Challenge Program on Water and Food


# Basin Development Challenges

# Stakeholder Consultation Workshop Report

Volta River Basin

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*25-26 November 2009, 2iE, Ouagadougou, Burkina Faso*

*By Tonya Schuetz with contributions from Boru Douthwaite, Sophie Nguyen Khoa, Alain Vidal*

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## List of Abbreviations and Acronyms

| Abbreviation or Acronym | Full Name |
|---|---|
| 2iE | International Institute for Water and Environment Engineering |
| AGRA | Alliance of a Green Revolution for Africa |
| AMMA | African Monsoon Multidisciplinary Analyses |
| BDC | Basin Development Challenge |
| BF | Burkina Faso |
| BFP | Basin Focal Project |
| CA | Comprehensive Assessment of Water Management in Agriculture |
| CEDRES | Centre d'Etudes de Documentation et de Recherches Economique et Social, Université de Ouagadougou |
| CGIAR | Consultative Group on International Agricultural Research |
| CPWF / CGRAI | Challenge Program on Water and Food / Challenge Programme Eau et Alimentation |
| CSIR | Council of Scientific and Industrial Research |
| DGRE | Direction Générale des Ressources en Eau |
| GEF | Global Environment Facility |
| GH | Ghana |
| GLOWA | Global Change and the Hydrological Cycle |
| GoGeBa | **Go**uvernance et **ge**stion communale des petits **ba**rrages au Burkina Faso |
| GVP | GLOWA Volta Project |
| ICRISAT | International Crops Research Institute for the Semi-arid Tropics |
| IFWF 2 | 2nd International Food and Water Forum |
| INERA | Institut de l'Environnement et de Recherches Agricoles |
| IRD | L'Institut de recherche pour le développement |
| ISFM | Integrated soil fertility management |
| IMPECA | Impacts of gardening on water quality within small reservoirs |
| IUCN | International Union for Conservation of Nature |
| IWMI | International Water Management Institute |
| IWRM | Integrated Water Resource Management |
| KNUST | Kwame Nkrumah University of Science and Technology, Kumasi |
| MoFA | Ministry of Food and Agriculture |
| MT | Management Team |
| NGO | Non-governmental Organization |
| PAGEV | Project for Improving Water Governance in the Volta River Basin |
| PAGIRE | Action Plan for Water Resources Integrated Management |
| PARCODIEau | Participation des Communautés de Base au Dialogue sur les politiques en matière d'Eau |
| PIPA | Participatory Impact Pathway Analysis |
| PN | Project Number |
| RWH | Rainwater Harvesting |
| SAFGRAD | Specialized Office for Promotion of Agricultural Research and Development in the Semi-arid Zones of Africa |
| SARI | Savanna Agricultural Research Institute |
| SEI | Stockholm Environmental Institution |
| UNDP | United Nations Development Program |
| VBA | Volta Basin Authority |
| WRC | Water Resources Commission |
| WVBB | White Volta Basin Board |

## Background

The CGIAR Challenge Program on Water and Food (CPWF) is a research-for-development program that works to increase the productivity of water for food and livelihoods, in a manner that is environmentally sustainable, socially acceptable, and alleviates poverty for all disadvantaged groups. The First Phase of the CPWF ran from 2004-2008, while the Second Phase will run from 2009-2013. In its Second Phase the CPWF works in six river basins (Mekong, Ganges, Limpopo, Volta, Nile, and the Andean Basins System) in the developing world, supporting one or two development challenges per basin. More information about the CPWF can be obtained at www.waterandfood.org.

The table below describes the steps the CPWF is taking to identify basin development challenges (BDCs) and design coherent basin research programs with high probability of making substantial contribution to tackling the BDCs.

**Table 1: Steps the CPWF is taking to identify BDCs and contract research to tackle them**

| Step | Description | Selection/ design criteria | Sources of info / responsibility |
|---|---|---|---|
| 1 | Identify Basin Development Challenge | Broad stakeholder agreement on importance<br>Addresses food and water issues<br>Opportunity for the CPWF to contribute through its core principles (partnership, interdisciplinarity, capacity building, adaptive management)<br>High impact potential after 10 years, with measurable progress after 5 years | Comprehensive Assessment<br>Basin coordinator consultation<br>Basin expert consultations<br>Consultation at the International Food and Water Forum (IFWF 2) in Addis in Nov 2009<br>Basin Focal Projects |
| 2 | Identify opportunities for research to contribute | Build on Phase I research and new opportunities<br>Link and add value to existing research-for-development projects and networks<br>Outcomes likely after 5 years | Phase I project results<br>Basin expert consultations<br>Stakeholder consultation workshops |
| 3 | Design a coherent BDC research program | Research linked to impact through clearly defined and plausible pathways<br>To be contracted as 3 to 5 projects including a coordination function | CPWF MT responsibility, drawing on all other sources of insight and information |
| 4 | BDC research contracted and implementation begun | Projects awarded on merit and with their fit with each other<br>Coherence through agreement on common set of impact pathways at Inception Workshop; final implementation plans, budgets and contracts finalized after Inception Workshop | Inception Workshop |

Step 1 was complete at the time of the workshop. This workshop was the last activity in Step 2. While Steps 1 and 2 have been consultative, Step 3 relies on the CPWF Management Team to synthesize information and insight from various sources to design a Volta BDC research program in which a coherent research agenda is linked to expected impacts.

## Workshop Objectives and Process

The overall objective of this workshop was to consult key stakeholders knowledgeable about the proposed Volta BDC on how research can best contribute to tackling the BDC. In the Volta, the proposed BDC was "Rainwater management and small reservoirs in Northern Ghana and Burkina Faso". A brief description of the proposed BDC, taken from the CPWF's 2010 – 2013 Medium Term Plan, was sent to orientate the participants before the workshop (see Annex 1). Participants were invited to the workshop to provide advice on how research can best contribute to the BDC, thus helping the CPWF Management Team design the BDC research program (Step 3 in Table 1). The

specific objectives are shown in Figure 1 together with the process that was followed to achieve them. The process used elements of Participatory Impact Pathway Analysis (PIPA)[1] and incorporated lessons learned in conducting similar consultations in other basins.

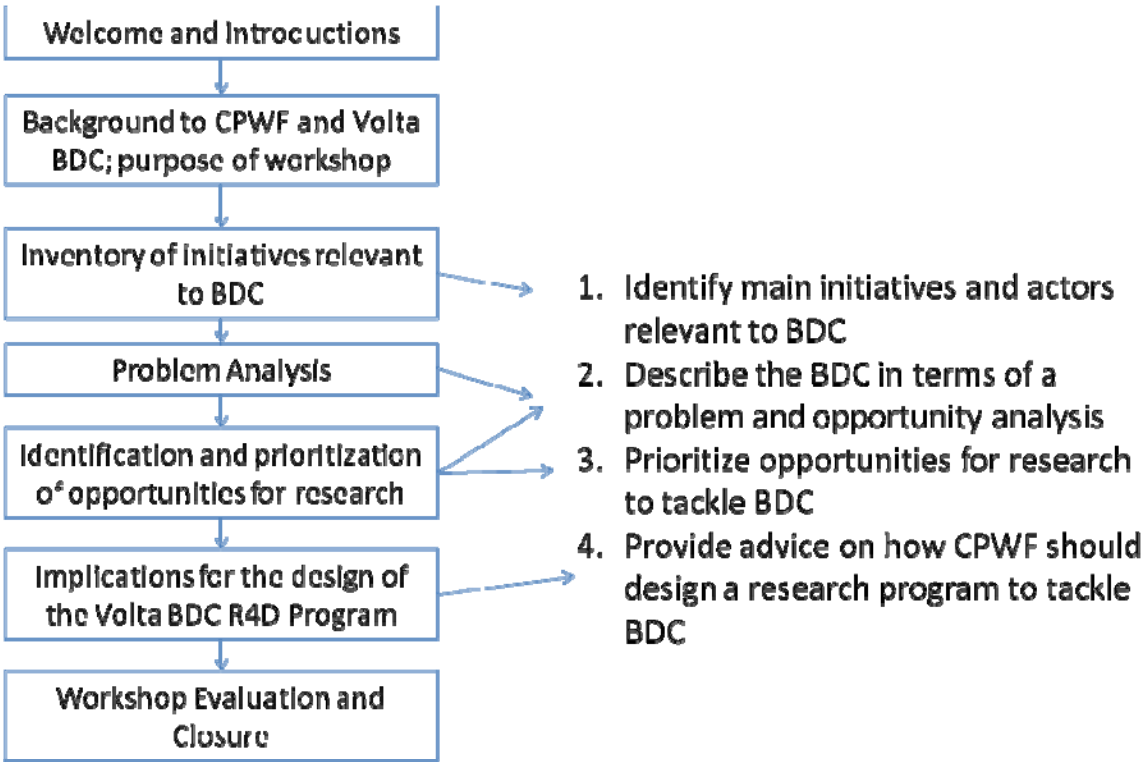



**Figure 1: Workshop Road Map showing process (left) and specific objectives (right)**

The workshop produced the following outputs:

1) Inventory of on-going and planned initiatives, projects and programs related to the CPWF Volta BDC (Annex 3)
2) Problem tree analysis and identified opportunities (Annex 4)
3) Elaborated and ranked opportunities (Annex 5)
4) Synthesis of opportunities for potential basin projects (Annex 6).

A disclaimer was given at the beginning of the workshop that "*Participation in this workshop will not increase or decrease the chances of success in being awarded a Phase 2 project*". While the CPWF wishes to be fair to workshop participants – it also wishes to be fair to those who for one reason or another were unable to join in.

## Workshop Languages

English and French were the working language for the participants during the workshop. English was the more dominant language since there were only very few participants who only understood French. For these a summary translation of what was said was provided. Once the participants were in their break-out groups, they used their preferred language for discussions and clarifications.

[1] Douthwaite, B., Alvarez, B.S., Cook, S., Davies, R., George, P., Howell, J., Mackay, R. and Rubiano, J. (2008). Participatory Impact Pathways Analysis: A Practical Application of Program Theory in Research-for-Development. *Canadian Journal of Program Evaluation.* 22(2) pp. 127–159

## Participation

Fifty people were invited to the workshop, seven sent their regrets, and eight did not attend. Of the 35 participants on the first morning (not including CPWF staff and the facilitator), 28 were male and 7 female, 20 came from Burkina Faso, 10 from Ghana and five from out of the basin. There was representation from government agencies (7), basin organizations (3), NGOs (2), and researchers (21) and farmer organizations (1) and extension (1). Five institute directors attended on the first morning. Alain Vidal, Program Director, Sophie Nguyen Khoa, Associate Director, and Boru Douthwaite, Impact and Innovation Director, represented the CPWF Management Team. Tonya Schuetz, the CPWF Information Manager, facilitated the workshop. Figure 2 shows the workshop participants and they are listed in Annex 2.

**Figure 2: Workshop Participants**

## Workshop organization and venue

The workshop was jointly organized with the Volta Basin Authority (VBA) and the International Institute for Water and Environment Engineering (2iE) provided the venue for the meeting in Ouagadougou, Burkina Faso.

## Introductions

After some welcoming words from the directors of the organizing institutions -- Alain Vidal, Director of the CPWF, Charles Biney, Executive Director of the VBA, and Amadou Maïga, Deputy Director General of 2iE -- the participants got to know each other by sharing their name, institution, and their expectation of the meeting. Then Alain Vidal gave an overview of the CPWF with its history and institutional framework. Boru Douthwaite explained the four steps the CPWF was using to identify and commission BDCs (see Table 1) and how the workshop would contribute to Steps 2 and 3 in particular. To provide a basin context Jacques Lemoalle presented the results of the CPWF Volta Basin Focal Project. Lastly, Sophie Nguyen-Khoa gave an overview of the other Phase 1 projects in the basin and with their relevance to the proposed BDC. The event was also used to share some outputs from Phase I, e.g. like a *comparative study on large scale extension methods used in Ghana and Burkina* prepared by AU SAFGRAD within PN5 *Enhancing Rainwater and Nutrient Efficiency*, or the *Small Reservoirs Toolkit*, an output from PN46, Small Reservoirs Project.

## The Workshop Process

### Inventory of Initiatives (Day 1)

The collection and presentation of on-going and planned initiatives in the Volta Basin relevant to the CPWF proposed BDC started with four invited speakers.

- Volta Basin Authority and GEF/UNDP project by Charles Biney, Executive Director VBA
- IUCN PAGEV Phase II by Kwame Ababio, Program Director PAGEV II
- Volta Observatory including Volta Hycos by Jacob Tumbulto, Director Volta Observatory
- GLOWA Volta Project Phase III by Barnabas Amisigo, Ghana Water Research Institute
- GoGeBa Project by Christian Etongo Ilengo, BD-Koubri, Burkina Faso (NGO)

Presenters addressed the following questions in five to seven minute talks, followed by questions from participants:

1) What is already happening in the Volta Basin relevant to the BDC, or about to happen?
2) Who is doing it?
3) What are the gaps? What are the opportunities for research to tackle the BDC, which are not already being taken?

Other participants volunteering to talk about initiatives they knew about and/or they are involved in. The following initiatives were presented:

- Alliance of a Green Revolution for Africa (AGRA) by Seraphine Sawadogo-Kabore, INERA
- African Monsoon Multidisciplinary Analysis (AMMA) by Harouna Karambiri, 2iE
- White Volta Basin Board (WVBB) by Aaron Arduna, WRC
- PAGIRE (IWRM) by Jacqueline Zoungrana, DGRE
- Programme Nationale – Approvisonnement eau potable et assainissement by Jacqueline Zoungrana, DGRE
- PARCODIEAU by Abdramane Sow, University of Ouagadougou

In order to ensure that all the initiatives were captured, participants were asked to fill out a table (see table 2 below. Annex 3 shows all the submitted initiatives.

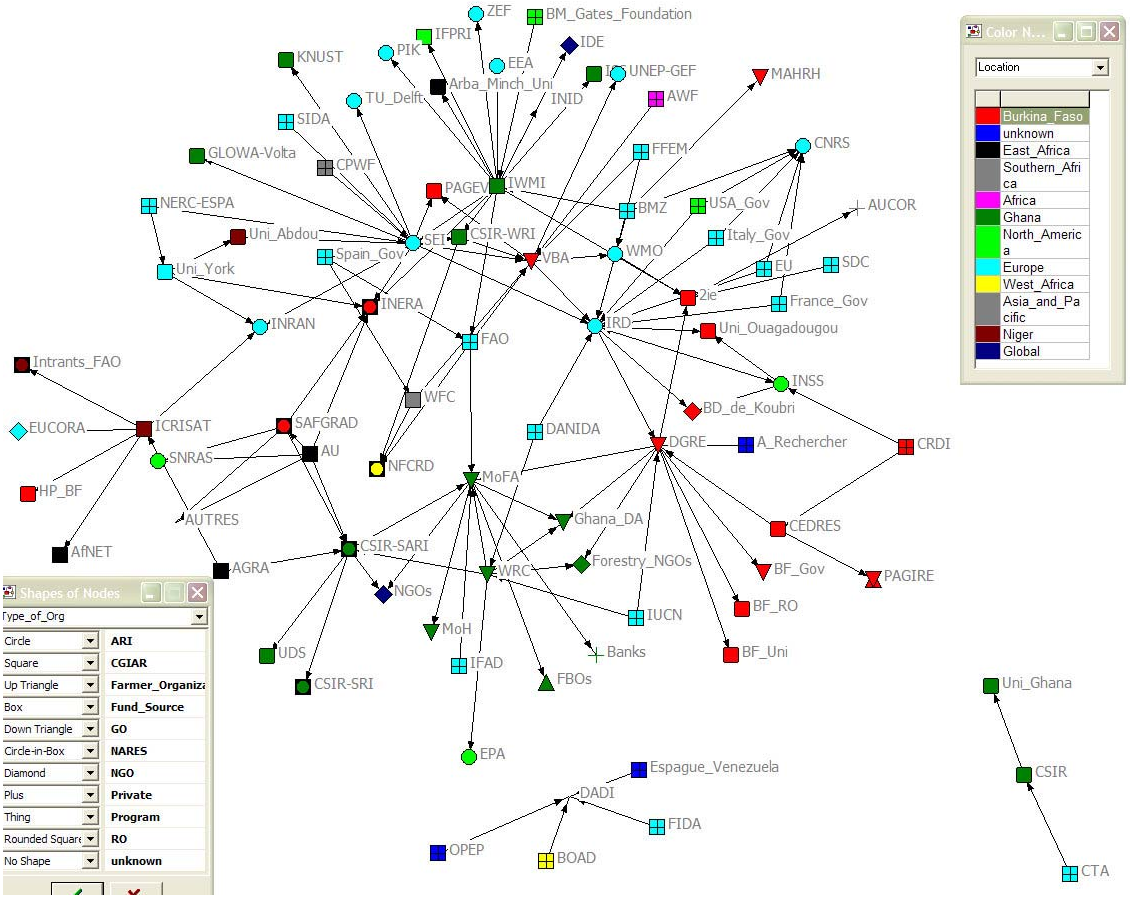
**Table 2: Inventory of initiatives relevant to the CPWF Volta BDC**

| Title of project | Description what&where | Start date | End date | Funding agency | Lead organization | Partner organizations | Budget | Linkages to CPWF Phase 1 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

From the table of initiatives (i.e., from the data in columns 5, 6 and 7) we were able to plot a network map (Figure 3) that shows organizations linked together by the initiatives on which they are jointly working. As such the map provides a visualization of the institutional landscape in which the CPWF's BDC research needs to fit and add to. Any new projects that the CPWF chooses to support to tackle the BDC should take into account, complement and potentially link on-going and planned initiatives and the organizations leading them and who are centrally involved. Centrally-involved organizations in the map are the ones nearest the centre with the most links. The map shows a

network with many central organizations based in the basin (in Ghana and Burkina Faso) with links to a large number of European research organizations and donors.

**Figure 3: Network map of organizations working on initiatives related to the Volta BDC**



## Problem trees and opportunities (Day 1)

Participants were introduced to causal analysis through constructing problem trees. By asking several times why a problem is happening, each group arrives at a problem that can be tackled by research, and thus an opportunity for the BDC to make a contribution. The main problems that each group started with were the first three boxes on the right hand side of Figure 4. The problems were pre-determined by CPWF team. The participants were then asked to separate into four groups with a mix of different stakeholder categories (representatives from government agencies, basin organizations, NGOs, researchers, farmers and extension services) to begin developing their problem trees. Two groups spoke French and two spoke English. See Table 3 for the groups' composition. See annex 4a, 4b, 4c, and 4d for each group's problem tree.

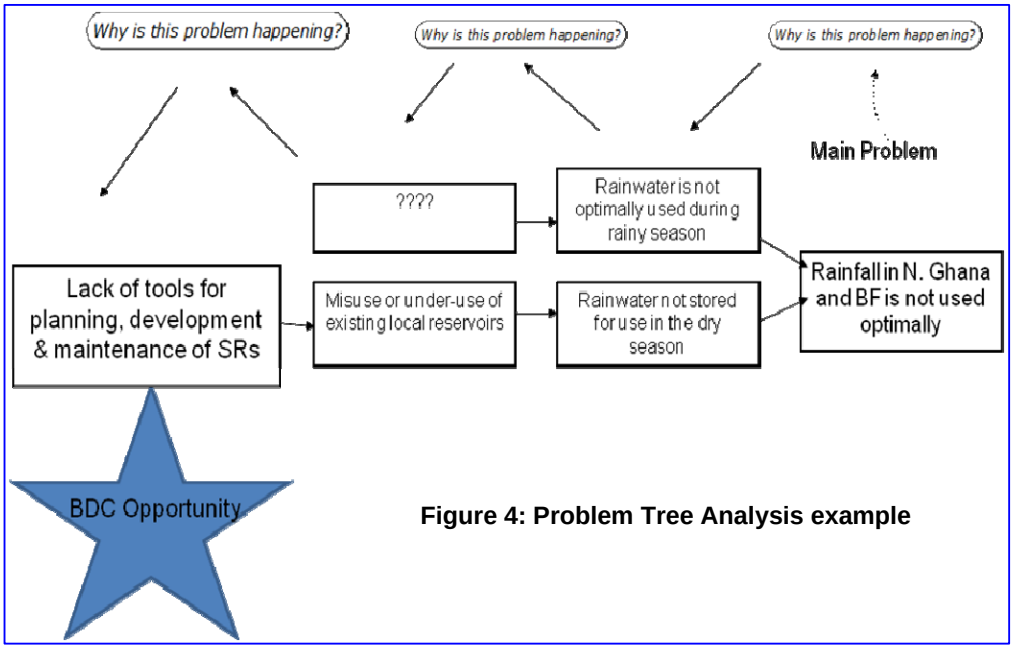



**Figure 4: Problem Tree Analysis example**

**Table 3: Group composition**

| Group I | Group IV |
|---|---|
| Eddie Kofi Abban | Bruno Barbier |
| Mathias Fosu | Christian Etowgho |
| Alice Addah | Devaras de Condappa |
| Linda Kapeon | Jean Philippe Venot |
| Barnabas Amisigo | Salam Richard Kondombo |
| Jennie Barron | |
| Boru Douthwaite | |

| Group II | Group III |
|---|---|
| A.R.Z. Salifu | Jacques Lemoalle |
| Jacob Tumbulto | Gnoumou Haona |
| Frank Annor | Dembele Youssouf |
| Serafine Sawadogo Kabore | Sow Abdramane |
| Philippe Cecchi | Karambiri Harouna |
| Yousoupha Mbengue | Dougbedji Fatoadji |
| Aaron Aduna | Herve Levite |
| Winston Andah | Zoungrana Jaqueline |

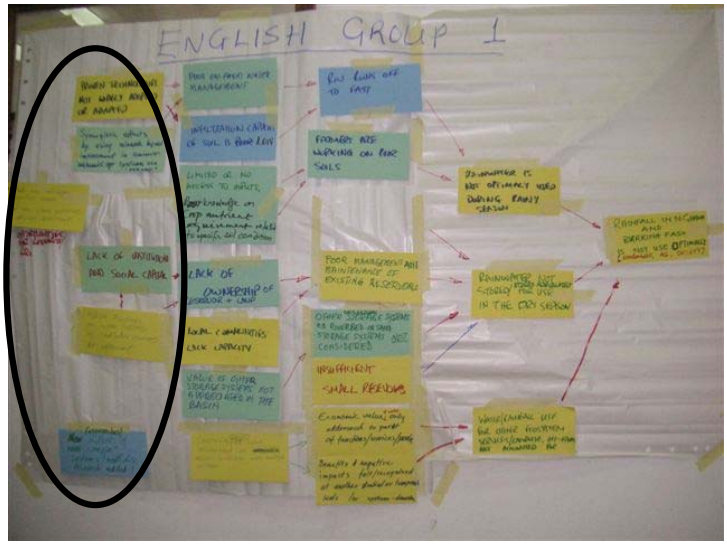



**Figure 5a (above): Group I discussing and figure 5b (right) their problem tree.**

The last activity of the day was to ask participants for their suggestions for improvements or what they liked of the day.

## Elaboration and prioritization of opportunities (Day 2):

After a quick check-in in the morning, participants were asked to describe the BDC opportunities identified in the causal analysis (see oval in Figure 5b), as well as other opportunities, in a table (Table 4).

**Table 4: Opportunities for research**

| Opportunities description | Role of research in making it happen | Actors involved | Geographic location |
|---|---|---|---|
| Develop tools for better planning of SRs | Research to develop tools that help engineers to holistically address the technical problem of building a SR | MoFA UER, WVBB, WRC, WRI, IWMI, IRD, TUD, … | Zibilla, Upper East Region, Ghana |
| … | | | |
| Apply tools from the SR toolkit | Test, adjust and improve the developed tools | … | Koubri |

All the groups then presented the opportunities they had identified, and discussed similarities or differences with other groups. Participants were then asked to vote for the opportunities they thought were most important in terms of 1) the need for further research and 2) impact potential. Each participant was given three green dots for 'importance' and three orange dots for 'impact potential' which they were free to distribute as they wished. The scoring of all opportunities is given in annex 5.

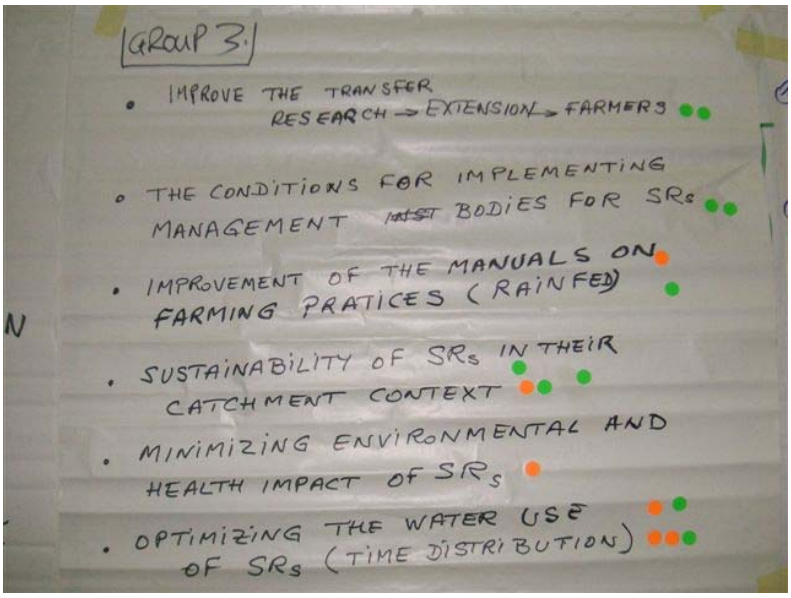



**Figure 6: Group III list of elaborated and prioritized opportunities.**

## CPWF BDC Proposed Research Program (Day 2)

During lunch the CPWF MT grouped the identified opportunities in five areas:
1. Rainwater Management
2. Small Reservoirs Management
3. Groundwater Management
4. Landscape analysis & management
5. Outreach, Learning and Innovation

Sophie Ngyuen-Khoa presented the groupings to participants as potentially providing the focus of five BDC projects. Participants commented on the groupings and changes were made. The five potential research areas are given in more detail in Annex 6.

## Next Steps

Finally, Boru Douthwaite told participants what to expect after the workshop:

- The workshop report will be shared with the participants and people invited who could not attend the workshop themselves, encouraging them to give feedback or share comments. Key workshop results will be available on the CPWF website for everybody to access.
- The CPWF Management Team will use the information and insights from this workshop, together with our sources, to design a research program to tackle the BDC.
- The Volta BDC research program will be contracted in 2010 as three to five projects until the end 2013 which is the end of CPWF Phase II.
- Three contracting mechanisms will be considered, depending on what is most appropriate for each project. The mechanisms are open competition, restricted competition and direct commissioning.

The expectation is that the Volta BDC research program will receive an average annual budget of approximately USD1.3m a year.

## End of Workshop Evaluation

Before the official closure participants were asked to do an end of workshop evaluation by writing on cards what they liked and thought worked well and how elements of the workshop could be improved for the Limpopo stakeholder consultation workshop the following week. A lot of positive feedback was given on the approach and the organization and the quality of the translation, whilst translations also seem to have been a point of improvement. See for detailed feedback Annex 7: End-of-workshop Evaluation.

# Annex 1: The CPWF Volta Basin Development Challenge Summary[2]

***'Rainwater Management and Small Reservoirs in Northern Ghana and Burkina Faso'***

Institutional and technical mechanisms to develop, maintain, and sustain small reservoirs and other rainwater management approaches to improve the livelihoods of the poor in the dry-lands of Southern Burkina Faso and Northern Ghana, taking into account implications for downstream users.

**Volta CPWF Phase 1 Lessons learned**

CPWF Phase 1 Volta work identified several policy and development demands that require research inputs:

- Rainwater management systems and frameworks that can be scaled up to basin levels.
- Methods for integrating rainwater harvesting (RWH) technologies with other, water productive food crops.
- Assessments of the likely impacts of upstream RWH development on downstream water use.

CPWF Phase 1 research suggested several policy and Development Challenges. Consultation with stakeholders, reference to CPWF projects and the literature, suggested that the Phase 2 focus in the Volta should be on **trying to ameliorate water scarcity problems in the basin's dryland areas. This should be achieved by building on its Phase 1 small reservoirs and increasing rainwater management work**. The aim is to improve the resilience and livelihoods of the people and ecosystems in this area. Research will focus primarily on Ghana and Burkina Faso.

**The outcomes and impacts sought**

If this Development Challenge is successfully addressed, then community-level institutions will be strong enough to manage and maintain small reservoirs designed for multiple uses. Communities of small reservoir users will be able to allocate reservoir water effectively and fairly, particularly with regard to allocations to women, to maximise the social benefits of these excavations. A well-designed rainwater management system will support small reservoir management and maintenance. Under this system, the interaction between local and district-level institutions will be strengthened and mutually supportive. Such institutions will be embedded in a cross-border administrative system that serves to both enable and fortify them. Previously failing small-reservoir management systems will be reversed.

**The research**

For the Volta the research is proposed to be done in three projects addressing the Basin Development Challenge

- **Project on small reservoirs and other approaches to improved rainwater management**: This project focuses on research around rainwater management, agricultural system design, irrigation, and small reservoir management.
- **Project on institutions and governance:** This project focus on research on the institutional and governance aspects of small reservoirs with complementary questions for other rainwater management practices.
- **Project on coordination**: A separate project is foreseen to foster coordination across projects in a basin.

Note that the BDCs for Limpopo, Nile and Volta basins have much in common.

[2] Sent to participants prior to the meeting

## Annex 2a: List of Participants BDC Volta River Basin Workshop, Ouagadougou, Burkina Faso, 25-26 Nov 2009

| Name | Institution | Address | e-mail | Stakeholder Category | Country |
|---|---|---|---|---|---|
| Christian Etongo Ilengo | BD-Koubri, Burkina Faso (NGO) | GoGeBa project member | barkoubri@liptinfor.bf | NGO | Burkina Faso |
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| Jacob Tumbulto | VBA, Volta Observatory Director | | j.tumbulto@abo-volta.org, jwtumbolto@gmail.com | gov./basin | Burkina Faso |
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| Barnabas Amisigo | CSIR-WRI and GLOWA Volta Project | 00233-24-3-947476 | barnyy2002@yahoo.co.uk | research | Ghana |
| Eddie Kofi Abban | *Fisheries, Independent Consultant NGO, formerly CSIR-WRI* | *00233-20-8207380, 021-768310* | eddie_abban@hotmail.com | research | Ghana |
| Jean-Philippe Venot (for Boubacar Barry) | IWMI, International Water Management Institute, Ghana | | J.Venot@cgiar.org | research | Ghana |
| Frank Ohene Annor | KNUST, Kwame Nkrumah Univeristy of Science and Technology, Kumasi | 00233-24-912-9987 | annorfrank@yahoo.co.uk | research | Ghana |
| Alice Addah | Irrigation farmers | 00233-24-446-9968 | n.a. | farmer | Ghana |
| Linda Kapeon | MoFA, Ministry of Food and Agriculture, Bolgatanga | | n.a. | extension | Ghana |
| Aaron Aduna | WRC, Water Resources Commission, Bolgatanga, representative of the WVBB, White Volta Basin Board | 00233-208234442, 00233-242074137 | aaronaduna@yahoo.com | gov. | Ghana |

| Name | Institution | Address | e-mail | Stakeholder Category | Country |
|---|---|---|---|---|---|
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| Matthias FOSU | CSIR-SARI Savanna Agricultural Research Institute | Tamale | mathiasfosu@yahoo.co.uk | research | Ghana |
| Dougbedji Fatondji; | ICRISAT, International Crops Research Institute for the Semi-arid Tropics | PO Box 12404, Niamey, Niger, Tel: (+227) 20 72-26 26/ -25 29- office (+227) 20 75 54 75, (+227) 93 91 99 29 Mobile | d.fatondji@cgiar.org, d.fatondji@gmail.com | research | Niger |
| Herve Levite | IWMI, International Water Management Institute, Burkina Faso | | h.levite@cgiar.org | research | Burkina Faso |
| Mme GNOUMOU Awa | Ministere des ressources Animales | | | Government Agency | Burkina Faso |
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| Devaraj de CONDAPPA | SEI, Stockholm Environmental Institution, associate | | devaraj.de.condappa@googlemail.com | research | India |
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| Sophie N.K. | CPWF, Challenge Program on Water and Food | | s.nguyen-khoa@cgiar.org | research | Sri Lanka |
| Boru Douthwaite | CPWF, Challenge Program on Water and Food | | b.douthwaite@cgiar.org | research | Philippines |
| Tonya Schuetz | CPWF, Challenge Program on Water and Food | | t.schuetz@cgiar.org | research | Sri Lanka |
| | | | | | |

| Name | Institution | Address | e-mail | Stakeholder Category | Country |
|---|---|---|---|---|---|
| **Wed. Morning Session** | | | | | |
| Gnissa Konate, Director | INERA, Institut de l'Environnement et de Recherches Agricoles | 04 BP 8645 TEL: 34-40-12/34-02-70 FAX: 34-02-71 | inera.direction@fasonet.bf | Research, Government Agency | Burkina Faso |
| Amadou Maïga, DDG | 2iE Group International Institute for Water and Environment Engineering | *01 BP 594 Ouagadougou 01, BURKINA FASO, Phone : (+226) 50 30 20 53 ou 50 30 71 16/17* | | | Burkina Faso |
| Mme GNOUMOU AWA | Ministere des ressources Animales | | | Government Agency | Burkina Faso |
| Monsieur Jean-Marc LEBLANC | *IRD,* L'Institut de recherche pour le développement, Burkina Faso *Director* | | jean-marc.leblanc@ird.fr | Research ARI | Burkina Faso |
| Ahmed ELMEKASS | Coordinator Of African Union SAFGRAD African Union Semi Arid Africa Agricultural Research and Development | | elmekassa@yahoo.com | International Organization | Burkina Faso |

## Annex 2b: Process for selecting participants

The CPWF provided the organizers of the workshop with the following specifications:

- A workshop of between 25 to 30 people, not including CPWF staff and the facilitator [Reason: balance between expense and receiving advice from a wide range of actors];
- Equal representation from Ghana and Burkina Faso. [Reason: Phase I worked in both countries and both countries will be included in Phase II]
- Participants should come from the main stakeholder groupings identified in Phase 1, namely, researchers (from inside and outside the basin), extensionists, NGOs, basin organizations, government agencies, farmer groups. [Reason: success of the BDC research program will depend on the participant of next users, end users and politically important actors as well as researchers, therefore they should be consulted at the design stage]
- Participants should be knowledgeable about the BDC [Reason: to allow them to participate meaningfully]
- Organizations that played a central role in Phase I in the area of the BDC should be represented [Reason: Phase II intends to build on Phase I research and partnerships, although not exclusively]
- There should be gender balance [Reason: Ensure diversity and representativeness of workshop output]

The method used was to draw up an initial list of 80 people from Phase I documentation (project implementers and participants in CPWF workshops). Four people – the CPWF Phase 1 Basin Coordinator, the Executive Secretary of the VBA, the Volta Basin Focal Project leader, and the workshop facilitator – then scored each person in terms of their potential contribution to the workshop. The scores, together with the CPWF design specifications, informed the final selection of participants.

## Annex 3: Inventory of on-going or planned initiatives

| Title of Project | Description, summary what and where | Start Date | End Date | Funding Agency | Lead Organization | Partner Organizations | Budget | Linkages to CPWF Phase 1 |
|---|---|---|---|---|---|---|---|---|
| Adapting to climate change in drylands: the re-greening of Sahel as potential success case | Research into driving processes and conditions enabling the regreening in SE Niger and Burkina (Yatenga) | 1 Jan 2010 | 31 Dec 2014 | SIDA (SAREC) | Stockholm University/ Stockholm Resilience Center | INERA (BF)<br>University Abdou Moumoni<br>INRA (Niger) | | Transdisciplinary research on positive development trajectories of agroecosystem with potential water limits in Sahel. |
| AGRA Microdose | It is a development project implemented in Niger, Burkina Faso, and Mali, aiming at improving livelihood at household level by increasing the level of fertilizer use to increase food production. The warrantage system should be incorporated to help farmers benefit from the outcome of the effort | 2009 | 2012 | AGRA | ICRISAT | INERA, Burkina<br>INRAN, Niger<br>FAO Intrant Project<br>EUCORA, Mali<br>AfNET (TSBF-CIAT)<br>Hunger Project (BF) | $11.5 M | One of the technologies tested are selected for scaling out during the course of the phase as being applied at a large scale. However these technologies need further improvement as research questions arising from their implementation need to be addressed. |

| Title of Project | Description, summary what and where | Start Date | End Date | Funding Agency | Lead Organization | Partner Organizations | Budget | Linkages to CPWF Phase 1 |
|---|---|---|---|---|---|---|---|---|
| ALG III | Construction of 4 reservoirs<br>Implementing 145 ha of irrigated command area<br>Supplying water to livestock<br>Increasing ag. production | 2003 | 2009 | BOAD | DADI | | 4.591 M. FCFA | |
| AMMA Multidisciplinary analysis of the African Monsoon | Water cycle study (atmosphere, ocean, land)<br><br>Development of prevision and decision support tools | 2002-09 2010-20 | (Phase 1) (Phase 2) | EU; France; USA; UK: Germany; Italy | CNRS; IRD (France) | More than 50 partners (USA, Europe, Africa) | | Contact: Jan Polcher (CNRS; Paris 6) |
| ASTI-Fish (Agriculture – Science and Technology – Innovation Systems) Ref Fisheries | Studies Policies, Programmes and Projects to identify encouragements for innovations among actors of industry. Identifies and recommends actions for linkages among actors for better economic operations. | Jan 2009 | Dec 2009 | CTA | CSIR-Ghana | University of Ghana | Not sure 350000 EUR or 350000 EUR | Networks built in implementation of CP34 was fundamental in execution of ASTI-Fish in Ghana and Innovations. |
| AWM Solutions Project | Identifying AWN interventions, in particular:<br>1. Studying management and governance relate to SR and VB<br>2. Approaching management and opportunities/ constraints of SR in a multi-level perspective (local/ watershed/ national)<br>Opportunity analysis and potential impact assessment of agricultural water management interventions in SSA and SA at multiple scale.<br>SEI leads watershed work in three site (one is in BF) | Jan 2009 | Jan 2012 | Gates Foundation | IWMI | FAO<br>SEI<br>IFPRI<br>IDE<br>INERA<br>2iE<br>INID | 7.5 M. USD | Study of small reservoirs at watershed scale |

| Title of Project | Description, summary what and where | Start Date | End Date | Funding Agency | Lead Organization | Partner Organizations | Budget | Linkages to CPWF Phase 1 |
|---|---|---|---|---|---|---|---|---|
| Boosting maize yield in Ghana through large scale adoption of ISFM | Project will widely disseminate ISFM and increase fertilizer use through linkages with farmers association and agro-input dealers. Location is northern Ghana.<br>Project will also train farmers association and agro-input dealers and develop fertilizer recommendation for maize and grain legumes. | Jul 2009 | Dec 2012 | AGRA | SARI | UDS<br>SRI<br>MoFA<br>NGOs | $1.5 M. | Fertilizer microdosing in northern Ghana Increasing rainwater productivity through increased soil fertility |
| Eutrophication and siltation of water infrastructures in west Africa | Water quality of Small reservoirs<br>Nutrient transportation and risks of eutrophication<br>Siltation | 2000 | 2005 | Swiss cooperation | 2iE (ESTER-EIHER Group) | Nonce | | Contact: A.H. Maiga Amadou.hama.maiga@2ie-edu.org |
| Evaluating siltation of Small reservoirs | A lot of small reservoirs have been built but many are silted<br><br>Why and how does siltation takes place?<br><br>Proposition of action/solution to limit siltation | 2010 | 2013 | NONE. *(This is request for a project)* | DGRE;MAHRH | Government<br>University<br>Research Institute (2iE) | 100 M. (CFA??) | Research opportunities<br><br>Enhance surface water supplies and efficient use of surface water resources |
| Faso MAB | Basis for an atlas of lakes and reservoirs in Burkina Faso | 2007 | 2009 | IRD | IRD<br>Philippe Cecchi (IRD)<br>philippe.cecchi@ird.fr | INSS (BF)<br>DGRE (BF) | 15000 EUR | output |
| GoGeBa | Governance and management of small reservoirs | 2007 | 2009 | CRDI/ IDRC | INSS<br>Aude NIKIEMA<br>nikiaude@yahoo.fr | IRD<br>University of Ouagadougou<br>NGO “BD” | 100000 CAD | output |

| Title of Project | Description, summary what and where | Start Date | End Date | Funding Agency | Lead Organization | Partner Organizations | Budget | Linkages to CPWF Phase 1 |
|---|---|---|---|---|---|---|---|---|
| IMPECA | Impacts of gardening on water quality within small reservoirs | 2007 | 2009 | DANIDA | IRD, Philippe CECCHI, philippe.cecchi@ird.fr | DGRE<br>INSS<br>University of Ouagadougou<br>NGO "BD" | 11100 0 EUR | output |
| Improvement of methods for the designs of reservoirs | In BF, there is a policy for the supply development of surface water resources to increase agricultural production<br><br>A lot of reservoirs are constructed but about a third of them are washed away with the first rains (there is a problem of design) | 2010 | 2011 | NONE. *(This is request for a project)* | DGRE | Government<br>University<br>Research Institute (2iE) | 200 M. (CFA??? ) | Research opportunities<br>Sustainability of small reservoir<br>Optimizing use of water resources during the dry season |
| Inventory and characterization of technologies on rainwater management | Burkina Faso and Ghana | 2010 | 2011 | African Union | AU/ SAFGRAD | INERA<br>SARI<br>AUTRES<br>SNRAS | | |
| IWRM Interventions | Setting up the management structure | 2005 | 2006 | DANIDA | WRC (Water Research Commission_ | District Assembly<br>MoFA<br>SARI<br>EDA | | Water governance and modeling |
| Land conservation and smallholder rehabilitation project (LACOSREP) | The project head office was the Ministry of Food and Agriculture (MoFA), UER, Ghana. It was implemented by rehabilitation and construction of dams in the UER. The following components were implemented:<br>1. Agricultural development that implements technologies in crops, livestock, fisheries, and soil and water conservation<br>2. Water resources development (this implemented about 70 dams) and establishment of Water User's Association (WUAs) in each dam sites | 1997 | 2006 | IFAD | MoFA | Banks<br>NGOs<br>Ministry of Health<br>District Assembly | | Provided sites and staff for research studies by CPWF |

| Title of Project | Description, summary what and where | Start Date | End Date | Funding Agency | Lead Organization | Partner Organizations | Budget | Linkages to CPWF Phase 1 |
|---|---|---|---|---|---|---|---|---|
| | 3. Credit component supported (credit for both on farm and off farm activities)<br>4. Monitoring and evaluation component | | | | | | | |
| PABSO | Construction of Bottom valley scheme<br>Creation of work opportunities for local producer | 2007 | 2009 | German cooperation | MAHRH (ministry of agriculture) | | 2.489 M. FCFA | |
| PAGEV | Transboundary water management in its second Phase | 2004 2009 | 2008 2013 | IUCN | WRC<br>DERE | MoFA<br>Forestry<br>NGOs<br>District Assembly | | Governance and modeling |
| PARCODIEAU *participatory community dialogues on water _ policies in Burkina Faso* | *Action research on the participation of local leaders in institutionalizing decision making with respect to use of water resources*<br><br>mail: parcodieau@yahoo.fr | Oct. 2005 | Sept. 2008 | CRDI | CEDRES<br>University of Ouagadougou | S/P PAGIRE<br>DGRE | | |
| PIAME | Capacity building of target groups (animation, sensibilisation)<br>Intensification and diversification of ag. production through control/management of water | 2007 | 2009 | Spain/Venezuela coop *(via FAO)* | DADI | | 2.885 M. FCFA | |
| PIGEPE | Intensification of agricultural production<br>Capacity building of local producers<br>Increasing income of the poorest agricultural households | 2008 | 2015 | IFAD, OPEP | DADI (Ministry of agric) | | 9.361 M. FCFA | |
| Promotion of pump irrigation to support flood-affected farmers | Provision of pumps and inputs to enhance dry season irrigated agriculture; after 2007 floods affected the whole White Volta Basin in all districts of UER (Upper Eastern Region), Ghana | 2007 | 2009 | FAO | MOFA | FBOs<br>District Assembly | | Provide sites for studies on water use |

| Title of Project | Description, summary what and where | Start Date | End Date | Funding Agency | Lead Organization | Partner Organizations | Budget | Linkages to CPWF Phase 1 |
|---|---|---|---|---|---|---|---|---|
| Replenishment and 'supply development' thanks to retention and groundwater recharge techniques | Groundwater resources affected by CC;<br>Poor soils leading to low groundwater recharge | 2010 | 2015 | NONE. *(This is request for a project)* | DGRE | Government<br>University<br>Research Institute (2iE) | 500 M. (CFA?) | Research opportunities<br><br>Enhance surface water supplies for domestic water and environmental preservation |
| Rethinking water storage for CC adaptation in sub-Saharan Africa | | Apr 2008 | Aug 2011 | GTZ/ BMZ | IWMI | ZEF Uni-Boon<br>Postdam Inst. For Climate Impact Research (PIK), Germany,<br>EEA and Arba Minch Uni<br>CSIR-WRI<br>ISSER-Ghana | 1.12 M. EUR | |
| TIVO Project (Volta Tilapia Project) | Genetically improving Volta strain of Nile Tilapia (*Oreochromis niloticus*) for faster growth. Dissemination and management through Volta basin countries. To improve economics of Tilapia culture industry | 2009 | | Govern ment of Spain | FAO<br>WorldFish<br>WRI-Ghana | National Fish Culture Research and Development Institutions of Volta Basin Countries | Initially about 1M USD or EUR | Faster growing starins of *O. niloticus* already improved culture production of fish in reservoirs and will continue especially in drought situations. |

| Title of Project | Description, summary what and where | Start Date | End Date | Funding Agency | Lead Organization | Partner Organizations | Budget | Linkages to CPWF Phase 1 |
|---|---|---|---|---|---|---|---|---|
| Transformation and shifts in production landscapes for livelihood improvements in the Sahel | Partnership building and minor research on biophysical aspect of local regreening. Seed funds to develop longer partnership. | 1 Jan 2009 | 31 Dec 2009 | NERC-ESPA / UK major researc h fund/ | University of York SEI | INERA (BF) University Abdou Moumoni (Niger) INRA (Niger) | | Decouple biophysical condition in particular water impacts and opportunity in regreening areas in Sahel /watershed scale/ |
| UNEP/GEF Volta River Basin Project | "Addressing Transboundary Concerns in the Volta River Basin and its Downstream Coastal Area" is a regional initiative designed to facilitate the integrated management, sustainable development and protection of natural resources of the Volta River Basin within the six riparian countries of Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali and Togo | | | UNEP | | | | |
| VBA Volta Basin Authority | Promotes permanent consultations and provides a focal area where people and representatives of the six riparian countries of the Volta basin meet with a strategic plan. VBA doing a master plan for development of basin. The formation of a Framework of Financial Partners of the Volta Basin, Donors Consultative Group (DCG), stems from a Ministerial resolution in June 2006, which called on the international community to provide support for the VBA, requesting specifically African Development Bank/Africa Water Facility, ECOWAS and France to guide the formal constitution of a Financial Support Group | | | Sida, GTZ, Danida, DFID, World Bank and the Europe an Commis sion. | | ECOWAS/ WRCU France Sida/ IUCN/ PAGEV GLOWA Volta Project UNEP/GEF Volta Volta HYCOS IWMI | | |
| VBA Observatory | Establishment of a computerized system of data management to support decision making | Feb 2009 | Feb 2011 | PAGEV IUCN UNEP | VBA | | 1.2 M. | Information sharing |

| Title of Project | Description, summary what and where | Start Date | End Date | Funding Agency | Lead Organization | Partner Organizations | Budget | Linkages to CPWF Phase 1 |
|---|---|---|---|---|---|---|---|---|
| | | | | GEF | | | | |
| Volta H4WS Phase 1 | | Jan 2006 | June 2009 | French GEF (FFEM) | WMO | VBA countries<br>2iE<br>IRD | 1 M. | Information sharing |
| Volta H4WS (Cont) | | Jan 2010 | Dec 2011 | AWF | VBA | VBA Countries<br>IRD<br>WMO | 1.2 M. | Information sharing |
| WEAP Volta | Continuation of two tasks:<br>1. Implementation/ capacity building within VBA framework<br>2. Improve at the sub-basin scale so as to capture sub basin processes such as: (a) rainwater harvesting downstream impact; (b) small reservoir management; (c) multi-level governance.<br>Another opening: collaborate with GLOWA Volta so as to couple their GAMS application with WEAP → addition of an economic dimension → opportunity for bringing "food specialist" around the "WEAP round table" in addition to water specialists | Ongoing: next opportunity: | WEAP training workshop early 2010 | SIDA (PAGEV)<br>CPWF (BFP Volta) | SEI | VBA, PAGEV, IRD, KNUST, TU Delft, possibly GLOWA Volta | | BFP Volta |

# Annex 4: Problem Tree Analysis

## Annex 4a: Problem Tree Analysis Group I

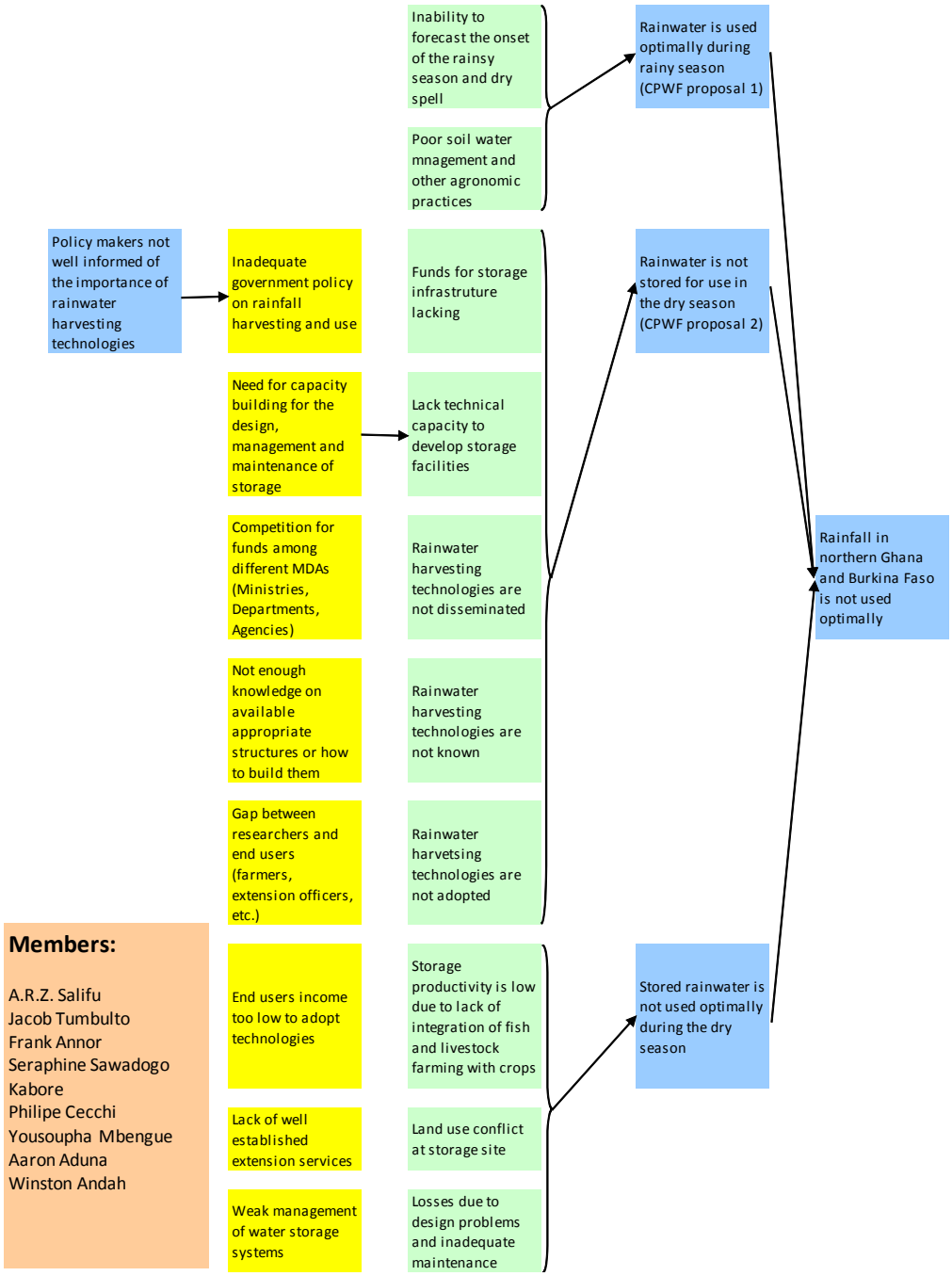
**GROUP 1**


**Members:**

Eddie Kofi Abban
Mathias Fosu
Alice Addah
Linda Kapeon
Barnabas Amisigo
Jennie Barron
Boru Douthwaite

# Annex 4b: Problem Tree Analysis Group II

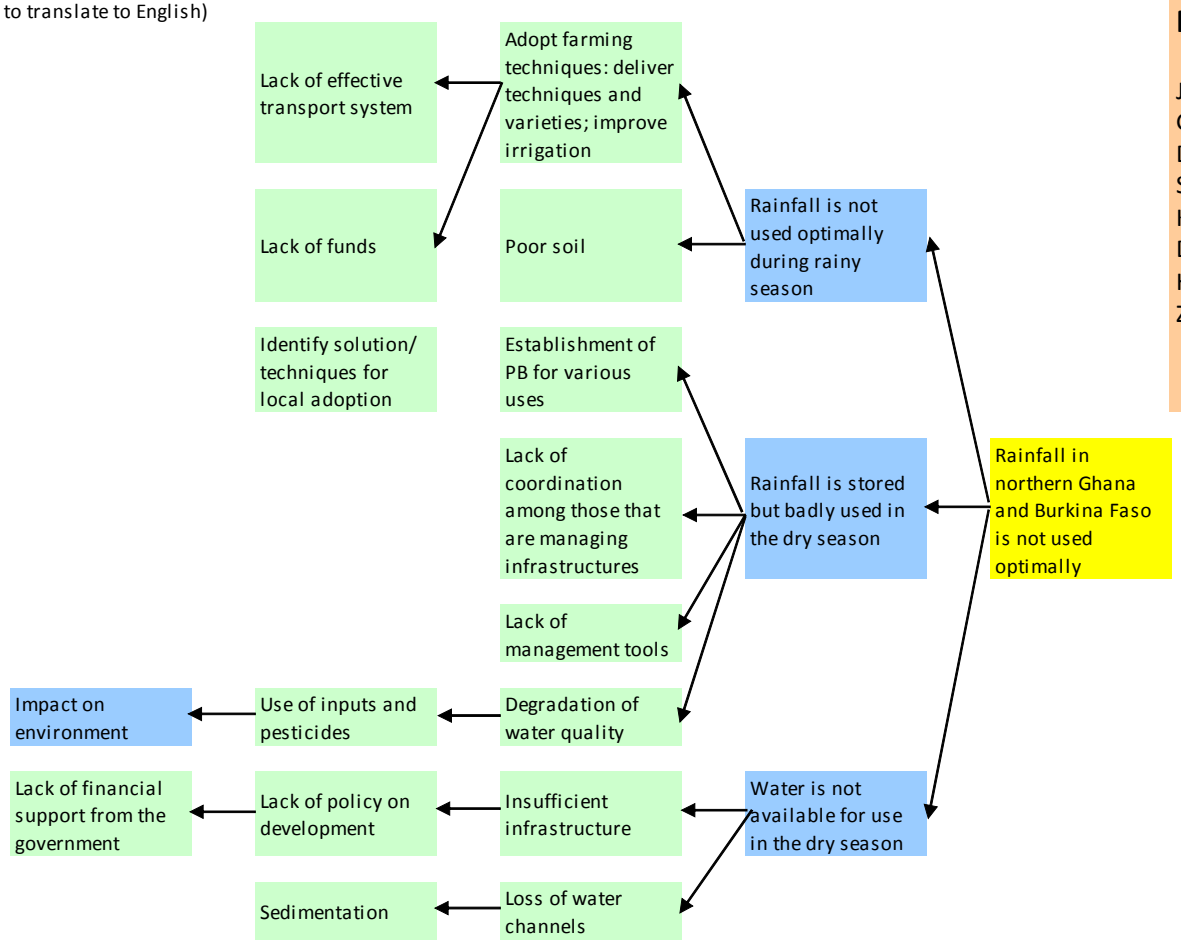
**GROUP 2**



## Annex 4c: Problem Tree Analysis Group III

**GROUP 3**

(tried to translate to English)

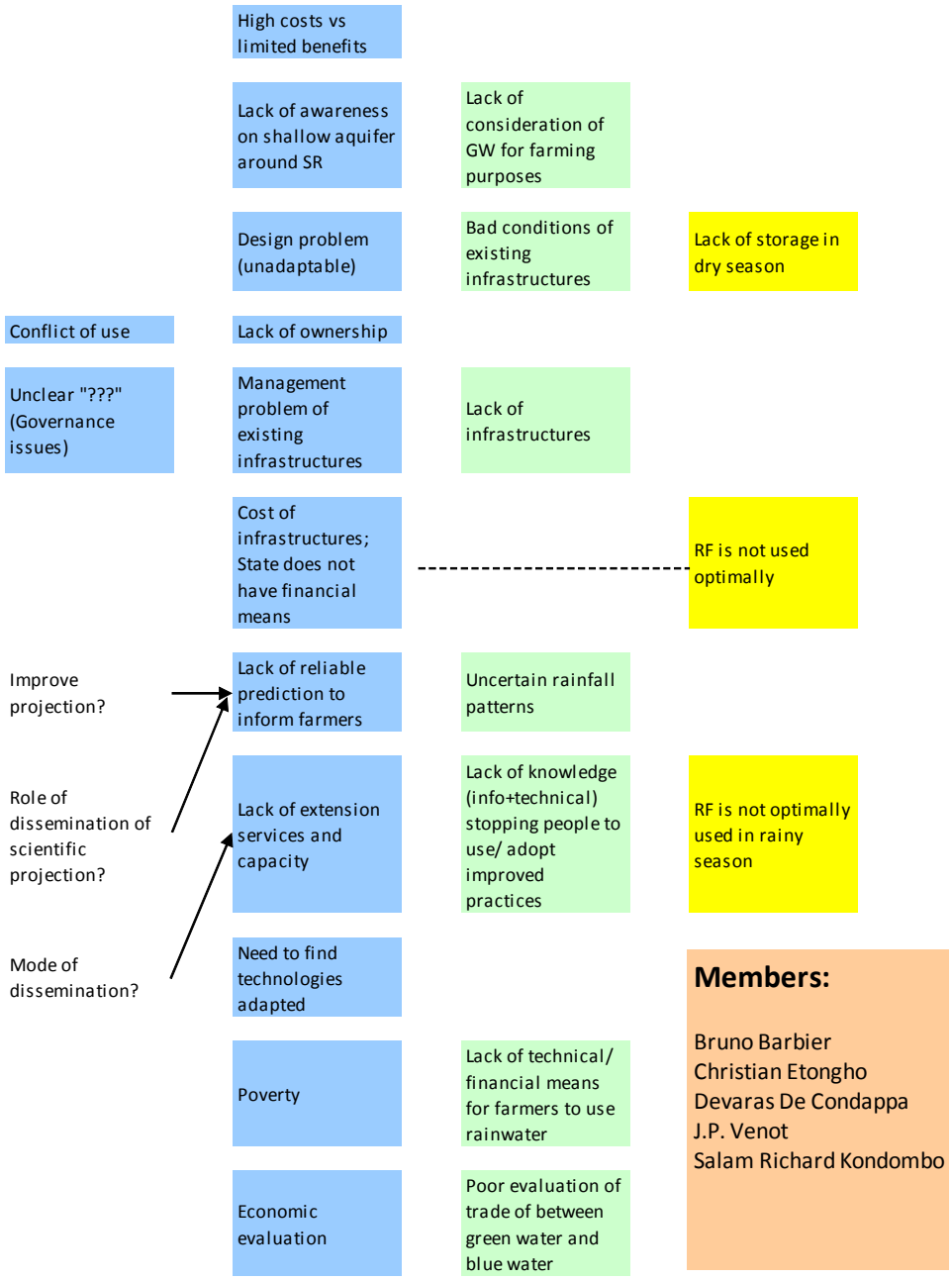



**Members:**

Jacques Lemoalle
Gnoumou Haoua
Dembele Youssouf
Sow Abdramane
Karambiri Harouna
Dougbedji Fatondji
Herve Levite
Zoungrana Jacqueline

## Annex 4d: Problem Tree Analysis Group IV

### GROUP 4



## Annex 5: Scored opportunities

| Theme | Opportunities | Vote | |
|---|---|---|---|
| | | Importance | Impact |
| Rainwater Management | Increase water storage thru promotion of other storage systems in the VB | 3 | 3 |
| | Reducing cost of aquifer use | 2 | 0 |
| | Labor saving development in in-field water harvesting systems | 1 | 0 |
| | Improve rainwater harvesting | | |
| Total | | 6 | 3 |
| Small Reservoirs Management | Reduce cost of SR | 2 | 0 |
| | Improving SR design | 1 | 0 |
| | Improve drainage | 0 | 0 |
| | Evaluate existing designs of SR and management systems & Develop a manual for it | 2 | 1 |
| | Clarifying ownership and management of SR | 4 | 8 |
| | Regenerate pastures around SR | 1 | 2 |
| | Rational use of pastures and water | 1 | 0 |
| | Enhancing crop livestock integration around SR | 4 | 3 |
| | Using SR as livestock management | 0 | 0 |
| | Better management of SR | 0 | 0 |
| | Develop tools to improve multi-purpose use of Small Reservoirs | 3 | 3 |
| | Increase availability of credit for SSF | 0 | 0 |
| | Develop Micro and Macro finance schemes for farmers | 2 | 6 |
| | Transfer of Knowledge between researcher and end users | 1 | 2 |
| | Develop tools for knowledge based capacity building at all levels (basin, national, regional, district, community) | 0 | 2 |
| | Improve extension services | 2 | 1 |
| | Dissemination and Adoption of research outputs | 6 | 5 |
| | To increase adoption &adaptation of AWM interventions and SRs | 1 | 2 |
| | Improve value chain | 1 | 2 |

| Theme | Opportunities | Vote | |
|---|---|---|---|
| | | Importance | Impact |
| | Improving water productivity | 1 | 1 |
| | Improving sustainability of SR in the context of RB | | |
| | Water resources are ill distributed in time. New management tools to put forward these tools to enhance WPY | | |
| | Conflict resolution | 4 | 3 |
| | Understand comparative advantages | 1 | 1 |
| | Develop tools for Water Quality management in SR | 4 | 0 |
| | Enhance opportunity for food production from small reservoirs | 3 | 4 |
| | Conditions of implementation of management institutions around SR Focus on equity, gender and poverty in the framework of IWRM | 0 | 2 |
| | Minimize environmental and health impact | 1 | 0 |
| | Improvement of manuals on farming practices | 1 | 1 |
| | Sustainability of small reservoirs in the catchment context | 1 | 3 |
| | Optimizing the water use of SR | 3 | 2 |
| Total | | 50 | 54 |
| Landscape Analysis & Management | Adaptation to CC through improved water storage | 0 | 1 |
| | Improving the impact of climate predictions | 3 | 3 |
| | Apply developed tools to efficiently forecast rainfall (on-set and dry spells) | 3 | 3 |
| | Improve Soil-Water mgt. and other Agronomic practices | 6 | 6 |
| | Improved technologies on crop water use | 3 | 4 |
| | Better mgmt of production landscapes | 2 | 1 |
| | Technical options (new cropping tech) to improve RWM | | |
| | Research on soils that have soils problems | 2 | 0 |
| | Soil health & water productivity impacts by improved crop-water- nutrient interventions | 0 | 1 |
| Total | | 19 | 19 |

| Theme | Opportunities | Vote | |
|---|---|---|---|
| | | Importance | Impact |
| Groundwater Management | Identify others sources of water for use in the dry season | 5 | 2 |
| Total | | 5 | 2 |

# Annex 6: Research Opportunities in the Volta Basin, Group Discussion Synthesis

**1. Rainwater Management**

**Technical options**

- New and improved rainwater harvesting technologies
- Improved technologies on crop water use
- Improved soil water management
- Improved soil fertility
- Soil, health and water product improve nutrient interventions - Map of nutrient utilization including carbon sequestration, Develop soil test calibration for efficient nutrient use

**Socio-economic options**

- Labor saving in RWH/M systems (R&D and test to reduce labor requirements)
- Improve market and value chain (enhance farmers networking)

**Financial options**

- Increase availability of credit for small-scale farmers (credit for water harvesting)
- Develop micro and macro finance schemes for farmers

**Minimize environmental and health impact**

- Low cost method to determine soil health

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**2. Small Reservoirs Management**

**Multiple uses of Small Reservoirs**

- **Strategies for other water users in and around SR**
  Fish and Livestock strategies in SR – technology transfer from LR to SR
  Enhancing crop-livestock integration around SR
- **Enhanced opportunities for food production in SR**
  Enhance nutritive food production
- **Rational use of water for crop and livestock, fisheries**
  Increased Water Productivity
- **Valuation of water related benefits (direct and indirect)**
  Including valuation of social and ecosystem services and the multi-functionality of water
  Comparative advantages of different water values
  Consider/enhance social and human capital

**Infrastructure design**

**Tools for water quality management**[3]

**Institutions and governance**

- Clarifying ownership and management
- Conflict resolution (e.g. Companion modeling) to enhance use and management of SR
- Consider/enhance social and human capital

[3] Herve Levite (added in an e-mail 08.01.2010): "I think that improvement in design of Small dams with regards to extreme events could be a major contribution although it is not a top priority coming from the discussions (not only water quality page 35)"

**Small reservoirs systems**

- Management of water in the reservoirs and around (considering land use, grazing, etc.)
- Improving sustainability of SR in the context of the catchment and river basin
- Management of reservoirs ensemble: cumulative impact of water use

**3. Groundwater Management**

- **Valorization of shallow groundwater -** Improving knowledge on shallow aquifers
- **Reducing cost of aquifer use -** Improving technologies to capture groundwater

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**4. Landscape analysis & management**

**Management of reservoirs ensemble: cumulative impact of water use**

**Minimize environmental and health impact**

**Land and water interface**

- Land degradation, erosion
- Reservoir siltation

**Promotion to increase catchment/basin water storage**

- Develop and promote other storage options and systems in the catchment and basin

**Adaptation of Agricultural Water Management (AWM)** - Technologies out there already available: how can we leverage them?

**Improving the impact of climate predictions** (evaluate impact, mode of dissemination)

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**5. Outreach, Learning and Innovation**

- **Dissemination and adoption of research outputs**
  Technologies out there already available: how can we leverage them?
- **Transfer of knowledge to end users – esp. from researchers to end users**
- **Improve extension services -** Research on technology transfer

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Color coding:
**Purple highlighted = scored high in importance as well as with impact potential**
Yellow highlighted = scored high in impact potential
Green highlighted = scored high in importance

## Annex 7: End of Workshop Evaluation - Simplified After Action Review

| HOW TO IMPROVE | WHAT WORKED WELL |
|---|---|
| • *Late Start of the first day (2)* ➔<br>• *Second day break long hours which could have discuss more*<br>• *Inventory of initiatives: Add mort time to presentations (plus/min. 10 min.)*<br>• *The inventory of participants felt biased (of course)*<br>• *Synthesis improve by more comprehensive synthesis and clear language*<br>• *Should try x complement with other sources of info a/o consultation with key experts in network*<br>• *The scoring should be done after synthesis of research opportunities (2)*<br>• *Translation to be improved (4)*<br>• *Too much pressure on 'translator'*<br>• *Facilities at conference room and translation*<br>• *Lack of field visit during the 2 days (2) to dams*<br>• *Unclear added value of "problem tree analysis" (use of "criteria" for opportunities selection only)?*<br>• *Basin stakeholders should have more space-time to express their need*<br>• *It would be advisable that the participants know the subject of discussion before the start of the workshop*<br>• *Information sur le Programme de l'atelier*<br>• *A ameliorer: Faire une ceremonie d'ouverture en bonne et due forme (2)*<br>• *Programme atelier*<br>• *Donner plus de temps pour commentaries de l'analyse des questions de recherché* | • *Identification and prioritization of opportunities + + + +*<br>• *Nice place for the meeting + + +*<br>• *All sessions were well monitored, discussion session was well monitored*<br>• *Good translation*<br>• *All participants involved in workshop program activities*<br>• *Participatory (2) approach (3)* ➔ *very good, excellent*<br>• *Approach / pedagogie utliisee*<br>• *Facilitation (3, + + +) and participation – very good*<br>• *Group work excellent*<br>• *Well planned and well executed – merci!!!*<br>• *Structure of meeting and timetable good*<br>• *The process*<br>• *Overall good*<br>• *Good participation and coordination*<br>• *We need more workshops like this*<br>• *Well organized, planned , managed*<br>• *Use of 2 scoring systems*<br>• *Bien vouloir regrouper les réponses aux questions cela permet de gagner du temps.*<br>• *Dans l'ensemble excellente.*<br>• *Identification des opportunités de recherche + + +*<br>• *Opportunités de recherche identifiées par la participation*<br>• *Bravo un programme qui est tourné vers l'impact* |