replicable cases that have potential to build resilience through water saving/flood mitigation and drought management.

Contributing factors, actors, and background:

Senior water policy experts from the three countries with backing from their respective governments and water institutions were responsible for this change. GWP facilitated the organization of these meetings through respective CWPs. The GWP South Asia Regional Office also provided technical support.

Boundary Actors are:

Afghanistan Research and Evaluation Unit (AREU), India Water Partnership, Safe Water Network (SWN), Planning Commission of Pakistan, etc.

Other local agencies involved:

High level expertise engaged from private consultant group e.g. Asianics Agro Dev International and Indian Research organisations.

Lessons learnt:

Proceedings of these meeting validated this assumption that there is a lot of scope for cooperation among Afghanistan, India and Pakistan on climate change adaptation. All three countries' experts shared their country specific information and database to review issues faced by the region. This facilitated a common understanding for regional cooperation to overcome some of the negative impacts of climate change and to create climate resilience among the communities mostly hit by the severity of climate change. This exercise brought experts on one platform for suggesting collaborative efforts. The deserts development in South Asia with special focus on Afghanistan, India and Pakistan is one example of such cooperation. The project concluded with following agreements;

1. Future Cooperation in Climate Change Resilience
2. Desert Development in South Asia
3. Sharing of experiences and success stories in each country pertaining to desert development
4. Travelling seminar
5. Holding of conferences in each country
6. Efforts to raise finances for above activities

People we can interview:

- Mr Naseer Ahmed Gillani,

Chief Water – Planning Commission of Pakistan,
Government of Pakistan,
65, Street 4, Sector 1 -8/1,
Islamabad, Pakistan.
+92 51 44441235/+92 333 5123412
naseergillani@yahoo.com

- Dr Pervaiz Amir, Director, Asianics Agro Dev International,

3, Street 35, Section 5, 8/1, Islamabad, Pakistan. +92 51 2264768/+92 300 5055560 P.amir2010@yahoo.com

- Mr Khalid Mohtadullah,

Senior Advisor – ICIMOD/GWP/IWMI,
T-41, Street 10, DHA,
Phase II, Lahore,
Pakistan,
+92 4235727905/+92 3008440960
Gkm1960@hotmail.com

- Mr Mir Ahmed Joyenda,

Deputy Director – Communication and Advisory,
Afghanistan Research and Evaluation Unit (AREU), H144, 3rd Street,
Charahi Haji Yacoub,

Shahr-1-New Kabul
Afghanistan.
+93 799324892/+93 700 276637
joyenda@areu.org.af
mir_joyenda@yahoo.com

- Mr S. C. Jain,

Programme Leader, Safe Water Network,
The Centrum, Room 1, 1B-3, 369-370,
Sultanpur, Main MehrauliGorgaonRoda,
New Delhi – 110010,
India,
+91 9868607509
Subhasjain8@gmail.com,
sjain@safewaternetwork.org

Other Information: Web links to reports, news items, photos, etc.

http://pwp.org.pk/?page_id=427

1st Meeting: Dubai, on 18 June 2014

2nd Meeting: Nepal on 15 and 16 September 2014

3rd Meeting in Dubai on 29 and 30 January 2015

Activity No. 1.2.1.C:To improve dissemination, outreach and utilization of flood/drought forecasting information among farming communities, relevant government agencies, CBOs and other key stakeholders in Pakistan

Output/Outcome: Flood/drought data, forecasting information is available to the beneficiaries

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:

Flood and drought related data collected from Pakistan Meteorological Department (PMD), Indus River System Authority (IRSA), Pakistan Water and Power Development Authority (WAPDA), Provincial Irrigation Departments and Provincial Agriculture Departments under joint arrangements of PWP and National Defence University (NDU), in collaboration with Global Change Impact Study Centre (GCISC), Ministry of Climate Change, Asianics Agro Dev International and PMD has been validated and categorised. NDU provided complimentary support in compilation of data. The data references on flood and drought has been uploaded on PWP website under Climate Change title for use by the beneficiaries i.e. researchers, practitioners, farmers and general public. Works highlighted at Hisaar Foundation Conference held in Karachi with strong impact factor.

Contributing factors, actors, and background

Contributing factors included frequent floods and droughts in Pakistan especially during past decade.

Boundary Actors included Pakistan Meteorological Department (PMD), Indus River System Authority (IRSA), Pakistan Water and Power Development Authority (WAPDA), Provincial Irrigation Departments, Provincial Agriculture Departments.

Other local agencies involved:

National Defence University (NDU), Global Change Impact Study Centre (GCISC), Ministry of Climate Change and Asianics Agro Dev International, etc.

Lessons learnt:

Scanty data is available to researchers and practitioners for use in their research and study analysis. Efforts have resulted in compilation of a list of relevant data sources available for researchers and practitioners. This has set an example of data sharing among regional countries especially Afghanistan, India and Pakistan. GWP Pakistan has played vital role in scanning available date in the three participating countries and list of available

data/documentation on the subject matter has been prepared along with web links and uploaded on PWP website.

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Activity No. 1.3.1.B: Development of area specific investments through knowledge and technical support

Output/Outcome: Climate change affected communities in specific areas of Upper Indus river basin (Potohar plateau area) will be provided knowledge and technical support for highlighting their local issues to attract supplemental funding

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:
The heightened concern and media publicity created around the Tharparkar drought situation in Sindh received much national and international attention, especially due to the reported infant mortality and loss of livestock. Much of the concern has focused around extreme water shortages in several pockets of Tharparkar and claims that food shortages were leading to rapid outmigration from the area. These claims also led to emergency relief and the Prime Minister of Pakistan himself visiting the affected area. This was later followed up with visits from high profile party leaders from the ruling Sindh government. A draft action plan is now under evaluation by the Planning Commission of Pakistan.

The Planning Commission of Pakistan requested Chairman, PWP to conduct a mission to take stock of the actual situation and to help the federal government to conceptualise a response that would address drought from a sustainable development perspective in line with the emerging development strategy and the five year planning cycle. Since, water shortages claimed much of the issues that underline development in the Thar Desert it was especially desired to make preliminary recommendations that would ensure rapid transformation of the area to ensure prosperity and equitable livelihood in one of the poorest regions of the country. The mission objectives were; provide government with assessment of on the ground

situation based on rapid reconnaissance, discussions with stakeholders and overall observations and conclusions drawn by the team, propose a development agenda around water development to help initiate detailed development strategy.

Area specific Investment proposals for Tharparkar Drought were prepared and presented to the Government of Pakistan in May 2014 to approach appropriate forum/donor for financial support. As an alternate approach to be carried out with PWP resources, a bio-sand filter was successfully experimented in PWP Office and will be demonstrated and replicated in Tharparkar as a source of clean drinking water in far flung area.

Technical Interventions:

PWP has demonstrated the technical options available for the desert dwellers on providing clean drinking water and introduces IWRM - Rain Water Harvesting and soap making.

PWP has demonstrated 14 bio sand water filters in interior Cholistan with support of Bahawalpur Area Water Partnership (AWP) and trained community to prepare their own bio sand water filter at home. The Cholistan desert also locally known as Rohi, sprawls 30km from Bahawalpur, Punjab, Pakistan and covers an area of 26,300 km^2. It adjoins the Thar Desert, extending over to Sindh and into India. The backbone of Cholistan economy is cattle breeding. It has the major importance for satisfying the area's major needs for cottage industry as well as milk, meat and fat. The main wealth of the people are their cattle that are bred for sale and milk, due to their nomadic life.

Katchi Basti Union Council 14, Jinnah Abadi (Gareebabad) Union Council 17, Deravar Cholistan, Basti Meegwala, Kasaeya Wala Tobha, Mahr Di Basti, Basti Sadaat, Mosa Colony, Laal Suharna, Chak Alif 71 DB and Basti Sinjarani were the targeted areas for the project. The bio sand water filter is capable of removing 97 per cent of bacteria 100 per cent parasites, turbidity, iron, manganese, bad odour and taste.

Again, PWP has distributed five bio sand water filters in District Dera Ismail Khan with support of Southern District AWP and trained communities to prepare them at their homes.

PWP distributed hybrid Napier grass among community at their door steps, to maximise the growth of hybrid Napier in Dera Ismail Khan. The hybrid is most suitable solution to overcome the shortage of fodder during drought, one plant alone is enough for one goat/sheep which grows up to the height of 10 feet.

Dera Ismail Khan often abbreviated to D. I. Khan, is a city in Khyber-Pakhtunkhwa (KPK), Pakistan. D.I. Khan has a hot desert climate with hot summers and mild winters. Precipitation mainly falls in two distinct periods: in the late winter and early spring from February to April and in the monsoon in June and July. Summers go scorching up to 51 degree Celsius and winters can freeze as low as (-2) degrees.

Goat farming and cattle rearing also generate major cash flows for the inhabitants here. Milk production is comparatively higher here than in other cities of KPK. Same is the story of wheat production; D. I. Khan has one of the highest yielding areas of wheat. People are strong and resistant to harsh weathers therefore their professions are in accordance to their habitat.

D. I. Khan is one of the districts lacking basic sanitation facilities in KPK and there is low availability of water for the communities dwelling in adjacent areas of D-I-Khan city. In some areas, Government of KPK provided the community with tube wells for provision of water but presently most of the tube wells are non-functional due unpaid electricity bills. Community has no excess to clean toilet facilities due to non-availability of water, 70 to 80 per cent of community resorts to open defecation. Communities dwelling in Dera Ismail Khan are totally dependent on livestock and shortage of fodder is biggest problem that community is facing, situation gets worst during droughts and cattle mortality rate goes on peak during drought.
Another technical option tried by PWP was to improve the quality of water supply and conservation of water through promoting Rain Water Harvesting Techniques and hygiene awareness of communities dwelling in isolated areas of District Tharparkar especially Tehsil Mithi. Additional interventions were tried out which are namely, promoting rain water harvesting techniques by excavation of four ponds in target areas with involvement of local community.

PWP has initiated rain water harvesting among locals by excavating ponds on already depressed lands to collect the run-off rain water for drinking, livestock and for agriculture purposes (four ponds excavated in, Barach Ghot, Molay Ji Wand, Winghar and Sahu Para), Training of local community on traditional methods of soap making technology. To promote the concept of hygiene awareness, PWP initiated soap making at home by demonstrating soap making technologies to communities. In addition, the focal points were trained for further replication of this technology in target areas of District Tharparkar, etc.

Contributing factors, actors, and background (Who or what contributed to the change? What was the GWPs role?)

Severe drought impacts in Tharparkar, Cholistan and Dera Ismail Khan (D. I. Khan) resulted in infant mortality and cattle deaths in these areas have made PWP to plan some concrete proposal to overcome the problems of the areas. Soap making, getting clean water through bio-sand units, storing water for cattle through rainwater harvesting ponds were planned and executed. Also provided drought resistant verities of fodder for cattle in these drought impacted areas.

Boundary actors included Muslim Aid, Monthly Farozan, Green Media Initiatives, etc

Other local agencies involved:

Pakistan Rangers, Local Communities, Southern Districts AWP, Bahawalpur AWP, Press Club and District Administration etc.

Lessons learnt:

It is observed that areas of Tharparkar and Cholistan were being ignored by all the government departments. Low cost interventions could help in resolving immediate issues and would facilitate existence of the communities in those areas. Major interventions could be channelled through the Government either Provincial Government of Sindh or the Federal Government of Pakistan. PWP realised a need to develop a comprehensive proposal focussing on the areas for the Government of Pakistan and suggest a sustainable solution. The proposal was well taken by the Planning Commission and submitted to the concerned agencies to formulate a project. This proposal includes a long water canal to be constructed from Kotri Barrage to pass through the Tharparkar area and fall into the Indus River a few miles from its origin point. This will provide lifeline water flow to Tharparkar areas. Proposal is under consideration by the concerned departments in Government of Pakistan.

Bio Sand Filters: Bio-sand filter technology is a low cost intervention suitable for improving quality of water in deserts. Communities can manage and maintain the simple units. The project has improving the quality of open pond water, develop trust among communities, chose leaders and work with them, demonstrate technology with clear benefits, improve the livelihood of desert communities.

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Report :http://pwp.org.pk/wp-content/uploads/2014/09/Integrated-Water-Resources-Management-Paractices-in-Tharparker.pdf

Newsline: http://www.gwp.org/en/gwp-south-asia/#.

Fact Finding Mission Report on Tharparker Desert (Aid Memories): http://pwp.org.pk/wp-content/uploads/2014/05/Report-of-Fact-Finding-Drought-Master-Planning-Appraisal-Mission-Tharparkar.pdf

Activity No. 1.4.3.A: Work with climate change National Focal Points to develop proposals targeting for climate funding

Output/Outcome: Strengthened linkages with focal point in government through quarterly meetings and highlight in media potential projects for key hotspots,

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:

PWP organised a couple of consultative meetings with the Climate Change Division, Global Change Impact Study Centre (GCISC), Water and Power Development Authority (WAPDA), Ministry of Water and Power, Ministry of National Food Security and Research, National Focal Point on Climate Change, many partner institutions working on climate and water. A number of proposals and opportunities to formulate interventions in climate resilience for local communities were thoroughly discussed and a proposal was finally prepared and presented to the National Focal Point on Climate Change. The proposal however, could not succeed because of many competing organisations who seek funding under climate change adaptation in Pakistan. It is learnt that another partner namely LEAD Pakistan was able to obtain some resources through their proposal on climate change – capacity building of young professional in Pakistan.

Contributing factors, actors, and background

PWP has worked closely with the Planning Commission, the Climate Change division and WAPDA jointly identified proposals in area of water and climate change. Highlighted international opportunities with donors and networking projects e.g. CDKN, Climate Adaptation Fund.

Various local NGO's and media groups also associated with this exercise.

Lessons learnt:

- Local proposal development skills are weak.
- Information about opportunities very scarce and not very encouraging.
- The prerequisites are very tight e.g. 60 per cent funds from the proposing organisation.

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Activity No. 2.5.3: Implement projects which demonstrate the alternate farm energy technologies like solar pumps and bio gas water pumping at 2 pilot sites involving partners and/or Area Water Partnerships

Output/Outcome: Two pilot sites for solar pumps and bio gas water pumping will be developed with the involvement of partners and AWPs and documented results & success stories disseminated to local communities and farmers

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:

PWP in collaboration with Eco-Conservation Initiatives (ECI) have installed two biogas water pumps at Khewra (Rehan colony and Dhok Laal Shah) in the greater interest of local community based on their emerging energy and irrigation needs. The field personnel of ECI visited the field area a number of times to select the most suitable sites and negotiate with the community members based on the mutually agreed criteria. As a result of these planned efforts and in coordination with GWP / PWP professional team, two biogas water pumps; one at Dhok Lal Shah and the other at Rehan Colony were successfully installed and made operational. These water pumps will recycle the waste but also meet energy requirements to irrigate the kitchen gardens helping local community to earn income. These demonstration models will also contribute to ecological conservation and strengthen community livelihoods at the household level. These activities would help to mobilise the local communities in sustainable farming and climate compatible development approaches.

The biogas water pumps established at Khewra makes use of relatively simple and reliable technology as part of alternative energy resource. System consists of a large tank or digester where livestock waste is fed through the inlets. In the digester, bacteria convert organic waste into biogas through the process of anaerobic digestion. The community owner feeds the digester with the mixed livestock waste on daily basis. Biogas produced is supplied

through a pipe to an electric generator to generate electricity that runs the submersible water pump helps irrigate a kitchen garden consisting of 25 acres. Biogas may also be used for cooking, lighting and other energy needs. The slurry produced as a bi-product of the system is being used as bio-fertilizer.

Contributing factors, actors, and background

Water is a critical resource for sustainable farming and economic development. Irrigation is highly dependent on ground-water especially in the rain-fed areas of Khewra and its suburbs as well as a supplement to the canal system and rainwater. The use of electric tube wells and diesel engines for irrigation have become prohibitively expensive for irrigation. As a result, small farmers especially in rain-fed areas are being seriously affected due to high prices of electricity and diesel as well as extreme power outages in the rural areas. Keeping in view the favourable climatic conditions and the scale of livestock farming in the rural areas of Pakistan, bio-gas can be very useful for efficient irrigation as a part of alternative energy.

Boundary Actors

The boundary actors included M/s. Eco-Conservation Initiatives (ECI), Communities of Dhok Lal Shah and Rehan Colony (Raja Khait), Mr Syed Altaf Shah and Mr Rehmatullah on whose fields the bio-gas plants and water pumps were installed.

Background

Bio-gas is a promising and sustainable sources of alternative energy especially in the context of rural areas of Pakistan. It is based on the phenomenon of decomposition of organic matter in the absence of air to yield a gas mainly consisting of methane and carbon-dioxide. This gas can be used as a source of energy for cooking, lightening and heating. The stabilised organic product after digestion contains many useful substances present in the original wastes. The digested slurry may be used as a bi-product that can be a source of bio-fertilizer and plant nutrients.

Lessons learnt:

Currently, bio-gas water pumps are successfully running at both sites of Dhok Lal Shah and Rehan Colony near Khewra Town in the Salt Range area. These systems reduce the waste and meet energy requirements to irrigate the vegetable gardens translating into substantial financial savings for the local community. These plants also serve as local demonstration and replication models for promotion of ecological conservation through community involvement.

Other community members are also excited to replicate the new irrigation approach with its encouraging efficiency levels. To replicate this model other small farmers have approached ECI Field Unit Khewra showing their interest to replicate these models for meeting their energy and irrigation needs. Therefore, owners of the existing bio-gas water pumps were

advised how to deal with other interested community members for installation of similar bio-gas water pumps.

Partners are convinced that introduction of bio-gas water pump technology in rural areas will bring numerous benefits to local community in addition to efficient irrigation, improved sanitation, public health and conservation of forests with prevention of soil erosion and production of bio-fertilizers. In addition to this, such type of activities tends to mobilise the local community to adapt to climate change impacts at local level. More attention should be given to develop market linkages

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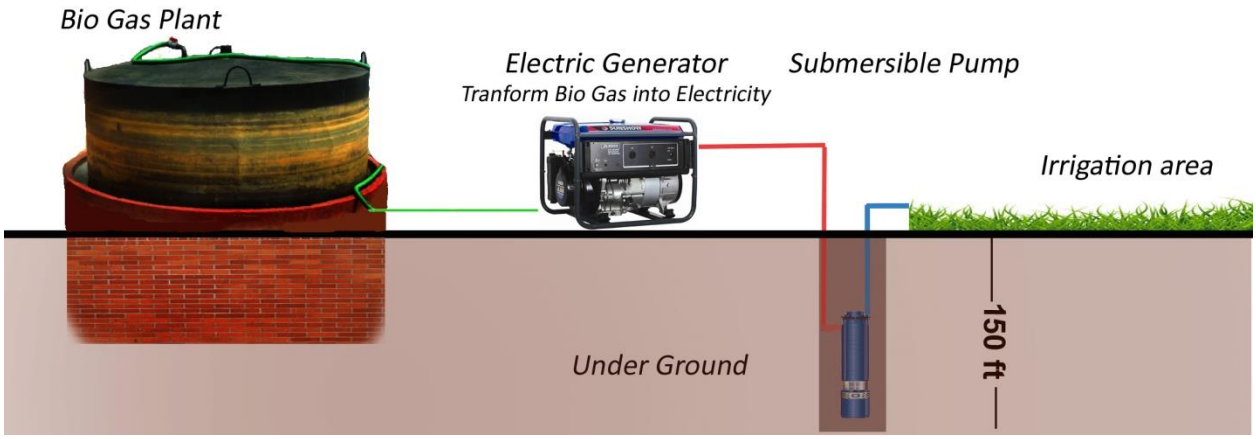
Other Information: Web links to reports, news items, photos, etc.

http://pwp.org.pk/?page_id=34

Global Water Partnership

Pakistan Water Partnership

Bio Gas Water Pump



Dhok Lal Shah

Rehan Colony Plant in service.




Activity No.3.6.3: To train at least of 500 farmers in modern rain harvesting and efficient irrigation technologies (CDKN, CapNet, APAN assistance is sought)

Output/Outcome: Farmers are trained to harvest rainwater to meet their domestic and agricultural water needs in dry periods and adopt efficient irrigation technologies

Strategic Goal # 1 – Generate and Communicate Knowledge

Description of the change:

Against the target of 500, PWP and its AWPs have been successfully trained over 6,000 farmers in modern rain water harvesting techniques and efficient irrigation technologies during 2014. This included 1,904 female and 4,096 male farmers.

WACREP training impacted the farmers to practice rain water harvesting in their houses for agricultural and domestic uses, as reported by Nara Canal AWP, Loralai AWP, Gomal-Damaan AWP and Indus Delta AWP.

Contributing factors, actors, and background

Canal water supplies are uncertain in most parts of the country because of depleting water storages. Therefore, farmers are looking for other means of irrigation, especially rainwater harvesting. PWP in collaboration of its AWPs took this initiative of educating farmers on modern techniques of rainwater harvesting and efficient irrigation technologies to enhance their yields even without regular availability of canal water during critical water periods.

PWP undertook this initiative under three phases in 2014. Under first phase, areas of Sindh and Baluchistan were covered by the PWP experts and over 200 farmers were trained in Nara Canal AWP, Indus Delta AWP, Loralai AWP and Sarawan AWP. In second phase, over 130 farmers of Khyber Pakhtunkhwa and Punjab were trained in Southern District AWP, Gomal-Daaman AWP, Potohar AWP and Bahawalpur AWP by the PWP experts.

Under third phase, PWP encouraged nine active AWPs to take up this initiative at their own level with financial and technical support from PWP. Nara Canal AWP, Indus Delta AWP, Loralai AWP, Sarawan AWP, Southern District AWP and Gomal-Daaman AWP, Potohar AWP and Bahawalpur AWP trained over farmers during this phase.

Later PWP has taken up this initiative as part of the launch/pre-launch meetings of new AWPs in Southern Punjab (Bahawalpur AWP) and Sindh (Tharparkar AWP).

Details of the total farmers trained are given below (except Tharparkar):

AWP	Training	City	Participants	Number
Nara Canal AWP	Modern rain water harvesting techniques	Sanghar	Farmers	139
		Mirpurkhas	Farmers	158
		Nawabshah	Farmers	82
		Tadno Muhammad Khan	Farmers	98
		Tando Allah Yar	Farmers	128
		Badin	Farmers	79
		Badin	Farmers	79
Loralai AWP	Modern rain water harvesting techniques	Loralai	Farmers and Students	328
Gomal-Damaan AWP	Modern rain water harvesting techniques	Dera Ismail Khan	Farmers and CBO workers	156
Indus Delta AWP		Thatta	Farmers and Fishermen	56
		Mirpur Sakro	Farmers and Fishermen	93

	Modern rain water harvesting techniques	Keti Bandar	Farmers and Fishermen	41
		Gharo	Farmers and Fishermen	78
		Makli	Farmers and Fishermen	56
		Marho Kotri	Farmers and Fishermen	35
		Darsano Chano		28
Sarawan AWP	Modern rain water harvesting techniques	Mastung	Farmers	77
		Naseerabad	Farmers	163
		Hazarghanji	Farmers	108
Southern Districts AWP	Modern rain water harvesting techniques	D. I. Khan	Farmers and Shopkeepers	78
		Bannu	Farmers and Shopkeepers	62
		Lakki Marwat	Farmers and Shopkeepers	91
		Shahbaz Khel	Farmers and Shopkeepers	137
Potohar AWP	Modern rain water harvesting techniques	Rawalpindi	Farmers and CBOs	133
		Kotli Sattian	Farmers and CBOs	86
		Gujjar Khan	Farmers and CBOs	181
		Rawat	Farmers and CBOs	94
Bahawalpur AWP	Modern rain water harvesting techniques	Bahawalpur	Farmers and NGOs	58
		Bahawalnagar	Farmers and NGOs	93
		Yzman Mandi	Farmers and NGOs	37
		Lal Sohanra	Farmers and NGOs	67
		Hakra	Farmers and NGOs	53
			Total people trained	3,073

Lessons learnt:

This intervention is found very effective by farmer communities. Rainwater harvesting is found as an ideal mean of supplemental irrigation as well as additional water source for cattle heads. Efficient irrigation technologies were rapidly taken up by farmers who were deprived of water in far flung areas. Small units of drip irrigation got popular within no time.

This intervention has produced impacts in the shape of increase in crop productivity in Mirpurkhas, Sanghar, Thatta, D. I. Khan, Loralai, Mastung and many other areas. AWPs reported positive impacts on the livelihood of farmers with substantial increase in farm income of the communities.

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Other Information: Web links to reports, news items, photos, etc.

Farmers training at Mastung, Balochistan under Sarawan AWP

Training farmers at D. I. Khan, Khyber Pakhtunkhwa under Gomal-Daaman AWP

Training of farmers at Sanghar under Nara Canal AWP

Training of farmers at Mohabbat Killi, D. I. Khan under Southern District AWP

Chapter 6 – Sri Lanka Water Partnership (SLWP)

Sri Lanka Water Partnership (*Lanka Jalani*) is an independent non-profit association of institutions with the goal of promoting Integrated Water Resources Management (IWRM) in line with the concepts and principles articulated at international fora such as Rio, Dublin and 1st and 2nd World Water Forums. It is an initiative supported by the Global Water Partnership (GWP) and a constituent of the South Asia Regional Water Partnership. Membership is open and inclusive and currently represents a wide range of stakeholder interests. It took the initiative in developing a Water Vision 2025 for Sri Lanka in the year 2000 and a program for Action (PFA) to translate the vision to action. It has set up Area Water Partnerships (AWPs), Youth and Gender networks and other basin level institutions to support River Basin Management (RBM) and IWRM in Sri Lanka. AWPs provide the local institutional base for representation and action at local level while the Country Water Partnership (CWP) and associated CEO panel provides the forum for policy level dialogue of these issues for consideration at national level. Both levels encourage close interaction among groups of stakeholders for purposes of harmonizing approaches and integrating issues.

Ms Badra Kamaladasa, former Director General, Department of Irrigation is the current Chair of SLWP and eminent researchers, academics and water resources specialists serve on its Steering and Programme Committees.

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INTRODUCTION TO WACREP ACTIVITIES

Sri Lanka Water Partnership

Under WACREP, SLWP has identified 7 activities the details of which are given below;

Activity No. 1.2.1.B: Training of Trainers (TOT) is a core activity in the CCA programme undertaken in irrigated agriculture systems to expand the outreach to systems not covered under current project and to continue after end of project by the agencies themselves

Output/Outcome: TOT materials, trained staff in District/Provinces, Agency Staff aware of CCA and FO leaders sensitized on CCA, (100 Trainers, 750 Programme Staff of agencies (mid-level) and 1500 FO Leaders targeted),

Partners:

Ministry of Irrigation and Water Resources

Irrigation Management Division

Department of Agriculture

Department of Irrigation

University of Ruhuna

University of Rajarata

Department of Meteorology

Strategic Goal # 1 *– Catalyse change in policy and practice*

Description of the change:

The SLWP WACREP initiatives are expansion and reinforcement of the SLWP CCA programmes from 2013 with special focus on rural livelihoods especially irrigated agriculture dependent, a sub sector that is expected to confront both social and economic consequences of a serious nature due to climate change. The lack of awareness among both agency staff and the farming community and lack of understanding of resilience capability to cope with these challenges sought to be overcome through a set of integrated initiatives and a phased approach.

With the experience gathered the more CC vulnerable rain fed agriculture and minor irrigation sector would be taken up subsequently. The areas selected for intervention are based on existing vulnerability, profiling for floods, droughts, and irrigation and drinking water impacts. SLWP implements its programmes directly with its collaborating partners rather than through sub-contracting or outsourcing notwithstanding the difficulties involved, as this leads to developing capacity and internalising within the agencies. SLWP is of the view that this approach will raise the capacity and knowledge within the partnership and related agencies, help internalise CCA within the respective agencies and encourage provision from within their own budgets for the future. Interaction, networking and consequently integration of efforts have been seen to be realised within the water sector on CCA issues with increasing priority being given by the water agencies to CCA based on increasing demand by the targeted groups. While policies and a strategy to deal with CC have been developed at national level, there is minimal knowledge and interaction at the field level with both staff and the farming community being unaware of any initiatives in this regard. The approach of SLWP is to catalyse the field level involvement and implementation of the national strategy. The interventions cover the communities with programmes involving Drinking Water CBO and schools in addition to above. A cadre of trainers (staff Level) will be available to carry the CCA activities forward after project completion.

Contributing factors, actors, and background

TOT programme was based on training assessments and identified requirements arising from the CCA awareness programmes conducted by SLWP in the past. It was evident that the core group of field level staff of water agencies is needed for extension work on CCA. Accordingly,

- The CCA programmes were designed targeting agency staff (District and Project level), Farmer Organisation Representatives and Farmer Leaders. A special residential three day ToT programme for agency executive staff to take on as trainers.
- 17 CCA programmes for staff (Irrigation Department, Agriculture Department, Mahaweli Authority Sri Lanka and National Water Supply and Drainage Board, Department of Agrarian Development and Irrigation Management Division of Ministry of Irrigation and Water Resources) covering major/medium schemes have already been held in North Central (NCP), Eastern, North Western (NWP) and Central(CP) provinces for 892 participants.
- 20 CCA programmes for Farmer Organisation (FO) Representatives and Farmer Leaders of major/medium schemes in NCP, NWP and CP were conducted.
- 11 District level programmes for 878 FO leader participants and nine project level programmes for 721 farmer leaders were held.
- Three day CCA -ToT Programme for Executive staff of above agencies - 55 participants including 35 engineers and 12 female participants.

Total 2,540 participants were trained including estimated 20 per cent female participation. Allied programmes related to the above included; four special programmes on Adoption of

New Technology and Best Practices to cope with CCA (Smart Agriculture) were held for selected Farmer Leaders and Project Officers in collaboration with the Universities of Rajarata and Ruhuna and Department of Agriculture Field Research Stations at Angunukolapellessa and Maha Illuppallama. 185 have been trained under this programme.

The main collaborating partners were Ministry of Irrigation and Water Resources Management (M/IWRM) , Ministry of Water Supply and Drainage (M/WSD), Ministry of Agriculture (M/A) Hector Kobbekaduwa Agrarian Research and Training institute, Irrigation Department, Irrigation Management Division - M/IWRM. National Water Supply and Drainage Board (NWSDB), Community Water Trust - M/ WSD, Universities of Ruhuna / Rajarata and Open University, Post Graduate Institute of Agriculture, Department of Agriculture, Natural Resources Management Centre, Kothmale International Training Institute of M/IWRM, Mahaweli Authority of Sri Lanka, International Water Management Institute, Metrological Department, Area Water Partnerships of SLWP, Education Department, Regional Health and Department of Agrarian Development.

Lessons learnt:

SLWP interventions on Climate Change in relation to the water sector started in 2002 and by 2010 several local and national dialogues were held to create an awareness of the need to consider CC and adaptation (CCA) seriously. With WACREP in 2013 SLWP was able to post coherent integrated and a focused critical mass of activities on CCA. The emphasis on agriculture and rural livelihoods helped concentrate on activities on a scale that saw SLWP being recognised as a pioneer in CCA intervention in areas defined as vulnerable to CC by the state. Programmes linking the Irrigation Department, Irrigation Management Division of the Ministry of Irrigation and water Resources, National Water Supply and Drainage Board, Community Water Trust (now Department) under the Ministry of Water Supply and Drainage, Department of Agriculture, Provincial Health and Education Departments and the Universities of Rajarata and Ruhuna enabled outreach activities to be conducted with interdisciplinary input and full inter agency involvement. Agency staff at provincial, district and local levels and farmer organisations, CBO and school children enabled the entire range of rural society in these areas to be covered.

By 2014 what started as promotional campaign became completely demand driven and there were requests by agencies for much more than what resources and time permitted.

The following outcomes are recognised as influenced mainly due SLWP programme on CCA.

a) Training institutions, such as Irrigation Training Institute of Department of Irrigation (DOI) at Galgamuwa and Kothmale, International Irrigation Training Institute of Ministry of Irrigation and Water Resources (MOIWR) and Mahaveli Authority (MA) have added CCA to their institutional training curricula.

b) CCA has now been internalised in Irrigation Department, Irrigation Management Division of the Ministry of Irrigation, Department of Agriculture and National Water Supply and Drainage Board. These agencies now arrange programmes in close collaboration with each other, including Department of Meteorology and Universities which were inducted initially under SLWP organised CCA activities.

c) Extension Division of Department of Agriculture which collaborated extensively with SLWP for holding TOT Programme on CCA for professional staff has recognised the catalytic role played by the SLWP. The Extension Division opened a CCA unit within Protected Agriculture (Sub Division) of Extension Division.

People we can interview:

Rajarata University- Mr Janaki Gunaratne Head Dept. of Water Resources
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Department of Meteorology -Mr Sarath Premalal Director Research and Training
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Department of Irrigation- Eng. Jankie Meegastenna Director Water Management
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Department of Agriculture- Mr RS Wijesekera Director Extension.
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Irrigation Management Division of M/IWRM- Ms Chandrka Ethugala Director
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Other Information: Web links to reports, news items, photos, etc.

CCA TOT Report Link -
http://lankajalani.org/wp-content/uploads/2015/02/Proceedings-of-ToT.pdf

Implementation Summary:

Program title	Date	Location	Venue	Participants / Agencies	Total Attendance
FARMER LEDER AWARENESS					
Farmer Leaders					
Farmer Leader Awareness on CCA	27/1/2014	Rajangnya Sche	RPM /IMD conferenc	FOLeaders	90
Farmer Leader Awareness on CCA	10/32014	PSS/ Giritele	Dis/Sec/ Conference	FO Leaders	78
Farmer Leader Awareness on CCA	11/3/2014	Minneri/Kaudulla	Subharathie/Diulankad	FO Leaders	114
Farmer Leader Awareness CCA	11/3/2014	Anuradhapura	DC/ Conference hall	FO Leaders	80
Farmer Leader Awareness on CCA	8/4/2014	Kurunegala	RRI Batalagoda	FO Leaders	80
Farmer Leader Awareness on CCA	5/6/2014	Galgamuwa	DS Conference Hall	FO Leaders	102
Farmer Leader Awareness	6/6/2014	Nikaweratiya	Agrarian. Con. Hall	FO Leaders	122
Farmer Leader Awareness on CCA	30/6/20214	Mahiyanganaya	DS office	FO Leaders	105
Farmer Leader	21/7/2014	Puttlem	District Sec. Conference	FO Leaders	109
					880
Farmers					
Farmer awareness on CCA-(am)	10/2/0214	Hurulu wewa	Agrarian Tra. Centre	Faemers	113
Farmer awareness on CCA-(pm)	10/2/2014	Mahakanadarawa	Rambewa Temple	Farmers	67
Farmer awareness on CCA	11/2/2014	Nachchaduwa	RPM office Nachchaduwa Farmers	Farmers	91
Farmer awareness on CCA	9/5/2014	Rajanganaya	RPM office Rajangana	Farmers	90
Farmer awareness on CCA	29/5/2014	Mahavillachchiya	Cultural Centre Mahavilla	Farmers	96
Farmer awareness on CCA	30/5/2014	Polonnaruwa	District Sec. Conference	Farmers	65
Farmerawareness	30/7/2014	Nuwara wewa	Hatareswela Temple	Farmers	92
Farmer awareness	31/7/2014	Tissawewa	Sarananda Piriwena	Farmers	87
Farmer awareness	11/8/2014	Palukadawala	Tract 2 Meeting Hall	Farmers	92
					793
TECHNICAL & FIELD STAFF TRAINING					
Technical & Field staff					
Climate Change Adaptation	10/3/2014	Anuradharura	DAD Conference Hall	DO/DA/SO Field Officers	55
Climate Change Adaptation	20/6/2014	Kantalai	Akila Resort, kanthalai ID,DO/	ID,DA,DAD,RPM Officers	51
Climate Change Adoptation	1/7/2014	Mahiyangnaya	Cultural Centre- Mahiya:DI,IMD,DA,D	Field Officers	79
Climate Change Adoptation	5/7/2014	Kotmale	KITI Auditorium	EA Trainees	97
Climate Change Adoptation	30/7/2014	Galgamuwa	GITI Auditorium	EA Trainees	84
Climate Chang Adopttation	22/8/2014	Colombo	HARTI Conference Hall	IE,EA,DA,DO	50
Climate Change Adoptation	11/9/2014	Wariyapola	Wayamba Training Centre	PMC Officials	70
Climate Change Adoptation	12/9/2014	Wariyapola	Wayamba Training Centre	PMC Officials	63
TOT Programme	2-4/10/14	Gannoruwa	ISTI- Gannoruwa	District Level Trainers	67
Ginganga Detioration Awareness	24/10/14	Kaneliya	Forest Dept. Training Cen.	District & Field Officers	58
PMC Officer Awareness	27/10/14	Hambantota	District Sec. Conference	PMC Officers	60
PMC Officer Awareness	28/10/14	Weeraketiya	Divisonal Secretariat	PMC Officers	54
Climate Change Adoptation	28/11/14	Galgamuwa	GITI Auditorium	EA Trainees	79
					867

Activity No. 1.2.3.B: Policy Brief on CCA relating to capacity of irrigated agriculture farming in major schemes to respond to impacts of Climate Change to enable appropriate policy and investment decisions to be made by the relevant ministries

Output/Outcome: *Evidence based advocacy through field interventions and resilience survey to develop policies and strategies for local level intervention on CCA with respect to major irrigated areas,*

Partners:

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:

The policy brief is a follow up activity of Activity No. 1.3.1.D: Survey of resilience capability of farmers in irrigated agriculture to cope with impacts due to climate change with the aim of highlighting genuine investment needs. The survey was planned from September for three months and policy brief was planned to be completed in Q1 2015. Due to abrupt ending of WACREP Phase I in December 2015, this activity could not be implemented and will be done as planned with Locally Raised Funds (LRF) by SLWP.

Farmer Resilience Survey (1500 respondents of major, medium and minor irrigation schemes from NWP and NCP) was completed with the assistance of Universities of Rajarata, Peradeniya and Open University. Technical supervision was provided and final report was compiled by Mr M. Aheeyar former Head Water Resources and Environment of Hector Kobbekaduwa Agrarian Research and Training Institute (HARTI) and presently a Researcher International Water Management Institute (IWMI).

Contributing factors, actors, and background

While CCA was discussed at policy level and strategies and investment plans made under project funding, there had been no downstream activity to have these internalised within the agencies' and at operational level. This GWP programme was the first in the country to take the issue of CCA to the operational level and this has been acclaimed and recognised by many agencies such as Irrigation Department, Irrigation Management Department of Agriculture etc. For the first time CCA literature and booklets specifically designed for various categories in the national languages have been produced and distributed to the relevant participants. Most agencies have now internalised CCA and provide local content as part of programme implementation. The integrating of Universities with the operating agencies and technical departments such as the Meteorological Department has forged linkages for continuing collaboration on this and related activities.

Lessons learnt:

In-house implementation and no outsourcing enhanced the capacity building of staff at all levels. The costs were low and were shared with the collaborating partners assisted in holding a higher number of programmes with the available funding. Levels were reached to enable *tipping points* to be realised to ensure the momentum generated will be adequate to continue the activities on their own by the relevant agencies.

People we can interview:

Mr M. Aheeyar, Researcher, IWMI. Email: m.aheeyar@cgiar.org

Other Information: Web links to reports, news items, photos, etc.

Activity No. 1.3.1.D: Survey of resilience capability of farmers in irrigated agriculture to cope with impacts due to climate change with the aim of highlighting genuine investment needs

Output/Outcome: *Survey Report on resilience capability in two important irrigation provinces*,

Partners:

OUSL
The Open University of Sri Lanka

Strategic Goal # 1 *– Catalyse change in policy and practice*

Description of the change:

Farmer Resilience Survey (1500 respondents of major, medium and minor irrigation schemes from NWP and NCP) was completed with assistance of Universities of Rajarata, Peradeniya and Open University. Technical supervision was provided and final report was compiled by Mr M. Aheeyar former Head Water Resources and Environment of Hector Kobbekaduwa Agrarian Research and Training Institute and presently Researcher IWMI.

The Open University and Rajarata University conducted the survey in Puttalam District of NWP and NCP respectively. The survey in Kurunagala District of NWP was conducted by the University of Peradeniya.

Field survey was completed and data analysed in October/November. The final report is complete and development of an issue paper based on findings will be undertaken to help develop a policy brief.

Contributing factors, actors, and background

Policies, statutes and investment plans for coping with CC were on Expert Consultations and linked to the establishment of Institutions for coping with disasters consequent to the 2004 tsunami. National policy on Disaster Management in Sri Lanka was passed in February 2013. The CC Policies were articulated based on the Asian development Bank (ADB) assisted TA Project implemented by the Ministry of Environment in 2011/12.

The State interventions with respect to disasters such as floods and droughts impacting on rural livelihoods and agriculture are based on the above and institutional experiences during implementation. The Survey supported by GWP enabled a resist to the practices adopted by agencies and a correct appreciation of resilience capability or otherwise within the farming communities in irrigated agriculture. The results of the survey will enable appropriate responses to be developed based on evidence rather than opinions.

Lessons learnt:

The Survey Report has been finalised -a significant finding has been that paddy cultivation brings in less than 50 per cent of agricultural income to most irrigated farmers in major and medium schemes. A review of the conclusions and recommendations will be made at a consultation.

A Policy Brief to the authorities will follow based on the review.

People we can interview:

Mr M. Ahyeear Researcher IWMI Email: aheeyar@gmail.com

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Mr Janka Gunaratne Snr Lecturer University of Rajarata E mail: janaka78@gmail.com

Report: *http://lankajalani.org/wp-content/uploads/2015/02/wacrepsurveyreport.pdf*

Activity No. 2.5.4.A: To take necessary steps to replicate the micro irrigation initiative started in 2011 with the association of Irrigation Department and Practical Action

Four special programmes on Adoption of New Technology to cope with CCA (Smart Agriculture) were held for selected Farmer Leaders and Project Officers in collaboration with the Universities of Rajarata and Ruhuna and Department of Agriculture Field Research Stations at Angunukolapellessa and Maha Illuppallama. Nearly 185 have been trained under this programme.

Output/Outcome: Farmers in water short systems and vulnerable to CC were made aware of options and knowledge for coping using technological options 5 Programmes held,

Partners:

Strategic Goal # 1 *– Catalyse change in policy and practice*

Description of the change:

A total of 218 participated in these four programmes with 185 farmer leaders. The others included Project Managers and Development Assistants of the relevant irrigation and agriculture systems. These officers are expected to guide the farmers in adopting appropriate options and to liaise with the respective technical agencies and product suppliers to ensure appropriate options and versions are used by the farmers.

Contributing factors, actors, and background

The initial programme conducted in 2011 identified a lack of information and assistance to farmers wishing to use new technology. Farmers were guided entirely by sales persons of vendors who sometimes supplied unsuitable and costly equipment. A case in point was that for drip systems integrated embedded emitter systems rather than those with removable emitters were recommended resulting in blockage of emitters requiring replacement of entire distribution lines with emitters rather than only emitters. Removable emitters also are easily cleaned. Though the latter are slightly expensive the advantages are not told to them by sales persons who have no interest other that selling as many units as possible.

After training there is adequate knowledge in these systems for farmers to secure appropriate equipment.

Lessons learnt:

Proper extension services within the relevant agencies are needed to backstop new technology adoption by the farmers who are easily misled by vendors of equipment.

People we can interview:

Mr Janaka Gunaratne Snr Lecturer University of Rajarata Email: janaka78@gmail.com
Prof Champa Navaratne University of Rhuhuan, E mail: *champa_2004@yahoo.com*
Mr RPM Dissanaiake Deputy Director IMD: Email: *rpm.dissanayake@gmail.com*

Implementation Summary:

New Technology Oprions					
Technology options	2/7/2014	Hanbantota	Agunakola Pelessa	Farmers	50
Technology options	22/7/2014	Anuradhapura	Maha Illuppllma	Farmers	54
Technology options	23/7/2014	Anuradhapura	Maha Illuppllma	Farmers	54
Technology options26/8/2014	26/8/2014	Anguakola Pelessa	A ngunakola Pellessa	Farmer60	60
					218

Activity No. 3.6.1.B: Initiate a programme to enhance the capacity of Community Based Organizations (CBOs) who are handling drinking water projects. At present 3,600CBOs are handling water projects covering 30 per cent of the population

Output/Outcome:

15 CBO programmes were held covering 1,161 participants in collaboration with the NWSDB, Community Water Trust (CWT) of the Ministry of Water Supply and Drainage and Regional Health Departments, CEA and Forest Department. Issues of water resources conservation, health and sanitation were part of the programme that helped linking the Rural Water Supply arm of NWSDB with the CBO.

Partners:

Strategic Goal # 1 *– Catalyse change in policy and practice*

Contributing factors, actors, and background

The services of the Community Water Trust and NWSDB were made available to the CBO which are handling drinking water projects with clear institutional roles and responsibilities. The Central Environmental Authority, Forest Department and Universities played a supporting role.

Lessons learnt:

Federation of local CBO was given the opportunities to obtain services of CWT and NWSDB more effectively and make service demands.

People we can interview:

Mr Ruwan Liyanage, Project Manager Uva NWSDB E mail: ruwan.sanath@yahoo.com

Dr Nimal Karunasiri, Director General Department of Community Water Supply

E mail: communitywater.minunit@gmail.com

Mr Sunil Shanthasiri Snr Sociologist sunilshanthasiri@gmail.com

Other Information: Web links to reports, news items, photos, etc.

Summary Implementation:

Drinking water CBO Awarenes	6/1/2014	Soranatota	DS Conference Hall	CB0/Par.Org.	62
Drinking water CBO Awarenes	7/1/2014	Kandeketiya	DS Conference Hall	CBO/Par.Org	54
Drinking water CBO Awarenes	8/1/2014	Ridimaliyadda	DS Conference Hall	CBO/Par.Org	59
Drinking water CBO Awarenes	20/2/2014	Anamaduwa	DS Conference Hall	CBO/Par.Org	127
Drinking water CBO Awarenes	15/3/2014	Kalpitiya	Economic De. Centre	CBO/Par.Org	84
Drinking water CBO Awarenes	29/5/2014	Haliela	DS Conference Hall	CBO/Par.Org	105
Drinking water CBO Awarenes	30/5/2014	Ella	Ds Conference Hall	CBO/Par.Org	92
Drinking water CBO Awarenes	21/7/2014	Minipe	Technical College	CBO/Par.Org	109
Drinking water CBO Awarenes	4/8/2014	Ramboda	Glen lock Hotel	CBO/Par.Org	97
Drinking water CBO Awarenes	**18/09/2014**	**Matale**	**Hotel Clover Grange**	**CBO/Par.Org**	**111**
Drinking water CBO Awarenes	**4/12/2014**	**Padukka**	**Sanasa Auditorium**	**CBO/Par.Org**	65
Drinking water CBO Awarenes	**5/12/2014**	**Seethawaka**	**Pradeshiya shabha con.**	**CBO/Par.Org**	62
					1027

Activity No. 3.6.2.A: Continue with the programme of *Sisu Jala Hamuwa* – the school IWRM and Water Messenger Programme to train school children on importance of IWRM and issues related to health and sanitation

Output/Outcome: *Children are aware of IWRM Principles and sanitation issues*

Partners:

Strategic Goal # 2 *– Generate and Communicate Knowledge*

Description of the change:

The Water Messenger Programme of SLWP is a core IWRM activity since 2004. WACREP enabled expansion of programme with links to the other components undertaken with respect to irrigated agriculture and rural livelihoods. CCA was integrated into the IWRM programme and presently is part of the curricula in most schools

Contributing factors, actors, and background

It was planned to cover schools in 5 to7 school education circuits with at least 1,000 students and 300 teachers under this programme. Programme was linked to environment cells in schools. 13 programmes were conducted and 2,922 students and 49 teachers attended the programmes.

NWSDB and Provincial Education and Regional health Departments of Central, NCP and Uva Provinces were coordinated the programmes.

People we can interview:

Dr Gamini Jayakody Deputy Chief UNICEF email: drjayakody@gmail.com

Mr S. B. Niyangoda, Senior Adviser email: s.niyangoda@cgiar.org

Other Information: Web links to reports, news items, photos, etc.

Implementation Summary:

School Children Awareness on W&H	28/4/2014	Mahiyanganaya	Ulpathwewa M V	school children	160
School Children Awareness on W&H	30/6/2014	Girandurukotte	Giradurukotte MMV	School Children	179
School Children Awareness on W&H	1/7/2014	Mahiyanganaya	Hatdattewa MV	School Children	230
School Children Awareness on W&H	11/7/2014	Matale	Matale St. Thomas MV	School Children	265
Schooi Children Awareness on	**10/10/2014**	**Kandy**	**Udispattuwa MV**	**school children**	**254**
School Children Awareness on	**17/10/14**	**Puttlem**	**Arachchikattuwa MV**	**school children**	**250**
School Children Awareness	**20/10/14**	**Kandy**	**Ududumbara MV**	**school children**	**192**
School Children Awareness	**30/10/14**	**Kurunegala**	**Hettipola MV**	**school children**	**269**
School Children Awareness	**31/10/14**	**Kurunegala**	**Rasnayakarura MV**	**school children**	**181**
School Children Awareness	**4/11/2014**	**Kandy**	**Pilawala M V**	**school children**	**283**
School Children Awareness	**4/12/2014**	**Kandy**	**Kengalla M.V.**	**school children**	**207**
					2470

Activity No. 4.8.4.B: Proposal development and fundraising capability of SLWP enhanced

Output/Outcome: In-house project development capability enhanced.

Strategic Goal # 3 *– Strengthen Partnerships*

Description of the change:

This component under WACREP sought to enhance capability and capacity of SLWP and partners, to develop projects and implement resource mobilization to ensure sustainability of programmes. Enhancing visibility and impact were some other targets.

Contributing factors, actors, and background

A guideline on project development for small institutions/NGO was developed and printed and made available in a CD. This was followed by a workshop held in December 2014 with

selected partners and donors such as UNDP, Chamber of Commerce and some major corporates who are involved in water related Cooperate Service Response (CSR) activities.

In addition the participants included from partner NGOs, University of Colombo and Ruhuna, IWMI, Young Women's Christian Association (YWCA), Girl Guides Association (GGA), Environmental Foundation and Centre for Environment Justice.

Other Information: Web links to reports, news items, photos, etc.

Technical Guide Line online: http://lankajalani.org/wp-content/uploads/2015/02/wacreptecguide.pdf

Chapter 7 – Regional Water Partnership (GWP SAS)/ Global Water Partnership: South Asia Regional Office,

The GWP SAS is a fully independent constituent of the Global Water Partnership (GWP) family and network umbrella. GWP SAS currently represents Bangladesh, Bhutan, India, Pakistan, Nepal and Sri Lanka linked to the network through the respective CWPs which are they independent and autonomous organisations brought together with the common objective of promoting IWRM in the region.

GWP SAS governance comprises of a Regional Council (RC) with gender-based two member representation from each country, a Regional Office (RO) and a Regional Chair, providing administrative oversight. Both operated previously on two year rotational basis from 2003 in Bangladesh and Sri Lanka, and changed in 2007 to a three yearly rotation in India. The current Regional Chair is Mr Iswer Raj Onta from Nepal with the Regional Office being located in Sri Lanka. The Regional Office is headed by Ms. Priyanka Dissanayake, Regional Coordinator and it is hosted by IWMI located at Pelawatte, Battaramulla, Sri Lanka.

Contacts:

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Website: http://www.gwp.org/en/gwp-south-asia/ABOUT-GWP-SAS/

INTRODUCTION TO WACREP ACTIVITIES

GWP South Asia Regional Office (GWP SAS RO)

GWP SAS has identified three interventions during the project cycle, one under Package 1, and two activities under Package 4. They are,

Activity No. 1.1.1A: Regional Capacity Building Programme for Water Resources Managers on possible climate change adaptation strategies

Output/Outcome: Current adaptation planning and practices related to water resources, including IWRM plans, policies and strategies and lessons learned (good practices, gaps and needs), from ongoing adaptation initiatives in each country, sector and region.

Partners:

Strategic Goal # 1 – Catalyse change in policy and practice

Description of the change:
The workshop helped in integrative learning on CCA strategy implementation in country level and regional cooperation on climate change with respect to water. It helped in making connections between lessons learnt with broader processes such as the National Adaptation Plan (NAP) process. Mainstreaming CCA into developmental planning is still in early stages in most of the countries in the South Asia. This two day workshop gave an opportunity to discuss and share the much needed thoughts on CCA among the representing countries of the region.

NAP process and its importance to reduce vulnerability to the impacts of climate change, by building adaptive capacity and resilience was explained. Way of integrating CCA, in a coherent manner, into relevant new and existing policies, programmes and activities, in particular development planning processes and strategies, within all relevant sectors and at different levels were introduced.

Contributing factors, actors, and background
In the three framing presentations, namely, 1) Overview of the NAP process globally: How GWP is responding to the climate change challenge through WACDEP, 2) Climate Change Impacts and Water Adaptation Strategies: Institutional Frameworks – National Enabling Environment (Water Laws and Institutes), and 3) Identifying Opportunities for Strengthening

CCA in medium-term planning –NAP process preparatory elements; were made to set the necessary context for the workshop. Susanne Skyllerstedt, WACDEP GWP, Stockholm; Rohini Kohli, Lead Technical Specialist, NAP-GSP, Green Low Emission Climate Resilient Development Strategies, UNDP; Batu Krishna Uprety – Executive Member, JVS/GWP Nepal and the Chair, Least Developed Countries Group Expert Group (LDG) made framing presentations at the Technical Session. There was country presentation session by the country representatives on the status of CCA strategy implementation and lesson learnt. This session was followed by the participatory session. In this session groups discussed the different types of adaptation planning and practices related to water resources at different levels.

South Asia Co-operative Environment Programme (SACEP) has the regional mandate to coordinate among SAARC member countries on environmental matters and GWP SAS utilized this opportunity to hold a regional programme, in collaboration with SACEP and UNDP.

Other local agencies involved:

- Natural Resource Management Department and Environmental Protection Department of Afghanistan,
- Ministry of Environment and Forests, Bangladesh Secretariat and Ministry of Water Resources in Bangladesh,
- National Environment Commission, Bhutan,
- Ministry of Environment and Energy, Maldives,
- Pakistan Environmental Protection Agency and Global Change Impact Studies Centre (GCISC), Pakistan,
- Department of Irrigation, Sri Lanka, National Water Supply and Drainage Board (NWSDB), Central Environment Authority, Institute of Policy Studies, and
- Climate Change Division, Ministry of Environment and Renewable Energy, Sri Lanka,
- IWMI, Head Quarters based in Sri Lanka.

Lessons learnt:

The participants discussed and presented on the types of adaptation planning and practices related to water resources at different levels. The discussions were based on the following issues,

- Current adaptation planning and practices related to water resources, including IWRM plans, policies and strategies,
- Lessons learnt (good practices, gaps and needs), from ongoing adaptation initiatives in each country, sector and region.
- The key opportunities and key challenges to integrate NAPs into the national development processes in each country.

The participants identified the main challenges of country adaptation planning in country level are financing, lack of awareness and capacity of national policy makers on CAP, absence of an institution to take lead role, national and sectoral priorities, political and social influences, lack of cooperation among the stakeholders, no proper monitoring and evaluation mechanisms.

People we can interview:
Contact information of Beneficiary Community:

- **Mr S. M. D. P. Anura Jayatilake**

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- **Ms Rohini Kohli**

Lead Technical Specialist
National Adaptation Plan - Global Support Programme (NAP-GSP)
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Other Information: Web links to reports, news items, photos, etc.
Proceeding Report:
http://www.gwp.org/en/gwp-south-asia/WACREP/Reports/

Activity No. 1.1.1 B: Capacity Building Programme on Economics of Climate Change Adaptation (ECCA) *Supporting National/Sub-national Adaptation Planning and Action, 3rd Regional Training programme, (This workshop was a collaborative effort of USAID, ADB, UNDP and GWP South Asia)*

Output/Outcome: Overall objective of the ECCA Programme: A Climate change risk into planning processes is mainstreamed to ensure economically efficient climate change strategies at the sectoral, sub-national and national levels.

Partners:

Strategic Goal # 1 – Catalyse change in policy and practice

***Description of the change*:**
This activity was an initial step of future collaboration with UNDP on climate change adaptation planning and GWP SAS formed this partnership with UNDP on the directive of WACDEP Global Programme. This programme was to support the countries of their National Adaptation Planning (NAPs) process and Consultancy support was provided by GWP SAS at the workshop which was the 3rd in the series. At this training, participants were given the hands on training on climate forecasts Estimate and future impacts on agriculture. The software (SATA) which is a statistical model developed by Yale University was tested with country data by the country representative and participants were trained to interpret the "SATA Outputs" such as economic cost & benefits on various adaptation options as per the model.

Contributing factors, actors, and background
This Capacity Building Programme on the Economics of Climate Change Adaptation (ECCA) was a collaborative effort of UNDP, the USAID Adapt Asia-Pacific Project, the Asian Development Bank (ADB), the Global Water Partnership South Asia (GWP SAS) and Yale University. It addressed the consensus reached during a 2012 Regional Consultation that a more comprehensive approach to mainstreaming climate change risks into planning processes was needed to ensure economically efficient climate change strategies at the sectoral, sub-national and national levels.

The need for training on economic analysis has also been cited by countries during consultations related to support to the National Adaptation Plans (NAPs) process. The NAP process, established under the Cancun Adaptation Framework (CAF), enables Parties to formulate and implement NAPs as a means of identifying medium- and long-term adaptation needs and developing and implementing strategies and programmes to address those needs. It is a continuous, progressive and iterative process which follows a country-driven, gender-sensitive, participatory and fully transparent approach. Many of the programme's targeted staff is expected to play key roles in their respective NAP process.
The programme was launched at the 2012 Regional Consultation, where it was decided that a regional training programme would be the most efficient way to transfer related skills in the area of assessing the economic costs and benefits of adaptation projects and adaptation options at the sector level, especially as they relate to agriculture and water. The programme is thus comprised of a series of trainings focused on microeconomic tools for assessing the costs and benefits of adaptation.

The programme focuses on participating pilot countries in Asia, targeting technical staff in the public sector, specifically those who are or will be involved in sector or project analysis in central agencies including planning, finance, environment and/or line ministries. In March

2013, the 1st regional training session was held where participants were provided an insight into the different methods and data requirements for assessing the economic costs and benefits of adaptation. As post regional training tasks, each ECCA country team was asked (a) to identify a project that could be assessed in terms of associated economic costs and benefits; and (b) undertake preparatory work to analyse the economic impacts of climate change impacts and adaptation in the agriculture and water sector. Several on-line Community of Practice discussions (June and September 2013) and regular interactions between the ECCA country team and a team of mentors, based in the region and at Yale University, took place in order to support country teams with their 1st post-regional training tasks and to prepare everyone for the 2nd regional training.

At the 2nd regional training in October 2013, ECCA country teams were trained on conducting economic cost-benefit analysis. Using both demonstration data as well as in-country data collected by the teams and based on methods introduced at the 1st regional training, ECCA country teams were trained on how to apply analytical microeconomic techniques to assess the costs and benefits of adaptation. The results of the analysis are aimed at supporting decision-making related to the assessment of alternative adaptation options. As per the guidance of the GWPO, this workshop was attended by Priyanka Dissanayake & Lal Induruwage of GWP SAS.

This 3rd training was focused on applying the analysis techniques to data collected over the past few months by the ECCA country teams. The UNDP provided a sample questionnaire (Appendix III) on surveying “farmer households” and provided some financial supports to the country teams to collect the data. Mentors were allocated for clusters of countries and data have been collected by most of the countries. The country data was analysed by using the software package “SATA” and country teams were supported by team of expert of University of Yale, USA.

Teams undertook the Ricardian analysis on the impacts of climate change on the agriculture sector. Analysis was then shift to studying adaptation. Country teams had explored how their own farmers already adapt to the range of climate within their countries. Different adaptation options have been discussed so that each team can continue their analysis over the next few months and complete their adaptation analysis.

47 participants of 10 countries were represented at the 3rd training workshop, namely, Bangladesh, Maldives, Nepal, Sri Lanka, Cambodia, Indonesia, Lao PDR, Mongolia, Thailand and Viet Nam. All are government officials from Ministry Environment, Universities, Department of Agriculture, and Department/Ministry of Water, National Planners, Department of Irrigation and Ministry of Energy. Mr. Benoit Laplante, ADB Consultant did a presentation on Cost of Climate Change Vs Benefits of Adaptation, especially on infrastructure projects.

The connectivity between climate and water resources underlies many of the processes of climate adaptation. Changes in the volume and timing of snowmelt and stream flow, affects patterns of water use and management. Using the data and watershed characteristics developed by the ECCA country teams, hydro-economic models and assessment methods has been developed and used to characterize and assess climate change effects on water supply and use, and the effectiveness of alternative adaptation strategies.

GWP SAS has supported the programme by procuring a Hydrological Expert Prof Brian Hurd of New Mexico State University. Prof Brian has conducted a training session on data & Hydro economic modelling and each country teams were supported on how hydro economic modelling was done for their own watersheds.

Prof Brian provided technical guidance materials on using hydro economic modelling to assess adaptation alternatives, technical training materials on learning tools and methods for assessing the economics of adaptation and PowerPoints and other documentation prepared to conduct training activities at the regional/local level. In addition to that he was to provide Technical advice delivered via email/Skype/telephone on related analytical products generated by the ECCA county team as part of programme activities.

At the conclusion of the workshop, Prof Brian Hurd has submitted an assessment of each country-team's current status concerning their progress, efforts, and needed support regarding their water resource and watershed assessment. During his consultation with the country teams, it has been evaluated their understanding of the hydro-economic model and framework, including data elements, units and sources – as appropriate to each team, country-specific issues and concerns, and next steps.

The 4th workshop will be in later part of 2015 and each team will present the results of their analyses. Country-specific institutional development response plans and ongoing and new initiatives will be presented to, and discussed by, policy makers.

Lessons learnt:

Across the ten teams, progress and prospects varied widely, with some demonstrating a clear understanding of process, modelling tool(s), and necessary data to those that were building basic concepts and understanding. Countries demonstrating advanced capacity and progress also indicated strong potential for successful completion within the timeframe prior to the next scheduled workshop in mid-2015. Country teams leading the way include Thailand, Nepal, and Sri Lanka. Countries falling in the latter range will likely need additional support, including the possibility for additional 'hands-on' training, including Cambodia, Vietnam, Lao, and Mongolia**.**

The dilemma faced by the planners was that how to convince their policy makers on economic cost & benefits on various adaptation options. This ECCA Model gives planners the additional strength to convince people on pro or delayed action on climate change impacts on the economy.

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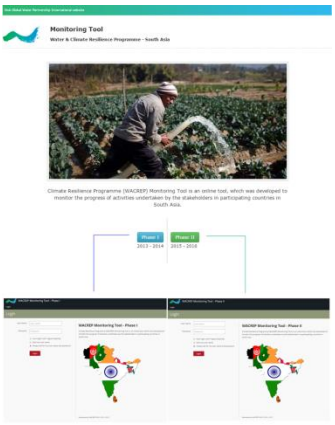
Activity No. 4.8.1: To establish a project management system for efficient programme development, management & implementation

Output/Outcome: A Monitoring Tool is up and running,

Strategic Goal # 3 – Strengthen Partnerships,

Description of the change:
Water & Climate Resilience Programme (WACREP) Monitoring Tool is an online tool, which was developed to monitor the progress of activities undertaken by the stakeholders in participating countries in South Asia. There was no on-line mechanism to monitor the progress at a given time. This tool gives an overall picture of implementation of the programme.



Lessons learnt:
A Manual has been compiled and shared with CWPs and this manual provides the basic guide lines on how to use this tool. At present, WACREP PM is continuing with data entry from the reports received by the Regional Office.

SUMMARY OF THE RESULTS FRAMEWORKS (LOG FRAME)

WACREP PHASE 1 – (2013 OCT – 2015 APR)

WP	Indicator Description	Achievements		Basis for Targets & Achievements
1	Number of Regional Organizations supported in water cooperation that integrate water security & climate change.	Target	2	Initial cooperation has been planned with SACEP[1] & SAARC DMC[2].
		Achievement	4	**SACEP:** Two day South Asia Regional workshop **on** "Lessons learnt in Strategy Implementation on Climate Change Adaptation in Water Sector", 9 – 10 September 2014, Sri Lanka**.** **SAARC DMC:** Conducted 2 back to back Regional Workshops with SAARC as a side event in 3rd India Water Week, 13 – 17 January 2015, India **Workshop 1:** From Risk to Resilience: South Asia Regional Framework for Sustainable Water Management, **Workshop 2:** Achieving Urban Water Security through Integrated Urban Water Management (IUWM) Approach, **UNDP[3]:** Four day Regional Workshop on "Capacity Building Programme on the Economics of Climate Change Adaptation (ECCA), 17-20 Sep 2014, Cambodia (South Asia & South East Asia represented) **BWP:** Conducted two day regional workshop on "To share lessons on Current Issues & Opportunities in Addressing Deltaic Regions in Pakistan, India & Bangladesh, 28 – 29 March 2014, Bangladesh which was co-hosted by IWM[4], Bangladesh. This was attended by representatives from World Bank, UNDP and ADB. **PWP:** Conducted 3 strategic meeting with their partners in Afghanistan & India to strengthen the 2 track diplomacy on water corporation. **APAN[5]/IWP:** Collaboration at the regional days' programme.
2	Number of national organizations supported in developing legal frameworks/policies/ strategies/ sectorial development plans, integrating water security & climate resilience.	Target	2	Ministry of Water Resources & Planning Commission of Bangladesh.
		Achievement	2	1. **BWP & CEGIS**[6] conducted a day long national dialogue on "Financing Mechanism for Bangladesh Delta Plan 2100" on 1 Nov 2014 to support the General Economics Division of the Planning Commission of Bangladesh who is preparing the plan under the financial support of the Netherland Government. At the national dialogue, a position paper was disseminated to the

[1] SACEP – South Asia Corporation for Environmental Programme, based in Sri Lanka.

[2] SAARC DMC – Disaster Management Center for South Asia Agreement for Regional Corporation, Based in India,

[3] UNDP - UNDP/ADAPT Asia-Pacific Capacity Building Programme, Economics of Climate Change Adaptation, Asia-Pacific Regional Centre, Bangkok

[4] IWM – Institute of Water Modelling

[5] APAN: Asia Pacific Adaptation Network

[6] CEGIS – Center for Geographic Information Services, Bangladesh

				participants and obtained views and experience to upgrade the position paper to concept on harnessing the possible financing modalities for Bangladesh Delta Plan 2100. 2. **SLWP** intervention has led to the modification of syllabus of training institutes by incorporating "climate change adaptation" in to the training module.
3	Number of organizations supported in the development of No/Low Regret investment strategies supporting policies and plans with integrate water security for climate change.	Target	2	**IWP & PWP** identified interventions at planning stage to highlight & support the policy makers to identify options/opportunities available for No/low regret investments.
		Achievement	2	In this endeavour, two way approach was undertaken, **Approach 1:** Document case studies/Success stories for replication – Under this approach, **IWP** has identified 7 case studies & they were documented. 1. People Led Village Transformation in Gawadewadi (Pune district), 2. Watershed Development Transforms Kadvanchi (Jalna district), 3. Babhulgaon Reaps Benefits of Farm Bunds and Plantation (Aurangabad district), 4. Common Property Resources Development in Umravati (Aurangabad district), 5. Artificial Well Recharge in Bazar Wahegaon (Jalna district), 6. Roof Top Rain Water Harvesting in Bazar Wahegaon (Jalna district), 7. Revival of Yelganga River though Community Initiative (Aurangabad district). The main criteria for selection of the cases were their ability to take collective actions for water security, drought proofing and climate resilience through low cost technologies. An additional criterion was that the initiatives should have the potential for replication in similar socio-economic and geographic situations. One of the success stories has been made into a learning guide by the Indian Environment Network. Based on the success stories, two documentary films entitled "**Water Harvesting for Climate Resilience – The Maharashtra Story-WACREP**" and "**Meghayala & Mizoram film**" have also been prepared and uploaded on to YOUTUBE and IWP website. **Approach 2:** Documenting the No/Low Regret Options available Under this approach, **PWP** with team of Experts documented a No/Low regret Investment opportunities for climate resilience documented for Tharparkar Desert. This study was done under the request of Pakistan Planning Commission and draft proposal is being assessed by the Planning Commission to incorporate in to their development strategy & 5 year planning cycle.
4	Number of countries supported in the development of capacity & projects to access climate and climate-related finance to improve water security.	Target	2	Planned 1 intervention by BWP & 1 intervention by PWP.
		Achievement	2	**BWP** in collaboration with IOMF[7] conducted a full day seminar on 15 Nov 2014 with the participation of MF Institutes and 200 participants. It has been identified that there are 194 MF Institutes engaged in climate change adaptation at community level. There were 10 bankable projects out of 12 projects submitted were identified for funding. Names of the approved projects are; 1. Financing rain water harvesting and storage systems both for drinking water supply and irrigation. 2. Financing micro-irrigation for high value cash crop and water conservation. 3. Financing low cost irrigation equipment to combat drought. 4. Financing water supply and sanitation equipment for climate vulnerable areas. 5. Financing of building small surface water storage ponds.

[7] IOMF – Institute of Micro-Finance, Bangladesh

				6. Financing alternative livelihood program for the traditional farmers. 7. Financing establishment homestead forestry and orchards. 8. Financing small scale aquaculture projects. 9. Financing small scale renewable energy (solar, biogas etc.) operated irrigation equipment. 10. Financing climate proof livestock and poultry sheds. Funds will be provided by PKSF[8]. **PWP** work in partnership with GCISC[9], WAPDA[10] & Climate Change Division of Pakistan Planning Commission to develop project proposals.
5	Number of WACDEP supported demonstration projects on water security and climate resilience undertaken & replication plan of these demonstration projects have been developed.	Target	10	It was planned to have 5 demo projects each by IWP & PWP
		Achievement	9* (IWP – 4, PWP 4, BhWP - 1) (*- If take it as individual projects, the total will be 69)	**IWP** interventions are given below; (a) Rehabilitated 4 irrigation tanks benefitting **1,000 persons (550 males & 450 females)**. This is the cost sharing community participatory project. (About 10,000 CuM of water augmentation potential have been created. In addition, about 2,500 meters of water supply channel have been created to divert water to tanks from respective rainwater catchments). Under this activity, 15-20% cost of rehabilitation as cash from the benefitted families as their contribution was mobilized and there was another 10% contribution in the form of labour and voluntary time; (b) Deepened 3 Ooranis (Traditional drinking water tanks) benefitting 595 HHs * (**1785 persons**) (Under each Oorani about 1,500 – 2,000 Cu.m of water storage potential has been created to harvest clean rainwater during North East monsoon in order to meet the drinking water needs of three villages (where the 3 Ooranis have been deepened), (c) Constructed 17 farm ponds benefitting **135 persons** (About 8,750 CuM of water storage potential has been created in the farm holdings). Under this activity each benefitting farm holder has contributed about 25-50% cost of the farm fond to create a storage potential which is adequate enough to overcome the negative impacts of climate change; (d) Promoted 10 community institutions (Valagams - Association of farmers, women and landless) under social capital benefitting 1,361 HHs* = **4083 persons**. **Thus the total beneficiaries under this activity are 7003 persons.** The way forward is that the interventions made under WACREP by DHAN Foundation in the project states could be scaled up by the State Government and other relevant development organizations with adequate fund allocation. **PWP** with the participation of private sector installed **two bio gas water pumps**. One at Dhok Lal Shah & other at Rehan Colony were installed and it is now in operation. Again **PWP** has introduced **bio-sand filter** to the Tharpakar Desert Community. Again, **PWP** has introduced Napier Grass for fodder in the desert and demonstrated the **traditional soap making techniques** to farmers in the desert. Activities carried out in Basti Barah and Basti Subarosah where **2,250 people live.**

[8] PKSF – Palli Karma Shahayan Foundation

[9] GCISC – Global Change Impact Study Center,

[10] WAPDA – Water & Power Development Authority,

				BhWP has implemented a project to showcase the efficient water resources Management technique in undulating terrain to increase agricultural yield. **416** people are benefited from this intervention.
	Number of documents produced outlining the lessons from GWP demonstration projects and a plan for replication solution.	Target	1	BhWP, GWP Nepal
		Achievement	9	**BhWP & GWP SAS RO** have produced a document showing the technical intervention of BhWP and it has already uploaded to GWP web under the heading of "Bajo Irrigation Channel Siphon Project-Bhutan". **PWP** has prepared a document on "Bio-sand filtration system" and it has already been uploaded in the PWP web. **IWP** has produced two video called "**Maharashtra Story**" and "**Meghayala & Mizoram film** "which is mentioned above. Other documents are still in draft stage.
	Number of beneficiaries supported in demonstration projects on water security & climate resilience undertaken.	Target	100	Planned from BhWP
		Achievement	9,669	**IWP** intervention - 7,003, **PWP** intervention – **2,250, BhWP** - 416
6	Number of national organizations with enhanced technical & analytical capacity for assessing the impacts and risks in enabling water security in the context of climate change.	Target	5	**SLWP – 5**
		Achievement	5	**SLWP** – 5 (Irrigation Department, Agricultural Department, Mahaweli Authority of Sri Lanka, National Water Supply & Drainage Board and Department of Agrarian Services.,
	Number of field level people trained to disseminate the knowledge on climate resilience, rain water harvesting & water conservation etc,	Target	500	**SLWP** - 500
		Achievement	8,293	**SLWP -** 2,178 (Farmer Leaders – 880, Farmers – 271, Drinking water CBOs – 1,027), **PWP –** 6,046, **BhWP** – 69 local leaders through sensitization workshop.
	Number of decision makers with enhanced capacity to integrate water security considerations in policy, planning or project implementation	Target	6	**SLWP** – 5, **IWP -** 1
		Achievement	218	**SLWP –** 218 (185 Farmer Leaders & 33 – Project Managers & Development Assistant at Irrigation Department)
7	Number of media features on climate resilience & water security, all media including radio, television print, internet.	Target	6	**IWP -**6
		Achievement	9	**IWP –** 1 (India Maharashtra Story – Video), Media materials of 6 case studies will be done soon. **BhWP – 1 (**Bajo Irrigation Channel Siphon Project-Bhutan" already uploaded to GWP SAS Web). **PWP – 1 (**Bio Sand Filtration System Document is already uploaded to PWP Web). Another 6 are in the draft form.
	Number of tools for water security & climate resilience developed and disseminated	Target	10	**SLWP** – 2, **GWP Nepal** – 2, **IWP** – 4, **GWP SAS** – 2
		Achievement		**IWP –** 7 IWP with support of IDI has prepared 7 case studies based on coping mechanisms adopted by rural communities of Meghalaya and Mizoram (North-East States of India) using their traditional wisdom and their relevance for adaptation to climate change, examining how science can add value to traditional/indigenous wisdom and vice versa. **The case studies are;** (i) Sacred groves of Mawphlang village, East Khasi Hills District, Meghalaya (Forestry sector), (ii) Rejuvenation of Natural Springs in Mawlingbna village, East Khasi Hills, Meghalaya (Water Resource Sector), (iii) Conveyance of water through bamboo pipes for drinking and irrigation in South Garo Hills and East Khasi Hill, Meghalaya (Water Resource Sector), (iv) Sustainable conservation of local fish species in fish sanctuaries, Meghalaya (Fisheries Sector),

				(v) Shifting cultivation (Jhum): Saitual and Kaifeng villages, Aizawl district, Mizoram (Agriculture sector), (vi) Weather Prediction systems based on Traditional Knowledge: Reiek Village, Mamit District, Mizoram (Agriculture sector); and (vii) Living root bridges in East Khasi Hills of Meghalaya: bioengineering wonders unique to the region (Transport sector). **The film is uploaded on YOUTUBE and IWP website for dissemination.**
	No. of Publications	Target	8	**IWP -** 8
		Achievement		All the documents of CWPs activities (nearly 38) have been uploaded to CWP websites and links are given in the project completion report. Publications will be produced in the future.
	No. of Meeting to exchange knowledge	Target	2	**BhWP -** 2
		Achievement	4	**BhWP –** 1 sensitization meeting with local leader (69) held to exchange knowledge. **IWP – 3** Three "Farmers' Field Schools" on (a) Agriculture (b) Water and (c) Livestock management, have been created for training on best practices on agriculture, water management and livestock management. To raise awareness on climate change, a special cultural programme was conducted. 71 youth and progressive farmers were trained on different good agricultural practices; water management practices and livestock management through various training programs. Vulnerability assessment and climate change hazard maps have been prepared based on Participatory Rural Appraisal (PRA) and house hold level base line survey. A number of Soil & water conservation measures have been undertaken in all the 10 selected villages. 26 progressive farmers have been selected for climate smart agriculture (CSA), different CSA are demonstrated during the project period with these farmers and it has been adopted by other farmers also. Goat breed improvement program started with 5 buck with 35 goat rearing farmers. Participatory water management, resource management practices initiated with 10 farmers for judicious use of water. 26.2 ha area of pasture land has been developed and due to this the fodder production has increased by 46.33 % as compared to previous years and 184 families have been benefitted through pasture land development.