

INVESTMENT IN AGRICULTURAL WATER MANAGEMENT IN SUB-SAHARAN AFRICA: DIAGNOSIS OF TRENDS AND OPPORTUNITIES

A Collaborative Program

between

**The New Partnership for Africa's Development (NEPAD),
The African Development Bank (ADB),
The Food and Agriculture Organization of the United Nations (FAO),
The International Fund for Agricultural Development (IFAD),
The International Water Management Institute (IWMI),
and
The World Bank (WB)**

INCEPTION REPORT

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LIST OF ACRONYMS

ADB	- African Development Bank
AQUASTAT	- FAO's Information System on Water and Agriculture
AU	- African Union
CAADP	- NEPAD Comprehensive Africa Agriculture Development Program
CCG	- Collaborative Program Core Consultative Group
EAP	- East Asian and the Pacific countries
E&CA	- European and Central Asian countries
FAO	- Food and Agriculture Organization of the United Nations
FARA	- Forum for Agricultural Research in Africa
GDP	- Gross Domestic Product
HIV/AIDS	- Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
IFAD	- International Fund for Agricultural Development
IFPRI	- International Food Policy Research Institute
ILRI	- International Livestock Research Institute
InWEnt	- Capacity Building International, Germany
IWMI	- International Water Management Institute
IWRM	- Integrated Water Resource Management
LAC	- Latin American and Caribbean countries
MENA	- Middle East and North African countries
NEPAD	- New Partnership for Africa's Development
NGO	- Non-Government Organization
SA	- South Asian countries
SC	- Collaborative Program Steering Committee
SSA	- sub-Saharan Africa
UNCED	- United Nations Conference on Environment and Development
USAID-IEHA	- United States Agency for International Development – Initiative to End Hunger in Africa
WB	- World Bank
WG	- Collaborative Program Working Group

FOREWORD

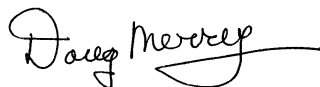
The Collaborative Program on Agricultural Water Investment Strategies in Sub-Saharan Africa: Trends and Opportunities is a unique partnership among quite different institutions, all of whom share the same goal: promotion of sustainable economic growth and poverty reduction in Africa, through enhancing the productivity and profitability of agriculture. We all agree that improving smallholders' access to water, and creating the conditions under which they can use it productively, is one of the key strategies for achieving the common goal.

The partners, in addition to IWMI, are the African Development Bank, the Food and Agriculture Organization of the United Nations, the International Fund for Agricultural Development, the Secretariat of the New Partnership for Africa's Development, and the World Bank. We are determined to work together and make a positive contribution to promoting good agricultural water investments in Sub-Saharan Africa.

This Inception Report has been prepared specifically as part of the Executing Agency Agreement between the African Development Bank and IWMI, which is supporting the implementation of four of the sub-projects or components of the Collaborative Program. But we have written this Inception Report to reflect the larger set of activities being implemented under the Program.

We would like to thank the African Development Bank for its strong commitment and its support for this work. We also wish to thank our other partners for the contributions they are making.

We look forward to producing a product that will lead to greatly enhanced but effective investments in agricultural water development in Africa.



Douglas J. Merrey
Director for Africa
International Water Management Institute

EXECUTIVE SUMMARY

The Collaborative Program on Agricultural Water Investment Strategies in Sub-Saharan Africa: Trends and Opportunities is a joint undertaking of the African Development Bank (ADB), the Food and Agriculture Organization of the United Nations (FAO), the International Fund for Agricultural Development (IFAD), the International Water Management Institute (IWMI), the Secretariat of the New Partnership for Africa's Development (NEPAD), and the World Bank (WB).

The objective of the collaborative program is to review experiences, identify opportunities, and make practical recommendations for innovative investments in agricultural water management in sub-Saharan Africa. The underlying premise is that sustainable economic growth and poverty reduction in Africa can be achieved by enhancing the productivity and profitability of agriculture, both irrigated and rainfed, and by encouraging more investment in the sector.

The idea of launching this program emerged from the deliberations of an international workshop on Agricultural Water Use that was held in June 2001 in Harare, Zimbabwe to discuss and draft a strategy paper on Agricultural Water Use in sub-Saharan Africa. A series of subsequent consultations and interactions among the partner organizations mentioned in the opening paragraph led to the formulation of the present collaborative program that is articulated around the following inter-related components:

- Irrigation project planning and implementation process;
- Constraints and opportunities for private sector participation in agricultural water development and management;
- Health, environment and livestock – with the growing importance of the latter, this component has been broken down into two: Health and environment aspects and Agricultural water and livestock production;
- Agricultural water development for poverty reduction;
- Regional demand for products of irrigated agriculture;
- Assessment of potential for improving agricultural water management;
- Irrigation cost study; and
- Agricultural water use from a river basin perspective.

Individual studies will be carried out on each of the above components broadly through a combination of critical review and analysis of the literature, case studies and scientific scrutiny of real-life experiences, and field work to bridge gaps in knowledge. The findings of these studies will enhance the knowledge base and improve the understanding of experiences and lessons learned from past agricultural water investments, elucidate past trends and future development strategies, analyze constraints, and identify opportunities for overcoming them. They will also provide valuable inputs to NEPAD's *Comprehensive Africa Agriculture Development Program (CAADP)*, which calls for US\$38 billion of new investment in the sector by 2015, to rapidly expand the area under sustainable agricultural water management.

The collaborative program will be implemented over a period of 12 months beginning in January 2004, although preliminary work on some components began in late 2003. The first five components listed above are supported by ADB with IWMI as executing agency. This Inception Report has been prepared in fulfillment of the requirements of the agreement between the ADB and IWMI. The remaining four study components, although not directly supported by ADB but by the other partner organizations, are also covered in this report.

Detailed individual descriptions of each of these component studies including proposed methodology and approach, activities, outputs, work plan and budget, are given in this report. Efforts to exploit synergies, coordinate field work, and harmonize data collection among the various components, thereby rationalizing the use of available resources and facilitating integration, are also highlighted.

The main output of each component study will be a report typically describing the analyses carried out, the lessons learnt from a critical review of the literature and carefully targeted case studies, and the constraints, opportunities and policy-oriented recommendations to promote wiser investments in agricultural water related to that particular component. These component reports will constitute the building blocks for an overall synthesis report that will integrate the lessons and conclusions and make key recommendations for encouraging innovative investments in agricultural water development and management in sub-Saharan Africa. A draft outline and chapter structure for the final synthesis report is included in this inception report.

The main clients of this program are the investment partners, notably the World Bank, ADB, and IFAD, in addition to other donors and investors. Given the expected policy-level outcomes of the collaborative program, special efforts will be deployed to communicate results and discuss findings with decision-makers, donor agencies, researchers, non-government agencies, and other role players. Both print and electronic media will be used. It is expected that all partner organizations will assist in the dissemination of study findings and recommendations to potential users through their extensive communication and knowledge sharing networks: e.g., by the hosting of results and recommendations on their respective web-sites and by providing links to the proposed investment study collaborative program web-site. The scientific credibility of the program will be enhanced by presentations at national and international conferences and the production of peer-reviewed scientific publications.

A high-level Steering Committee (SC) and a Working Group (WG) have been constituted to guide the implementation of the various studies. The Steering Committee will provide overall strategic direction and review the various outputs that will be produced under the collaborative program, including the overall synthesis report. The committee is composed of representatives of each of the collaborating institutions and chaired by a senior representative of NEPAD. The Working Group will ensure the technical quality of the program and consists of nominated representatives of the collaborating institutions. Key decisions (such as selection of specific cases and identification of indicators) and the detailed terms of reference for the various component studies are submitted to the Working Group for review and concurrence.

INTRODUCTION

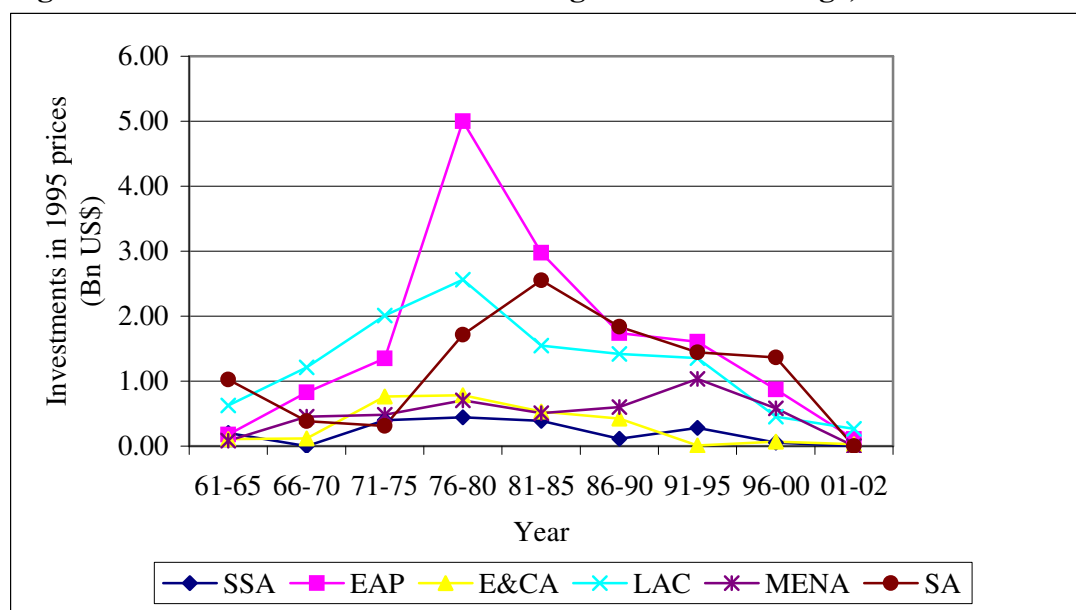
Agriculture is the most important sector of the economy for many countries in sub-Saharan Africa, contributing an average of 30% of total gross domestic product and accounting for 67% of employment in the region. Roughly 80% of the region's poor live in rural areas and are dependent on agriculture for their livelihoods. The population of the region is expected to increase by close to 3% annually to over one billion in 2025. Meanwhile, the Forum for Agricultural Research in Africa (FARA) estimates that to keep up with this increase and achieve food security, poverty alleviation and economic growth in a sustainable way, agricultural contribution must grow at an annual rate of 6% by 2020 (FARA 2003).

Substantial new investments in agriculture are needed to meet targets for poverty alleviation and food security. Meanwhile, FAO estimates that about 75% of the growth in crop production in Sub-Saharan Africa required by 2030 will have to come from intensification in the form of yield increases (62%) and higher cropping intensities (13%), with the remaining 25% coming from arable land expansion (FAO 2000). Since irrigation and other forms of agricultural water management is the key to intensification, it is also clear that much of the required new investment must be in agricultural water development.

Improved management of land and water can make significant contributions to overcoming some of the major challenges confronting sub-Saharan Africa: feeding a growing population, providing opportunities to escape poverty, and achieving sustained economic growth. The ability to identify and make judicious investments in agricultural water use, establish new infrastructure, and improve the performance of existing facilities, will be a key determinant of success. Improving land and water productivity, and increasing poor people's access to water for domestic and productive purposes are critical elements in this process. Ensuring that such developments occur in a balanced and harmonious way within the framework of an integrated and market driven approach to land and water resources management will require research to understand the reasons for past failures and identify the conditions for success.

Historical figures on lending for infrastructure development for irrigation and drainage by region show general declines for all regions with quite drastic cuts in Asia (Figure 1.1). In sub-Saharan Africa (SSA) a decreasing trend is observed from already very low levels of investment. More than turning around the decline, in SSA the issue is how to substantially increase the historically very low levels of spending on irrigation and drainage. The common denominator in the declines and low investments is the disappointing performance of development to date in terms of sustainability and returns on investment. Moreover, the decline in irrigation lending has been matched by declining farm-gate prices for food crops – further depressing returns to investment in agricultural water. That the decline and low level of investment has continued for more than 20 years indicates that the sector has been slow to respond and adapt to change. However, if the decline in investment is to be turned around and increased substantially, innovative approaches to agricultural water development are now required.

Figure 1.1 . Trends in Investments in Irrigation and Drainage, 1961-2002



Sources of data: World Bank, Asian Development Bank, and the Inter-American Development Bank. SSA stands for sub-Saharan Africa, EAP for East Asia and the Pacific, E&CA for Europe and Central Asia, LAC for Latin America and the Caribbean, MENA for Middle East and North Africa, SA for South Asia.

With the above in mind, five international organizations (ADB, FAO, IFAD, IWMI and World Bank) have joined forces with the secretariat of the New Partnership for Africa's Development (NEPAD) in a program intended to diagnose the causes for current trends and identify new opportunities for investment in sustainable, cost-effective agricultural water development in sub-Saharan Africa. The program aims to (a) identify changes in the current global development context related to agricultural water development; (b) identify innovative approaches and technologies for agricultural water use, including water harvesting and water conservation, as well as issues related to institutional and capacity building; and (c) propose better approaches to future agricultural water use development in the region than those of the past, both in terms of implementation and lending. It is expected that the program will contribute to improving the ability of governments to develop appropriate investment strategies for agricultural water use and to catalyze increased investment.

As a first step, a workshop on Agricultural Water Use was organized in Harare, Zimbabwe, from 13-16 June 2001. The objective of the workshop was to discuss and draft a strategy paper on Agricultural Water Use in Sub-Saharan Africa. The workshop brought together over 30 participants from a wide variety of countries and backgrounds, including ministry staff, NGOs, research institutes, universities, and the private sector. In addition, the workshop saw strong representation from international organizations, including ADB, FAO, IFAD, IWMI, and the World Bank. The Harare workshop identified a number of strategic issues concerning agricultural water use that needed consideration. These, somewhat modified after further consultations, included:

- the demand for products of irrigated agriculture;
- approaches to irrigation development planning and implementation;
- private sector investment in agricultural water development;
- agricultural water use from a river basin perspective;
- agricultural water development for poverty reduction;
- costs of agricultural water use development;

- health and environmental aspects; and
- the actual physical potential for improved agricultural water use.

The objective of the collaborative program on “Investment in Agricultural Water Management in Sub-Saharan Africa: Diagnosis of Trends and Opportunities” is to identify opportunities for **innovative** investment in **sustainable, cost-effective** agricultural water management. It is anticipated that this will catalyse more coherent donor interest in the sector. The specific purpose of the program is to contribute to a better understanding of experience and lessons learned from investment over the past two decades, the trends and future development scenarios, as well as the constraints and realistic opportunities for overcoming them. This will be achieved through compilation and critical review of existing literature, as well as limited case studies.

The program is intended to add value to the NEPAD process. The FAO had assisted the NEPAD Secretariat to develop the “Comprehensive Africa Agricultural Development Program” (NEPAD 2003) while the African Development Bank has been assisting NEPAD to formulate an infrastructure investment program that includes water infrastructure. The collaborative program has been designed to support these initiatives by identifying attractive agricultural water investment opportunities and the conditions that would make these feasible.

The program will not limit its review to irrigation investments in the conventional sense. Rather, it will use a broad definition of the subject: in addition to irrigation it will consider the opportunities for improving the productivity of rainfed agriculture through better water management, including both indigenous and modern techniques. The program includes the following eight components:

- i. **Regional Demand for Products of Irrigated Agriculture**, financed and implemented by the FAO.
- ii. **Review of Irrigation Project Planning and Implementation Process**, mainly financed by ADB with co-financing by IWMI and implemented by the latter in collaboration with ADB.
- iii. **Constraints and Opportunities for Private Sector Participation in Agricultural Water Development and Management**, mainly financed by ADB with co-financing by IWMI and implemented by the latter in collaboration with ADB.
- iv. **Agricultural Water Use from a Basin Perspective in sub-Saharan Africa**, proposed to be jointly financed by the World Bank and IWMI and implemented by the latter.
- v. **Study on Agricultural Water Development for Poverty Reduction in sub-Saharan Africa**, mainly financed by IFAD and ADB with co-financing by IWMI, and implemented by IFAD and IWMI in collaboration with ADB.
- vi. **Irrigation Cost Study in sub-Saharan Africa**, mainly financed by the World Bank with co-financing by IWMI and implemented by the latter in collaboration with the World Bank.
- vii. **Health and Environmental Aspects, and Livestock**, which have been split into two studies with the growing importance of livestock and the livestock-water interaction going way beyond environment and health concerns. These components are mainly financed by ADB with co-financing by IWMI and the International

Livestock Research Institute (ILRI) and implemented by both institutions in collaboration with the ADB.

- viii. **Assessment of Potential for Improving Agricultural Water Management in sub-Saharan Africa**, financed and implemented by IWMI together with the International Food Policy Research Institute (IFPRI) through the Comprehensive Assessment of Water Management in Agriculture Program.

The Partners agreed that analysis of the above issues would dissect the overall question that the program aims to address, i.e., how to improve the performance of investments in agricultural water use and thereby catalyze further investment in this sector in sub-Saharan Africa. It was acknowledged that there is a need to review experience and to summarize the lessons learned in respect of each of the above issues, as well as to identify gaps in knowledge and understanding that currently impede the widespread dissemination and operationalization of these lessons. The Program is designed to produce clear evidence-based practical recommendations that the investment community can use. The main clients of this Collaborative Program are the investment partners—especially the World Bank, African Development Bank, and International Fund for Agricultural Development—as well as other donors and investors.

HOW THIS INCEPTION REPORT IS ORGANIZED

The remainder of this report summarizes the components of the collaborative program, starting with those supported directly by the African Development Bank (ADB), and then proceeding to the others. It then goes on to discuss the overall approach to implementation of the components, the roles of the Working Group and Steering Committees that are guiding the process, the planned workshops, and the nature of the main outputs. The last section provides the proposed outline for the overall synthesis report and then followed by a list of references. The annexes at the end of this main report contain the logical framework and Gantt charts of all the collaborative program components.

The Appendices to this inception report include detailed discussions of the implementation of the Bank supported components and the other non-Bank funded components; and the CVs of the key IWMI staff who will lead and carry out the studies.

COMPONENTS SUPPORTED BY THE AFRICAN DEVELOPMENT BANK

Planning and Implementation

This component is based on the premise that disappointing results of developing water resources for agriculture in the past are the results of poor planning, appraisal and implementation. Investments have often been driven by donors and governments, and not by the demands and wishes of potential beneficiaries. Even where project design has been satisfactory, weak implementation capacity has often led to unsatisfactory results. The extraordinary efforts that are needed in terms of resource mobilization to meet the demands of the present and future population in SSA will most likely magnify existing weaknesses. This component will analyze past project preparation and implementation experiences, identify opportunities to improve, and recommend new approaches for planning and implementing development projects for agricultural water use. Specifically, this component will identify ways to increase the performance and sustainability of investments in agricultural water by identifying practical measures to improve project preparation and implementation, which in turn contributes to the overall objective of the investment program which is to identify opportunities for **innovative** investment in **sustainable, cost-effective**

agricultural water management. This will include planning, appraisal, implementation arrangements, supervision (or ‘implementation support’) and systems for monitoring and evaluation. Special attention will be paid to the institutional framework for project planning, appraisal and implementation, in terms of the incentives the different parties may have with respect to achieving the project goals. Ways to make projects more demand-driven, such that the water users are motivated and enabled to use the infrastructure productively and sustainably will be emphasized.

Annexes 1 and 2 give the logframe and the workplan in a Gantt chart.

Private Sector Participation

The volume of public investments in agriculture is decreasing in many African countries. But the volume of investments by the private sector is probably increasing, and there is scope for a significant further rise if the conditions are right and facilitation is provided. The “private sector” includes farmers and enterprises ranging from micro enterprises, often part-time and low skilled, to medium size enterprises with highly skilled workers that service a large part of a district or country. The range of products and processes and inputs needed is very wide indeed. Many poor smallholder farmers and holders of small enterprises do have access to funds and are willing to invest in their agricultural enterprises if conditions are promising. Encouragement of such investments require changes in the direction of efforts by public sector actors and donors, but financially only moderate investments.

Investments in the formal African irrigation sector have been largely driven by donors and governments. The private sector can play a variety of roles in agricultural production, often outside the formal, public sector. This has given rise to a number of initiatives to promote private sector participation in irrigation and agriculture for small irrigated areas as well as for the larger schemes. Supplementary irrigation in smallholder rainfed agriculture requires small scale approaches and in principle lends itself well to investments that many of the poor farmers could make.

Public sector actors, particularly government agencies and also donors, have a big role to play with respect to private sector investments: the priming of investments to kick start processes, and the facilitation of the investment process itself. Facilitation includes training, demonstration, information centres, adequate legislation, setting up institutions to empower farmers and enterprises, quality control of agricultural inputs and produce, transfer of management of irrigation schemes to empowered farmers, arranging for credit schemes, etc. Facilitation is often is more important than financial investment per se. This component will recommend ways by which governments, investments banks and donors can promote private sector participation in agricultural water use for poverty reduction, food security and economic growth.

Annexes 3 and 4 give the logframe and the workplan in a Gantt chart.

Health and Environment

The potential adverse impact of water resources development on the environment and human health are often considered a major constraint to sustainable irrigation development. The two issues are linked because it is changes in the environment (in conjunction with socio-economic change) that bring about changes in the health of local populations. The overall objective of this component of the program is to maximize the positive and minimise the negative environmental and health impacts of future agricultural water development in sub-Saharan Africa. The specific purpose is to contribute to better understanding of the environmental and health implications of different forms of agricultural water development in

SSA as well as the opportunities for mitigating negative impacts. This will be achieved through compilation and critical review of literature as well as research into issues for which knowledge is particularly scarce. A systematic documentation, analysis and synthesis of such information will contribute to the formulation of effective investment strategies in the future.

Annexes 5 and 6 give the logframe and the workplan in a Gantt chart.

Agricultural Water and Livestock

Livestock keeping is one of the most important agricultural livelihoods practiced in Africa and particularly so in water scarce, arid and semi-arid regions. Livestock make up more than half of the agricultural contribution to the gross domestic product (GDP) in some African countries (e.g., Sudan and Somalia). While demand for food must grow by 50% over the next 20 years to sustain human population growth, the demand for livestock products is expected to double during the same period. Because of the current importance and the higher rate of growth of livestock production, there is a need to factor livestock production into planning for water resource development. As countries become more industrialized, livestock can use up to half of all agricultural water, and there is growing interest in using waste water for feed production. A crucial knowledge gap exists in understanding the role of livestock in overall water use and the efficiency of water use in livestock production. There are needs for investment in water resource development for improved livestock production and in improved livestock management as a means to ensure more efficient and effective sustainable use of water resources for other purposes.

The International Livestock Research Institute (ILRI) will carry out this study and will provide insights into the need for investments in: (1) water development necessary for the future viability and profitability of SSA livestock production; and (2) better livestock management practices that will contribute to more effective and efficient use of water resources for other agricultural purposes. It will also contribute to the Health and Environment component by: (1) assessing the performance of past interventions in terms of the impact of poor animal management on the degradation and contamination of water resources; (2) identifying management practices that may mitigate the negative environmental and health impacts; (3) determining the livestock-related human health risks associated with past water development in SSA and how these risks can be reduced in future water resource development and management; and (4) assessing the potential positive health impacts of livestock keeping and how to enhance them best.

Annexes 7 and 8 give the logframe and the workplan in a Gantt chart.

Poverty Reduction

Recent experience suggests that a number of innovative approaches have been successful in reducing poverty among smallholders. For example, smallholders in Swaziland have, on their own initiative, taken advantage of market linkages and spontaneously developed irrigation for sugar cane production. In Kenya, farmers have been able to use land title as collateral for borrowing commercial finance to successfully develop irrigation for horticultural export crops. Recent institutional changes at the Office du Niger in Mali – an old established large-scale public rice irrigation scheme that has endured many cycles of rehabilitation-neglect-poor performance-rehabilitation in the past – has led to dramatic success. There have been technological successes as well: low cost water harvesting and soil moisture conservation techniques, as alternatives to conventional irrigation for food crop production, have enabled the poor to improve their access to water. Manual pumps have also enabled them to engage in micro-scale irrigation for higher value crops. Yet the key ingredients for success and

replicability are not widely understood and little quantitative information is available regarding their poverty reduction impacts. This component will improve our understanding of these factors and, from this, to learn lessons for the design of new projects that will better achieve their objectives than those of the past. This will in turn guide subsectoral investments for poverty reduction.

This component will catalyse increased investment in agricultural water development for poverty reduction in SSA through: (1) better understanding of the poverty reduction impacts of various types of agricultural water development in Sub-Saharan Africa; (2) identification of the most effective technologies and institutional approaches; (3) derive lessons for the design of future agricultural water development investments that will better alleviate poverty than those of the past; and (4) on the basis of the knowledge gained, clearly articulate the case for increased investment in agricultural water development for poverty reduction. IWMI will carry out case studies to complement the IFAD poverty reduction study covering Eastern and Southern Africa.

Annexes 9 and 10 give the logframe and the workplan in a Gantt chart for this ADB funded component while Annexes 11 and 12 give the logframe and workplan for the IFAD-funded component.

THE OTHER COMPONENTS OF THE COLLABORATIVE PROGRAM

Demand for Products of Irrigated Agriculture

This component is implemented by FAO. There is an urgent need to consolidate recent analyses of the region's comparative advantage and potential in agriculture and measure this against the prospects for the evolution of domestic and export markets and associated value added services. To date there exists no comprehensive analysis of the region's markets in irrigated agriculture produce. The bulk of regional irrigation analysis and operation has been squarely focused on the supply of agricultural services and an assumption that enhanced production will be taken up – a tacit assumption of demand. It is of vital importance that national agriculture policies internalise a realistic assessment of market structures, conditions and prospects and assess their comparative advantage in a regional setting. Implicit in this is the need to validate estimates of food supply and demand and rates of growth required in both irrigated and rainfed agriculture to meet these demands internally, as well as assessing the farm-gate price prospects for food crops and the impact these might have investment return. Prior to any direct investment in irrigation, the macro-economic circumstances, regional trade flows and the relative balance between rainfed and irrigated production in the region needs to be understood. This component will establish a regional perspective on market opportunities for the products of irrigated agriculture by preparing a diagnosis of the opportunities and prospects for national, regional and international markets in irrigated agriculture for the sub-Saharan region that can be fed into the synthetic report.

The desk study will have three components: (1) a *baseline* of current production and consumption patterns (including imported and exported products) will include: (a) *demand parameters* (national demands in food as projected by AT2030; distribution, structure and character of agricultural markets across the zones, from small remote communities to large centres of demand along principal trading routes; comparative analysis of internal produce flows and transaction costs where data is available; and an analysis of formal and informal market regulation); and (b) *supply parameters* (distribution of production centres and zones and relation to agro-ecological zones and farming systems; the structure of the irrigated sub-sector based on the FAO typology; value added processing; and imports and exports --

external produce flows and transaction costs in regional and sub-regional markets); (2) a **diagnosis** of market performance and constraints within the given baseline which will focus on: (a) *market performance* (production chain for irrigated agriculture – does it match demand; market linkages – local, regional and global; formal and informal market regulation; and profitability); (b) *market constraints* (access to natural resources – land tenure and water rights; access to capital and the role of credit; access to labour and the impact of HIV/Aids; entrepreneurial skills/quality control; access to transport); and (3) a **projection** of market evolution in the region which will include: projection of demand for irrigated produce; impacts of expected policy shifts and institutional adaptation; development of staple markets; development of alternative, non-traditional export crop, markets; macro trends in the sub-regional markets; prospects for expansion of irrigated food commodities – sugar, rice, wheat; prospects for expansion of supplementary irrigated food commodities – maize; prospects for expansion of high value agrifloral and horticultural produce.

Annex 13 gives the workplan in a Gantt chart.

Assessment of Potential

This component is implemented by IWMI together with the International Food Policy Research Institute (IFPRI). The results of the World Water Vision exercise presented at the Second World Water Forum in the Hague in March 2000, drew attention to a number of key issues related to the water and food production nexus and provoked much debate among engineering, agricultural and environmental scientists. Many questions raised in this debate remain unanswered, particularly those concerning the impact of water and food related policies on water scarcity, and food, environment and livelihood security over the next quarter century. Among the key remaining questions are: (a) how much more water is required to meet increasing needs in agriculture, domestic and industrial sectors; (b) where will the additional water come from: new storage, existing supplies, improved efficiency, groundwater extraction; and (c) what will be the impact of increased food production on the environment. On the other hand, if, as seems the trend, water is reallocated from agriculture towards domestic and industrial uses, it will be necessary to assess the resulting impact on food production, prices, trade and food security, particularly for developing countries. The impacts would vary with the level of analysis – whether at local, country or regional. It also appears necessary to establish whether it will be possible to meet additional food demand by improvements in rainfed agriculture and crop-breeding and to assess the possible impact of improved land and water management practices in rain-fed agriculture on the environment.

This component will contribute to achieving sustainable development of water for poverty alleviation and food security in SSA by simulating alternative futures for water and food and providing answers to the following questions: (a) what is the potential for SSA to meet its future food security requirements under various conditions; (b) how much and what investments would be required to achieve targets; (c) what are the implications of ‘business as usual’ investments, policies and actions; (d) is there an optimal mix of rainfed and irrigated agriculture; and (e) what are the impacts of water and food related policies on food production and demand, food security, trade requirements, and prices? Through the simulation exercises, this component will identify innovative investment opportunities in agricultural water use in sub-Saharan Africa under various sets of conditions and investment options which will include those in various water use technologies in agriculture while taking into account water supply and demand tradeoffs. The model(s) to be developed in this study will provide an objective basis to explore the complex linkages and interactions between the bio-physical, social, economic dimensions of water resources development. The building of

plausible sets of scenarios and their outcomes will ultimately feed into long term planning, including investment decisions in respect of agricultural water use.

Annexes 14 and 15 give the logframe and the workplan in a Gantt chart.

Irrigation Costs

This component is implemented by IWMI and the World Bank. Understanding the issue of initial capital investment requirements is a key step in removing obstacles to agricultural water development and achieving food security in sub-Saharan Africa (SSA). High irrigation investment costs coupled with declining world prices for food and the failures of many past irrigation projects have made donors and governments in SSA understandably reluctant to invest more resources in the sector. A 1994 Review of the World Bank's experience with irrigation between 1950 and 1993 suggested that irrigation investments in SSA averaged more than US\$ 18,000 per ha, over 13 times the South Asian average. Costly investments are unlikely to deliver positive economic returns – particularly if they are to be used for the production of food crops. However, it is still not properly established whether costs in SSA are significantly more expensive than in other regions. A good understanding of components and factors contributing to costs would be instructive. Several explanations on why investments in agricultural water development in SSA maybe more costly have been advanced. These reasons included relative quality of appraisal and feasibility studies, implementation capacity, use of inappropriate technologies, and cost ineffective design (resulting in some cases from past policies of developing irrigation at any cost), possibly more limited competition among contractors, more focus on construction of new schemes rather than rehabilitation of existing infrastructure which is the case in Asia, and failure to realize the potential of alternatives to conventional irrigation in water management. Other given explanations include: (a) higher proportion of investments allocated to appurtenant infrastructure; (b) higher mobilization costs due to more remote projects; and (c) higher construction input prices (including higher costs of labor, materials, and equipment; and lack of qualified local contractors) among others. Examination and resolution of these and other possible reasons is essential if water management investment costs are to be meaningfully reduced and more investments attracted to the sector in order to meet food production targets.

This component will address the question of whether per hectare investment costs in irrigated agriculture in SSA are really substantially higher than other regions and determine factors contributing to this. In carrying out this study, the typology of irrigation projects, crops irrigated, and expected benefits, among others factors, will be taken into account.

Annexes 16 and 17 give the logframe and the workplan in a Gantt chart.

IWRM in a Basin

This component is planned to be implemented by IWMI and the World Bank but is currently not financed. Water abstractions for agriculture in SSA represent a mere 3 percent of overall annual discharge (FAO AQUASTAT 2003), an indicator of the degree of under-development of water resources. Much of the readily available water is concentrated spatially and temporally, suggesting that there is significant scope for approaches that address supply side constraints such as river regulation and storage creation, in addition to mechanisms for demand management. Current efforts to manage water resources in an integrated fashion (IWRM) are based on the Dublin Principles that were adopted in 1992 as part of the United Nations Conference on Environment and Development (UNCED), Rio de Janeiro, 1992. They include: (1) water and land resources should be managed at the lowest appropriate level; (2) fresh water is a finite and vulnerable resource, which is essential to sustain life,

development and the environment; (3) effective management should link land and water uses on an integrated catchment basis; and (4) water management and development should be based on a participatory approach, involving users, planners, and policy makers.

A number of African countries have pursued water sector reforms that are based on these principles. Although the Dublin principles advocate a balanced approach that includes both supply and demand management, many of the reforms have focused almost exclusively on demand management, with only scant attention being paid to supply side constraints. One of the results of the emphasis on demand management is that those who are in a disadvantageous position to express their demands (smallholder farmers, pastoralists) tend to become marginalized vis-à-vis larger institutional users (water utilities, hydropower generation), and risk losing out. Further, agricultural use of water is perceived as 'low value' and 'wasteful,' ignoring the importance of agriculture for the livelihoods of most rural Africans and the need to make water available to enable sustainable intensified agriculture.

Current emphasis on demand management ignores a parallel need to improve water availability through river regulation, improved conveyance and storage capacity, and a more effective use of available resources for agriculture and other productive uses. The purpose of this study is to contribute to strengthening the role of IWRM in poverty reduction, food security and economic growth. This study will contribute to catalysing increased investment – whether by governments/donors or the private sector (including farmers) – in agricultural water development in SSA through identification of ways in which IWRM approaches can be made more inclusive in order to enhance their performance and impact in terms of poverty reduction, food security and sustainable economic growth. This component will contribute to efforts to translate the World Bank's and other investors' strategies for rural development and agricultural growth into action, to upscale successful experiences, and to provide strategic guidance for the World Bank and its development partners (governments, other international financing institutions, bilateral donors and NGOs) in the design of new projects that have a better chance of contributing to the achievement of the Millennium Development Goals.

OVERALL APPROACH AND METHODOLOGY

The study components will be carried out by IWMI staff and African consultants and partners. They will include desk reviews, field work and case studies, synthesis and recommendations.

The desk reviews will be comprehensive reviews of literature (except for the poverty study which will be done by IFAD) and will include: (1) general/global experience; (2) key issues in sub-Saharan Africa; (3) relevant existing case studies; and (4) a summary of lessons from past projects, and conclusions and initial recommendations on directions for future agricultural investments. This activity will also include the development and refinement of the study framework for analyses which will be consistent with the overall investment study framework.

The case studies will highlight findings of field work which may use a rapid appraisal approach or structured survey questionnaires. Each case study will include discussions on the case context and setting and will highlight specific issues and lessons from past projects, and general lessons applicable to other cases and future agricultural water management projects. The component reports will contain the main analyses and will integrate results and findings of desk reviews, case studies and field work. The reports will expound and analyze the key issues and problems of agricultural water management investments in sub-Saharan Africa,

highlight key findings, and identify major lessons for increasing investments in water in agriculture in SSA.

A draft of the overall synthesis report will be shared with partners for their inputs. A proposed draft outline is included in the last section. Efforts will be made to ensure linkages between micro and macro-levels of the different components. The synthesis report will pay special attention to providing policy recommendations which can be operationalized at various levels of government and stages of project development. These recommendations will be 'field tested' in a workshop involving all key stakeholders to ensure their relevance and practical feasibility.

As part of the review process for the final version of the synthesis report, bilateral donors active in Africa will also be invited to provide comments, and become involved in discussions. It is our aim that the final output will be endorsed by the respective collaborating institutions, as well as by the NEPAD Secretariat.

Below are the overall Collaborative Program logframe (figure 1.2) and Gantt chart with milestones for 2004 (figure 1.3):

Figure 1.2 Overall Collaborative Program Logframe

Intervention Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions
<p>Overall Objective</p> <p>To support NEPAD by catalysing increased investment in agricultural water use for poverty alleviation, food security and economic growth in Sub-Saharan Africa.</p>	<p>Actual and planned public and private sector investment.</p>	<ul style="list-style-type: none"> • Sectoral strategies, five-year plans and government budgets • Government budget reports • NEPAD reports • Annual reports by financial institutions (including those of private sector) • Government statistical reports • FAO databases 	
<p>Immediate Objectives</p> <p>On the basis of experience to date to:</p> <p>(a) demonstrate that investment in agricultural water development can have a significant, viable and sustainable impact on poverty reduction, food security and economic growth;</p> <p>(b) identify the conditions required for success; and</p> <p>(c) provide recommendations for the design of new investment projects that will perform better than those of the past.</p>	<p>Clear exposition of poverty reduction, food security and economic growth impacts of past investments.</p> <p>Recommendations for ‘best practices’ presented and validated/endorsed by stakeholders.</p>	<p>Draft and final report outputs.</p> <p>Stakeholder consultation.</p>	<p>Potential does exist for increased investment in terms of (a) demand for produce and (b) financial/natural/human resources with which to meet demand.</p> <p>Improved quality of investment plans will lead to increased investment.</p> <p>Analysis and recommendations shared by client countries and other development partners (including bilaterals).</p>
<p>Outputs</p> <p>Synthetic report – an analysis of experience of agricultural water development investment in SSA, in terms of poverty reduction, food security and economic growth targets/achievements. Report to focus on identifying changes in the current global context affecting investment in agricultural water development, as well as innovative institutional approaches and technologies. To examine key dimensions of equity, productivity and sustainability, considering five horizontal themes:</p> <ul style="list-style-type: none"> • Economic and financial aspects • Environmental and Natural Resources aspects 	<p>Draft and final reports.</p>	<p>Periodic progress reports from Working Group to Steering Committee.</p> <p>Feedback from stakeholders</p>	<p>Country/project reports and data available/reliable/verifiable. Appropriate study methodologies adopted. Component studies will result in concrete lessons that can be translated into specific recommendations and actions.</p>

Figure 1.3 Gantt Chart for Overall Project with Milestones in 2004

Task#	Description	Key Persons	J	F	M	A	M	J	J	A	S	O	N	D
1	Inception Report (detailed workplan, methodology, study framework, activities, & milestones)	All project leaders; A. Inocencio, D. Merrey for integration												
Milestones	Inception report – 31 Jan 04	*	■											
	Review and feedback by ADB & by collaborative program WG (within 2-3 weeks after submission)	ADB and Partners		■										
	Select Regional Experts	WG			■									
2	Literature/desk review for each component	All project leaders; A. Inocencio & D. Merrey for integration*												
Milestones	Desk review reports – 30 April 04					■								
	Review and feedback by ADB, Regional Experts & WG (within 2-3 weeks after submission)	ADB and Partners					■							
3	Case studies (knowledge gaps, survey/field work, data analyses, writing up)	All project leaders; A. Inocencio & D. Merrey for integration*												
Milestones	Field study report – 31 Aug 04								■					
	Review and feedback by ADB & by collaborative program WG (within 2-3 weeks)	ADB and Partners								■				
4	Full study reports (integration of case study results & desk reviews)	All project leaders; A. Inocencio & D. Merrey for integration*												
Milestones	Theme Study (Component) reports – 30 Sept. 04 (for finalization in Oct 04)										■	■		
	Review and feedback by ADB, Regional Experts & WG (within 2-3 weeks after submission)	ADB and Partners										■		
	Consultations with key bilateral donors													
5	Overall project synthesis	IWMI team for first draft; Study partners;												
Milestones	Overall synthesis report - 30 Nov. 04										■	■	■	■
	Consultation with all stakeholders to get feedback on draft synthesis report (Feb – Mar 2005)	Key stakeholders												

Synergies

To achieve synergies among components of the Collaborative Program, we will coordinate activities carefully and have scheduled regular (once every 4 weeks) internal progress review with discussions and brainstorming with respect to recommendations.

To achieve synergies with other research within the IWMI-Africa regional office, joint discussions and interactions will be scheduled, making sure that the knowledge and insights of the Ghana and Ethiopian subregional offices are also well captured. For other IWMI research, online discussions and exchanges will be promoted, and informal discussions and presentations of results will be facilitated at every available opportunity when concerned project leaders are visiting the Africa Regional Office or when component implementors will visit other IWMI offices.

To the extent feasible, component studies will consider common desk reviews and case studies. Sharing of documents collected by the different studies for their literature reviews will be facilitated by a common database of bibliographic references.

Where possible, field work or case studies in a country will cover various aspects/components of the Collaborative Program thus promoting an integrated rather than a fragmented approach. For instance, a consultant or team of consultants in Kenya can carry out various analyses covering poverty reduction, private sector, irrigation cost, health and environment, as well as planning and implementation aspects in the selected case studies and come up with one integrated report for the country.

Workshops

As agreed by the Working Group, a Core Consultative Group (CCG) of 5-6 regional experts in the field of agricultural water use in SSA will be identified in consultation with the Collaborative Program partners, and invited to provide comments on various intermediate and final outputs; they will also attend the consultative workshops. The CCG will be constituted in March 2004.

With respect to process, three further formal consultation exercises will be targeted: (a) for each of the eight individual studies, there will be a consultation with key stakeholders to review draft findings and conclusions; (b) once the 8 studies have been concluded, but prior to starting work on the synthesis report, there will be a separate set of discussions with key bilateral donors; and (c) there will be a further consultation with all stakeholders - regional and donor community, to present, and seek feedback on, the draft synthesis report.

WORKING GROUP AND STEERING COMMITTEE

A high-level **Steering Committee** and a **Working Group** have been formed and a **Program Coordinator** appointed to guide the implementation of the various studies. The Steering Committee provides overall strategic direction and will review the various draft reports that will be produced, including the overall main report. The committee is composed of representatives of each of the collaborating institutions, plus a senior representative of NEPAD.

The Working Group is responsible for overall technical guidance and quality assurance for the program and consists of nominated representatives of the collaborating institutions. Key

decisions (such as selection of specific cases and identification of indicators) and the detailed terms of reference for the various component studies are submitted to the Working Group for review and concurrence. The World Bank representative has been appointed as Program Coordinator. He will be responsible for facilitating communications with, and meetings of, the Working Group and Steering Committee – and acts as Secretary to the latter.

OVERVIEW OF MAIN OUTPUTS

For each of the component studies listed above, a report will be prepared that presents reasoned conclusions and recommendations. These reports will constitute the building blocks for the overall main report, which will synthesize the lessons, conclusions and recommendations and present a diagnosis of the current trends and opportunities for innovative investment in sustainable, cost-effective agricultural water development in Sub-Saharan Africa. It will also highlight areas needing further study and specify the additional resources required. It will further include:

- a bibliography on innovative practices in agricultural water use;
- recommendations for further detailed studies on aspects that have not been sufficiently analyzed in the existing literature; and
- a list of organizations, especially in Africa, capable of conducting these and other studies.

The overall synthesis report for the Collaborative Program will analyze the experience to date in terms of economic, financial, environmental, technical and institutional performance in the achievement of poverty reduction, food security and economic growth.

REFLECTIONS ON THE FINAL OUTPUTS

This Inception Report provides details on the methodology and approaches, work plans, staff responsibilities and time allocations and updated budgets for each study component including IWMI and ILRI contributions. The report also highlights efforts at achieving synergies, leveraging on the other Collaborative Program components as well as on-going research within IWMI.

With full cooperation and support of the Collaborative Program partners through timely sharing of reports and data, prompt reviews and feedback on draft reports, and on-schedule fund releases by ADB, IWMI is optimistic that the various components it will be directly implementing will be completed at the indicated dates and quality outputs which will include reports and databases will be produced and shared with the Program partners. We are confident that timely sharing of reports and data of FAO and IFAD will facilitate drafting of the synthesis report. We are also looking forward to suggestions on how to proceed with the IWRM study so that it can contribute to the synthesis report.

To promote a participatory and interactive process in the development of the synthesis report which is the main output of this Collaborative Program, an outline is proposed below to generate comments/discussions and suggestions on how we may ensure that components will be able to balance both needs for macro policy and institutional reforms with micro and specific recommendations which can be operationalized at various levels. We see this outline

as a guide to the component leaders in carrying out their respective studies and ensuring that they will be contributing towards this target.

Draft Outline of Final Synthesis Report

This draft outline of the final “synthesis” report of the Collaborative Program on Agricultural Water Investment Trends and Opportunities in sub-Saharan Africa, has taken into account initial feedback within IWMI and comments of Program partners. We envision this will be a substantial document with photos, text boxes, and figures jointly published by all the partners. We recognize these chapter headlines may be changed as the study proceeds.

The draft chapter structure and contents of the overall synthesis report is presented in the boxes that follow.

The synthesis report will also be ‘packaged’ into a relatively small number of key and concise messages for communication to targeted audiences such as policy and decision makers in governments and donor agencies through management and policy briefs.

Tentative Title: Securing the Future of Sub-Saharan Africa: New Opportunities for Investments in Agricultural Water for Food Security and Agricultural Growth

Executive Summary

I. Background

A. Problem Statement

1. African food security, economic growth, poverty, etc; compounded by HIV/AIDS, malaria, drought, declining soil fertility and rapid land degradation, malnutrition; socio-economic inequities, especially gender inequities; all compounded by deeper political and economic problems internally and global structural changes.
2. New Initiatives: NEPAD, Africa Water Facility, FARA, AU, sub-regional economic organizations, new river basin institutions, new donor initiatives like USAID Initiative to End Hunger in Africa (USAID-IEHA), IFPRI's 2020 Vision Initiative on Food and Nutrition Security in Africa by 2020, NEPAD-IFPRI African Successes workshop, give examples and reasons for hope.
3. Recognition of importance of better water management as a central ingredient of success (necessary for most of Africa, but certainly not sufficient; use some of World Bank figures on correlation of drought and economic growth, per capita water storage, etc.)
4. Declining investments in agricultural development, water—these trends must be reversed [use latest figures; there is evidence even domestic water investments are down despite rhetoric]
5. Therefore, need to take a fresh look, derive lessons from past experiences in Africa (and other regions as appropriate), and identify opportunities for new investments as well as the conditions that must be put in place if these are to succeed. Innovative 'out of the box' thinking essential—get out of old paradigms.

B. New Kinds of Investment Opportunities

Evidence for success; encouraging private sector investments; encouraging micro- and small-scale irrigation; rainwater harvesting, integrated livestock-water resources development; multiple use water systems; urban and peri-urban agriculture; transboundary opportunities; liberalized markets within African countries; emergence of new market opportunities – both local and international; emerging private sector market intermediaries; increased focus on commercialized production both at policy and farm levels.

C. Collaborative Program

Short description, derived from current description

D. What we did: The Basis for the Conclusions and Recommendations in this Document

Study methodologies, consultations and workshops, etc.; Strengths and limitations of the study

E. Link to Comprehensive Africa Agricultural Development Program (CAADP)

Show how our study supports the overall thrust in terms of proposing actions/investments that would contribute to implementation of the overall program objectives

II. Diagnosis: What We can Learn from Past Experiences

A. Conceptual Framework

The table below was developed by the Working Group at its February 2003 Pretoria meeting. It needs to be further refined & articulated and when we do so, this draft framework may change.

	STUDY COMPONENTS							
HORIZONTAL THEMES: (Key dimensions: sustainability, productivity, equity)	1	2	3	4	5	6	7	8
Economic and Financial								
Environmental/Resource								
Technical								
Institutional								
Social/Equity/Livelihoods								

B. Demand for African Irrigated Agricultural Products

C. Potential for Agricultural Production in sub-Saharan Africa

Continued

... *Continued*

A. How to Control Costs of Investments in Agricultural Water Projects

Minimizing costs, optimizing benefits

B. How to Minimize Negative Externalities and Maximize Health and Environment benefits

C. How to Improve Planning and Implementation of Agricultural Water Investment Projects

D. Agricultural Water Investments in a River Basin Perspective

E. Opportunities for Investing in Integrated Water and Livestock Projects

Examples of innovative approaches

F. Investments in Agricultural Water to Reduce Poverty and Promote Gender Equity

G. Mobilizing the Private Sector for Investments in Agricultural Water

H. Other Opportunities

Drawing on other work, e.g., wetlands, urban and peri-urban agriculture, development of groundwater, multiple use water systems

I. Conclusion

Key Messages and Lessons and their Implications for NePAD, the Africa Water Facility, and Future Investments

II. Key Recommendations: Opportunities for Investments in Agricultural Water to Secure Africa's Future

A. CAADP Context

B. Linkages between Agricultural Water and Economic Growth

To what extent will investments in agricultural water lead to economic growth, poverty reduction, better livelihoods, and environmental conservation? How can we move from a supply-driven to demand- and market-driven approaches to investments? Can we make a case, with figures? After all, this is a basic premise of the study.

C. Conditions for Investments

What conditions are necessary to encourage more and better investments and increase the likelihood of sustained positive impacts and returns? e.g., Policy environment; comparative advantage; institutional capacities to plan, implement, manage; terms of trade at national, sub-regional, regional, international levels; making projects more demand- or market- driven and avoiding projects driven by Treasury Departments or foreign donors or mainly engineers.

D. Role of Bilateral and Multilateral Investors

To what extent should multilateral and bilateral investors invest directly in agricultural water (infrastructure) projects, versus other investments that would create incentives and opportunities for private and NGO investments? E.g., build dams, irrigation schemes, etc. as has traditionally been done; or build supporting infrastructure like roads and communications and promote private investments in water? Maybe under different conditions, the answer to this question will vary. Focus on transboundary large-scale projects, leaving national projects to others?

E. Who should make which Investments?

E.g., do large multilateral banks have a comparative advantage in investments aimed at small-scale individualized technologies? Should these large investors focus only on large-scale complex projects such as infrastructure on transboundary basins? Funding many small-scale projects through creation of trust funds?

F. (Recap of) new Investment Opportunities

G. Changing the way Investment Institutions do Business

Focus on encouraging and supporting local initiatives; changes in policies and procedures for planning, implementation, monitoring and evaluating projects; changing the nature of the relationship between investors and clients; exploring support for new kinds of clients; assessing trade-offs between smaller and seemingly 'fragmented' projects, and large, more comprehensive projects; alternative approaches in promoting truly greater stakeholder participation and empowerment; etc.; more attention to capacity building [such as Africa Water Facility is expected to do]

H. Uncertainties: Unanswered questions; what we do not know; and questions needing further investigations

a. Limitations of data and suggestions for solutions

b. Research questions that need to be addressed short and long term

Strategy for Dissemination

The collaborative program will produce a series of reports, databases, practical guidelines and scientific publications to communicate its findings and recommendations to its wide range of stakeholders. IWMI will assist in the development and implementation of the program's information dissemination strategy, including preparation of documents for workshops, conferences, newsletters, policy briefs, and peer-reviewed scientific publications. Both print and electronic media will be employed. A web-site for the collaborative program is under development and it is expected that all partner organizations, in addition to providing links to it, will also host descriptions, results of the program on their respective web-sites.

The collaborative program web-site is being developed with the generous support extended by InWEnt - Capacity Building International, Germany - as part of the overall assistance it provided via IWMI for organizing a special session devoted to the collaborative program on 8 and 9 December 2003 at the Pan-African Implementation and Partnership Conference on Water held in Addis Ababa, Ethiopia. The InWEnt support included the attendance of nearly 40 participants from Southern and Eastern Africa and the production and distribution of: (a) collaborative program materials at the session, (b) the proceedings of the Addis Ababa session (currently in preparation), and (c) an information brochure for the program. (See Annex 18 for the summary of the outcomes of Water for Food Security Session at Pan Africa Conference)

The possibility of organizing a side event devoted to the collaborative program at the 2004 Stockholm Water Symposium in August is being actively pursued. This annual event offers a splendid opportunity to inform the nearly 1000 delegates who normally attend the Symposium about the collaborative program and to share its emerging findings with many of them with a view to obtaining critical feedback on the proposed approaches to improving investments in agricultural water in Africa.

The final workshop will be an extremely important event in the life of the collaborative program. It will bring together key decision-makers, representatives from donor agencies and non-government organizations, researchers, and other role players who are in a position to influence the uptake and implementation of the collaborative program's policy recommendations. Their inputs will be exceptionally valuable in refining the program's final synthesis report. It is worth highlighting at this point that in order for the workshop to fulfill this promise, adequate resources will have to be mobilized in the course of the year 2004 to support the organizing of the event as well as for the publication and dissemination of the final synthesis report.

Indeed, careful preparation (both from the substantive and presentational points of view) of the synthesis report itself and an effective campaign of dissemination will have a significant impact on building awareness about the findings of the collaborative program among a wider audience and enhance the chances of adoption of its lessons and recommendations, thereby charting a way forward for agricultural water investments in sub-Saharan Africa.

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ANNEXES

Annex 1 Logframe of Planning and Implementation Component

Intervention Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions
<p>Overall Objective To catalyze increased investment in agricultural water use for poverty alleviation in Sub-Saharan Africa.</p>	Increased levels of investment in agricultural water use in SSA.	Annual reports by donors and governments.	Investors willing to invest in good projects. Water use for agriculture investments will give good returns. Cost-effective opportunities do exist.
<p>Immediate Objective To improve the planning, design and implementation of agricultural water use projects in Sub-Saharan Africa.</p>	Set of clear recommendations on ways to improve planning, design and implementation of projects.	Final Report.	Governments and donors willing to implement improvements.
<p>Purpose To answer the following questions in the context of SSA:</p> <ul style="list-style-type: none"> – What is the institutional framework of the project lifecycle? What are the institutional reasons for failure of the past agricultural water use projects in SSA? How these reasons evolved in the past years? What is their relative importance? What are the opportunities for improvement? – How the objectives of the project were chosen? What are the perceptions of stakeholders regarding the current project lifecycle? To what extent the supervision and evaluation documents issued by the Donors give an accurate description of the project? – What are the new methodologies regarding planning and implementation currently tested by the Donors? What are the opportunities and the risks? 	Studies and sub-studies completed.	Periodic progress reports and Final Report	<p>Questions posed are relevant and answerable.</p> <p>Project selection, design and implementation can be improved.</p> <p>Access to Donors' information regarding the planning and implementation of past agricultural water use projects</p>
<p>Outputs</p> <p>Analysis of project management cycle and general analysis of the reasons for failure of past agricultural water use projects in SSA In-depth analysis of some completed projects Concrete recommendations on specific ways to improve planning and implementation of</p>	Studies and sub-studies completed.	Periodic progress reports and Final Research Report	<p>Data available for the analysis</p> <p>Data available for the analysis Governments will be responsive to recommendations made and strategies</p>

Intervention Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions
agricultural water use projects Recommendations for any necessary follow-up research.			proposed. Funds will subsequently be available
Activities 1. Literature search and review 2. Case studies and analysis 3. Preparation of recommendations and strategy formulation	Bibliography and citations Contribution made/relevance to overall study Implementable strategic guidelines	Periodic reports and Final Study Report Final Study Report Final Study Report	Adequate relevant material available. Representative cases available. In-country commitment and cooperation. Commitment to strategic thrusts

Annex 2 Gantt Chart of Planning and Implementation Component

Project Name			Agricultural water Investments Study: P & I component												
Project code			34P20SA AFB14												
			Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
Task	Description	Key person	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Inception report	SM/DM													
1.1	Design approach	NF/SM													
1.2	Develop conceptual framework	NF/SM													
milestone	Inception report 31/01/04			☆											
1.3	Review and feedback by ADB and WG	ADB and partners													
2	Desk review	SM/JS													
2.1	Initiate IWMI library search	SM/JS													
2.2	Compile existing literature	JS													
2.3	Contact donors and other organizations	SM/HS/DM													
2.4	Search through donors' databases	JS													
2.5	Select the projects for desk review	SM/HS/DM													
2.6	Complete project fact sheet	SM/JS													
2.7	Analyze data	SM/JS													
2.8	Set up detailed work plan for field study and criteria for choosing case studies	SM/JS/HS/DM													
2.9	Write desk review report	SM/HS/DM													
milestone	Desk review report 30/04/04							☆							
2.1	Review and feedback by ADB and WG	ADB and partners													
3	Case studies	SM/JS/consultants													
3.1	Select cases studies	SM/HS/DM													
3.2	Prepare TORs for consultants	SM/JS/HS/DM													
3.3	Identify consultants and contract with them	SM/HS/DM													
3.4	Adapt TORs with consultants	SM/JS													
3.5	Complete case studies	JS/consultants													
3.6	Write case studies individual reports	JS/consultants													
3.7	Process and analyze data	SM/JS													
3.8	Write Case Studies - report	SM/JS/HS/DM													
milestone	Case studies report 31/08/04											☆			
3.9	Review and feedback by ADB and WG	ADB and partners													
4	P&I component synthesis	SM/JS/HS/DM													
4.1	Pooled data analysis	SM/JS/HS/DM													
4.2	Write P&I component draft report	SM/JS/HS/DM													
milestone	P&I Component draft report 31/09/04												☆		
4.3	Review and feedback by ADB and WG	ADB and partners													
4.4	Write P&I component final report														
milestone	P&I Component final report 31/10/04													☆	
5	Overall project synthesis														
5.1	Contribute to draft synthesis report														
milestone	Draft synthesis report 30/11/04														☆
5.2	Workshop with key stakeholders and WG														
5.3	Contribute to final synthesis report														
milestone	Final synthesis report														☆

Annex 3 Logframe of Private Sector

INTERVENTION LOGIC	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p>Goal</p> <p>To promote innovative private sector participation in agricultural water use for poverty reduction, food security and economic growth in sub-Saharan Africa (SSA).</p>	<p>Increased levels of investment in agricultural water use in SSA</p> <p>Growth in agricultural GDP</p>	<p>Donor and government reports</p> <p>National and regional policy documents</p> <p>National statistics</p>	<p>Global economic environment does not hold up African development;</p> <p>Governance of countries becomes increasingly pro-poor.</p>
<p>Purpose</p> <p>The goal of this component is to recommend ways of promoting private sector participation in agricultural water use for poverty reduction, food security and economic growth in sub-Saharan Africa.</p>	<p>Written and evaluated recommendations governments and donors to promote greater participation of private sector in national and regional investment strategies and plans</p>	<p>Final project report received.</p>	<p>Investors willing to invest in good projects.</p> <p>Conducive investment environment and acceptable level of returns that encourage and sustain investments</p>
<p>Outputs</p> <p>A report identifying</p> <ul style="list-style-type: none"> - opportunities and constraints for private sector investments in agricultural water development and management - recommendations to governments, investment banks and donors on how they can promote such investments 	<p>Report written.</p> <p>Consultations held and final report disseminated</p>	<p>Report received.</p>	<p>Credible primary data collected without delay.</p>
<p>Activities</p> <p>Review literature on decision making with respect to private sector investment in agricultural water development and management in SSA;</p> <p>Fill gaps in knowledge regarding key issues through primary research.</p> <p>Develop recommendations for action by governments, investment banks and donors.</p> <p>Coordination of the study team.</p>	<p>Reports of components written (will be annexes in the full report).</p> <p>Surveys conducted and analyzed.</p> <p>Recommendation written.</p> <p>Progress reports to the overall study coordinator.</p>	<p>Progress reports overall study coordinator received.</p>	<p>Consultants/national researchers with good track records can be found.</p>

Annex 4 Gantt Chart of Private Sector Component

Task	Description	Key person	Jan 04	Feb 04	Mar 04	Apr 04	May 04	June 04	Jul 04	Aug 04	Sept 04	Oct 04	Nov 04	Dec 04
	1 Inception report	FPV												
milestone	Inception report 31/01/04		☆											
	Review and feedback by ADB and WG	ADB and partners												
	2 Desk review	FPV												
	2.1 Farmer investment	FPV/HS												
	2.2 Community investments	HS												
	2.3 Micro SME's investments	AI												
	2.4 Ownership of resources	AI												
	2.5 Relevant Asian experiences	FPV/TS												
milestone	Desk review report 15/04/04					☆								
	2.1 Review and feedback by ADB and WG	ADB and partners												
	3 New knowledge	FPV												
	3.1 Farmer investments	FPV/BvK/AK/OC												
	3.2 Community investments	HS/AK/OC												
	3.3 SME & micro SME's investments	AI												
milestone	Case studies report 31/08/04								☆					
	3.4 Review and feedback by ADB and WG	ADB and partners												
	4 Recommendations to governments, investments banks, other donors	FPV												
	4.1 To empower farmers	FPV												
	4.2 To empower and facilitate communities	FPV												
	4.3 For public sector actions	FPV												
	4.4 For public-private partnerships	FPV												
milestone	Draft Component report 31/09/04										☆			

Annex 5 Logframe of the Health and Environment Component

Brief Description	Indicators	Assumptions
<p>Objective To contribute to optimization of the benefits to be gained from the future development of agricultural water development in SSA.</p>		
<p>Purpose To review and systematically analyze existing information sources on multiple environmental and health impacts of irrigated agriculture in SSA and to formulate recommendations to ameliorate negative and enhance positive impacts.</p>	<p>Recommendations endorsed by key development institutions including the World Bank, IFAD, African Development Bank and NEPAD.</p>	<p>Information sources exist, accessible and provide sufficient information for analysis</p>
<p>Outputs A database, developed from available literature and comprising quantitative information, which it is anticipated will provide a benchmark of aggregated knowledge on the H & E impacts of investments in agricultural water. A publication on the inter-linkages between health and the environmental impacts of agricultural water development in SSA. Recommendations on how to mitigate negative environmental and health impacts of agricultural practices (including livestock keeping) whilst simultaneously enhancing the benefits of agricultural water development in sub-Saharan Africa.</p>	<p>Database developed by 31/08/04. Report with review of health and environmental impacts published by 31/10/04. Recommendations included in overall project report, published by 31/12/04.</p>	<p>Other relevant research projects provide additional information. Information sources exist, accessible and provide sufficient information for analysis</p>
<p>Activities Review of information sources Identification of knowledge gaps Case studies and collection of secondary data Analysis and consolidation and development of recommendations Report writing</p>	<p>List of sources available Listing available Hard/electronic copies of data available Draft recommendations available Draft reports available</p>	<p>Qualified local consultants are identified Information sources exist, accessible and provide sufficient information for analysis</p>

Annex 6 Gantt Chart of the Health and Environment Component

Task#	Description	Key person(s)	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
1	Inception Report													
1.1	Design approach	MM/EB	█											
1.2	Develop conceptual framework	MM/EB	█											
1.3	Develop scheme typology	MM/EB	█											
Milestone	Inception report 31/01/04		★											
2	Literature review													
2.1	Initiate IWMI library search	MM		█										
2.2	Contact identified institutions	MM/EB/OC		█										
2.3	Complete scheme fact sheets	MM/EB/OC/CM			█									
2.4	Analyze data for patterns/trends	MM/EB/OC/CM			█									
2.5	Write desk review report	MM/EB/OC/CM				█								
Milestone	Desk review report 30/04/04					★								
3	Case studies													
3.1	Identify knowledge gaps	MM/EB/OC/CM			█									
3.2	Initiate case studies	MM/EB/OC			█									
3.3	Complete case study fact sheets	Consultants				█								
3.4	Analyze data	Consultants/MM/EB/OC/CM					█							
3.5	Write field study report	MM/EB/OC						█						
Milestone	Field study report 31/08/04								★					
4	Synthesis													
4.1	Bring together lit review and case studies	MM/EB/OC/CM/AS							█					
4.2	Write report (draft 30/09/04)	MM/EB/OC/CM/AS								█				
Milestone	Theme synthesis –30/10/04										█			
5	Overall project synthesis													
5.1	Contribute to project synthesis	MM/EB/AS											█	
5.2	Write component synthesis report	MM/EB											█	
Milestone	Overall synthesis report 30/11/04	MM/EB											█	★

Annex 7 Logframe of the Agricultural Water and Livestock Component

Intervention Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions
<p>Overall Objective</p> <p>To contribute to the wider Collaborative Program on Investment in Agricultural Water Development in Sub-Saharan Africa through consideration of water requirements of livestock keeping as a production as poverty reduction strategy and by ensuring that inappropriate livestock management does not degrade existing and developed water resources.</p>	<p>Actual and planned public and private sector investment agricultural water in SSA as a whole with integration of improved livestock keeping practices.</p>	<ul style="list-style-type: none"> • Water and Livestock sectoral strategies, five year plans. • Government budgets • NEPAD reports • Annual reports by financial institutions • Government statistical reports • FAO/WHO data bases • Increased integrated livestock-water research implemented in SSA 	<p>Agricultural production systems requiring water development continue to depend on or include livestock as a major component.</p>
<p>Immediate Objectives</p> <p>In priority agricultural production systems of SSA:</p> <p>(a) To assess water development needs for livestock production,</p> <p>(b) To identify improved livestock keeping practices necessary to safe guard quality and quantity of agricultural water resources, and</p> <p>(c) To identify potential benefits of investments that integrated livestock, crop and water management.</p> <p>(d) To identify knowledge gaps requiring further research on integrated livestock and water management.</p>	<p>(a & b) Clear exposition of key livestock-water management issues that create demand for agric. Water or may constrain its sustainable use.</p> <p>(c) Recommendations of investment options that involve livestock based on experience, best practices and stakeholders' feed back</p> <p>d) Research recommendations.</p>	<p>(a, b & c) Reports to the E&H component and to the steering committee including documented feed back from stakeholders' consultations.</p>	
<p>Outputs</p> <p><i>Report on Agricultural Water Development and Livestock</i> that</p> <p>(a) Analyses of and recommendations</p>		<p>(a, b & c) Periodic progress reports to</p>	<p>Limited case studies will provide</p>

Intervention Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions
<p>for effective and efficient investment options that will improve water use efficiency in livestock production and that will reduce water degradation caused by poor livestock management in priority regions of SSA,</p> <p>(b) Identifies knowledge gaps related to livestock-water interactions that may require future investment in research and</p> <p>(c) Contributes to the wider Coop. Program on Investment in Agric. Water in SSA, particularly the Health and Environment Component.</p>	<p>(a, b & c) Draft and final reports and documents including feed back from stakeholders' consultations.</p>	<p>E&H component and to Steering Committee</p>	<p>principles applicable to a diverse range of social, economic and agroecological conditions characterizing SSA.</p>
<p>Activities</p> <p>(a) Literature review and desk studies water development and livestock management issues,</p> <p>(b) GIS based stratification of SSA,</p> <p>(c) In-strata desk review of case studies,</p> <p>(d) Stakeholders' workshops,</p> <p>(e) Dissemination of results.</p>	<p>(a) In country and regional workshops and consultations held and comments received.</p> <p>(b) GIS database developed and spatial analyses completed.</p> <p>(c) Stakeholders' feedback.</p> <p>(d) Reports.</p>	<p>(a, b, c, & d) Periodic progress reports to E&H component and to Steering Committee.</p> <p>(b) Maps.</p>	<p>Government agencies and investors are willing to make information available and that negotiations for access will not delay the project activities.</p>

Annex 8 Gantt Chart of the Agricultural Water and Livestock Component

Task#	Description	Key person(s)	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
1	Inception Report													
1.1	Design approach and conceptual framework	DP	█											
Milestone	Inception report 31/01/04		★											
2	Literature review													
2.1	Desk review	DP	█	█	█									
2.2	Development of a GIS-based stratification of SSA	ILRI –GIS staff	█	█	█									
2.3	Write desk review report	DP				█								
Milestone	Desk review report 30/04/04					★								
3	Case studies													
3.1	Identify key livestock-water development issues	Consultants & DP			█	█	█							
3.2	Contribute to health and environment desk review report	DP				█	█							
3.3	Analyze data from cases	Consultants/DP					█	█	█					
3.4	Write field study report	DP/Consultants							█	█				
Milestone	Field study report 31/08/04									★				
4	Component synthesis report													
4.1	Bring together lit review and case studies	DP							█	█				
4.2	Write report (draft 30/09/04)	DP								█	█			
Milestone	Component report –30/10/04											★		
5	Overall project synthesis													
5.1	Contribute to overall synthesis	DP											█	█
Milestone	Overall synthesis report 30/11/04	DP											█	★

Annex 9 Logframe of the ADB-funded Poverty Reduction Component ¹

Intervention Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions
<p>Overall Objective</p> <p>To contribute to the wider Collaborative Program on Investment in Agricultural Water Development in Sub-Saharan Africa, thereby supporting NEPAD by catalyzing increased investment in agricultural water development for poverty reduction in the region.</p>	<p>Actual and planned public and private sector investment, for East and Southern Africa and, ultimately Sub-Saharan Africa as a whole.</p>	<ul style="list-style-type: none"> • Sectoral strategies, five-year plans and government budgets • Government budget reports • NEPAD reports • Annual reports by financial institutions (including those of private sector) • Government statistical reports • FAO databases 	
<p>Immediate Objectives</p> <p>On the basis of experience to date to:</p> <p>(a) better understand the poverty reduction impacts of various types of agricultural water development in West Africa;</p> <p>(b) identify the most effective institutional and technological approaches; and</p> <p>(c) derive lessons for the design of future agricultural water investments that will better alleviate poverty than those of the past</p>	<p>Clear exposition of poverty reduction, food security and economic growth impacts of past investments.</p> <p>Recommendations for ‘best practices’ presented and validated/endorsed by stakeholders.</p>	<p>Working Group reports to Steering Committee</p> <p>Draft and final report outputs.</p> <p>Validation by stakeholders</p>	<ul style="list-style-type: none"> • Better understanding of poverty reduction impacts, as well as knowledge of the most effective institutional and technological approaches will lead to better project designs and improved quality of investment projects, which will in turn lead to increased investment. • Case studies will be representative of Sub-Saharan Africa. • Wider study will be implemented to augment that proposed.
<p>Outputs</p> <p><i>Report on Agricultural Water Development for Poverty Reduction in West Africa – that (a) analyses the</i></p>	<p>Draft and final reports.</p>	<p>Periodic progress reports from Working Group to Steering Committee.</p>	<ul style="list-style-type: none"> • Appropriate study methodologies adopted. • Study reveals successes and concrete

¹ (N.B. This is almost the same as the log frame of the IFAD Poverty study which is covering East & Southern Africa while the ADB-funded component takes cases from West Africa to complement the IFAD study.)

Intervention Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions
<p>poverty reduction impacts to date of agricultural water development projects/programs in West Africa (including alternatives to conventional irrigation approaches for the production of low value food crops), (b) provides recommendations on the best institutional approaches (including policies, organizations, legal frameworks and those related to implementation arrangements) and technologies for consideration in the design of future projects/programs and (c) contributes to the proposed wider study on Agricultural Water Development for Poverty Reduciton in SSA.</p>		<p>Feedback from stakeholders</p>	<p>lessons that can be translated into specific recommendations.</p>
<p>Activities</p> <ol style="list-style-type: none"> 1. Literature review and desk studies on promising institutional and technological approaches for pro-poor agricultural water development in West Africa 2. Case studies/mini case studies on current/recently completed ADB or WB or other investment and research projects. 3. Validation/endorsement of results through: <ul style="list-style-type: none"> • in-country workshops/seminars during course of case studies 4. Dissemination of results. 	<p>In country and regional workshops/consultations held and comments received</p> <p>Draft and final reports disseminated.</p>	<p>Peer review comments, stakeholder consultation proceedings</p> <p>Progress reports to Working Group.</p>	<ul style="list-style-type: none"> • Studies will clearly demonstrate significant and sustainable poverty reduction impacts from investment in agricultural water development in Sub-Saharan Africa. • Successful experience is replicable in West Africa

Annex 10 Gantt Chart of the ADB-funded Poverty Reduction Component

Task#	Description	Key person(s)	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
1	Inception Report													
1.1	Contribute to integrated inception report	BvK												
Milestone	Inception report 31/01/04		★											
2	Literature review													
2.1	Desk review including IFAD poverty study	BvK												
2.2	Write desk review report	BvK												
Milestone	Desk review report 30/04/04					★								
3	Case studies													
3.1	Implement case study	BvK/AK/OC												
3.2	Analyze data	BvK/FPV/HS												
3.3	Write field study report	BvK												
Milestone	Field study report 31/08/04									★				
4	Component synthesis report													
4.1	Bring together results of case studies and the IFAD findings	BvK												
4.2	Write report (draft 30/09/04)	BvK												
Milestone	Component report –30/10/04												★	
5	Overall project synthesis													
5.1	Contribute to overall synthesis	BvK												
Milestone	Overall synthesis report 30/11/04													★

Annex 11 Logframe of the IFAD-funded Poverty Reduction Component

Intervention Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions
<p>Overall Objective</p> <p>To contribute to the wider Collaborative Program on Investment in Agricultural Water Development in Sub-Saharan Africa, thereby supporting NEPAD by catalyzing increased investment in agricultural water development for poverty reduction in the region.</p>	<p>Actual and planned public and private sector investment, for East and Southern Africa and, ultimately Sub-Saharan Africa as a whole.</p>	<ul style="list-style-type: none"> • Sectoral strategies, five-year plans and government budgets • Government budget reports • NEPAD reports • Annual reports by financial institutions (including those of private sector) • Government statistical reports • FAO databases 	
<p>Immediate Objectives</p> <p>On the basis of experience to date to:</p> <p>(d) better understand the poverty reduction impacts of various types of agricultural water development in East & Southern Africa;</p> <p>(e) identify the most effective institutional and technological approaches; and</p> <p>(f) derive lessons for the design of future agricultural water investments that will better alleviate poverty than those of the past</p>	<p>Clear exposition of poverty reduction, food security and economic growth impacts of past investments.</p> <p>Recommendations for ‘best practices’ presented and validated/endorsed by stakeholders.</p>	<p>Working Group reports to Steering Committee</p> <p>Draft and final report outputs.</p> <p>Validation by stakeholders</p>	<ul style="list-style-type: none"> • Better understanding of poverty reduction impacts, as well as knowledge of the most effective institutional and technological approaches will lead to better project designs and improved quality of investment projects, which will in turn lead to increased investment. • Case studies will be representative of Sub-Saharan Africa. • Wider study will be implemented to augment that proposed.
<p>Outputs</p> <p><i>Report on Agricultural Water Development for Poverty Reduction in East and Southern Africa</i> – that (a) analyses the poverty reduction impacts to date of agricultural water development projects/programs in East & Southern Africa (including alternatives to</p>	<p>Draft and final reports.</p>	<p>Periodic progress reports from Working Group to Steering Committee.</p> <p>Feedback from stakeholders</p>	<ul style="list-style-type: none"> • Appropriate study methodologies adopted. • Study reveals successes and concrete lessons that can be translated into specific recommendations.

Intervention Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions
<p>conventional irrigation approaches for the production of low value food crops), (b) provides recommendations on the best institutional approaches (including policies, organizations, legal frameworks and those related to implementation arrangements) and technologies for consideration in the design of future projects/programs and (c) contributes to the proposed wider study on Agricultural Water Development for Poverty Reduciton in SSA.</p>			
<p>Activities</p> <ol style="list-style-type: none"> 1. Literature review and desk studies on promising institutional and technological approaches for pro-poor agricultural water development in East and Southern Africa 2. Case studies/mini case studies on current/recently completed IFAD-assisted and other investment and research projects. 3. Validation/endorsement of results through: <ul style="list-style-type: none"> • in-country workshops/seminars during course of case studies; and • regional workshop for implementaters of IFAD-assisted projects. 4. Dissemination of results. 	<p>In country and regional workshops/consultations held and comments received</p> <p>Draft and final reports disseminated.</p>	<p>Peer review comments, stakeholder consultation proceedings</p> <p>Progress reports to Working Group.</p>	<ul style="list-style-type: none"> • Studies will clearly demonstrate significant and sustainable poverty reduction impacts from investment in agricultural water development in Sub-Saharan Africa. • Successful experience is replicable in East & Southern Africa

Annex 12 Gantt Chart of the IFAD-funded Poverty Reduction Component

Activity	Week Commencing (2003/2004)																				
	1/9	8/9	15/9	22/9	29/9	6/10	13/10	20/10	27/10	3/11	10/11	17/11	24/11	1/12	8/12	15/12	22/12	29/12	5/1	12/1	19/1
a. Desk Studies																					
Collation & review of project documentation	█	█	█																		
Literature search & review -- water harvesting	█	█	█																		
b. Country Visits & Case Studies																					
Tanzania				█	█	█															
Kenya							█	█	█	█											
Madagascar										█	█	█	█								
Zimbabwe													█	█	█	█					
c. Preparation of Draft Final Report																					
Prepare Draft Final Report																				█	█
Prepare presentations for regional w/shops																				█	█
Staffing																					
Team Leader/Snr Water Management Specialist	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█				█	█
Senior Researcher (IWMI)			█				█	█	█	█										█	
Water Management Specialist			█	█	█	█	█	█	█				█	█	█	█				█	█
Agronomist			█	█	█	█	█	█	█	█	█	█								█	█
Economist/Institutions Specialist				█																	█

Annex 13 Gantt Chart of the Regional Demand Component

Task#	Description	Key person(s)	Oct -03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	June-04	Jul-04	Oct-04	Dec-04
1	Literature review, baseline, diagnostic, projection													
1.1	Collection of reports and literature review	FAO Consultants	█											
1.2	Development of baseline			█	█	█								
1.3	Preparation of diagnostic	FAO Consultants				█	█	█						
1.4	Development of Projection							█	█					
2	Case studies													
2.1	Write reports	FAO Consultants							█	█				
3	Component report													
3.1	Pooled data analysis and integrated report	FAO Consultants/ Jake Burke								█	█			
3.2	Write report	FAO Consultants/ Jake Burke									█			
Milestone	Component report –30/06/04													
												☆		
3	Expert Meeting													
3.1	Presentaion of study report	FAO Consultant/ Jake Burke										█		
3.2	Contribute to overall Collaborative Program synthesis report	JakeBurke											█	█
Milestone	Overall synthesis report 31/12/04													

N.B. The study will be carried out over a period of ten months. This would include a period of 4 weeks for collation of documentation, the literature review and desk studies; 4 weeks for region/country visits and provision for an expert group meeting to peer review the draft final report.

Annex 14 Logframe of the Assessment of Potential Component

INTERVENTION LOGIC	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p>GOAL To identify investments strategies for agricultural water use to alleviate poverty and food insecurity of sub-Saharan Africa (SSA)</p>	<ul style="list-style-type: none"> • Innovative strategies of investment in agricultural water use in SSA • Growth in agricultural GDP 	<ul style="list-style-type: none"> • Donor and government reports • National and regional policy documents • National statistics 	
<p>PURPOSE To explore following aspects using the integrated global water-food model being developed by IWMI and IFPRI.</p> <ul style="list-style-type: none"> ▪ The potential contribution of rainfed agriculture in the food supply and water demand equation ▪ The options of regional and international trade and their impact on food security poverty alleviation in sub-Saharan Africa region ▪ Implications on water and food policies, prices and also options of investments under different water supply and demand scenarios 	<ul style="list-style-type: none"> • Project guidelines and recommendations included in national and regional development plans and investment strategies 	<ul style="list-style-type: none"> • Final Project Report • Reports and policy documents of governments, regional organizations and donor agencies 	<p>Existence of an enabling environment conducive to investments in agricultural water use</p> <ul style="list-style-type: none"> • Investors willing to invest in good projects • Acceptable level of returns that encourage and sustain investments
<p>OUTPUTS</p> <ol style="list-style-type: none"> 1. Business as usual scenario of investment in water resources, where present trends of investment in water related development continues in to the future, 2. More irrigation scenario, where increased investment is expted than at present, and 3. A scenario of more rain-fed yield and more trade between regions within SSA or more trade with regions outside the SSA 	<ul style="list-style-type: none"> • Project reports • Peer-reviewed publications • Presentations at national, regional and international conferences • Guidelines and recommendations published in print and electronic formats 	<ul style="list-style-type: none"> • Project final reports and CD-ROMS • Journals • Conference Proceedings • Press Releases 	<ul style="list-style-type: none"> • Relevant agencies and groups willing to adopt project findings and implement project recommendations • Stakeholders interested in, and committed to project

INTERVENTION LOGIC	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p>ACTIVITIES</p> <p>4. Framework and model development 5. Data collection and analysis 6. Model implementation and scenario testing 7. Synthesizing results</p>	<ul style="list-style-type: none"> • Interim component outputs distributed to Working Group for comment and feedback • Outputs subject to peer review/workshop consultation as appropriate 	<ul style="list-style-type: none"> • Project progress reports and working documents • Workshop proceedings • Project databases • Work plans and budgets 	<ul style="list-style-type: none"> • Partners and stakeholders actively collaborate in project • Adequate data available • Partners willing to share data and information • Invited participants able to attend workshops • Stakeholders provide relevant and timely inputs to project implementation, and critical feedback on project findings

Annex 15 Gantt Chart of the Assessment of Potential Component

Task#	Description	Key person(s)	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
1	Model Development													
1.1	Model development and refinement	Mark Rosegrant (IFPRI) - UA & CdF (IWMI)	█	█	█									
1.2	Model calibration and completion of prototype model	IFPRI-IWMI	█	█	█									
Milestone	Prototype model completion 31/01/04				☆									
2	Data collection													
2.1	Data collection	IFPRI-IWMI	█	█	█									
3	Model testing and validation													
3.1	Test runs	IFPRI-IWMI			█	█	█							
3.2	Initial scenario building	IFPRI-IWMI				█	█	█	█	█				
Milestone	Fully running and tested model 31/08/04									☆				
4	Determining and defining water & food options for SSA													
4.1	Simulation exercises with various scenarios	IFPRI/UA/CdF								█	█			
4.2	Write report (draft 30/09/04)	IFPRI/UA/CdF									█	█		
Milestone	Component report –30/10/04											☆		
5	Overall project synthesis													
5.1	Contribute to overall synthesis	UA/CdF											█	█
Milestone	Overall synthesis report 31/12/04												█	☆

UA - Dr. Upali Amarasinghe, IWMI-HQ, Colombo
 CdF - Dr. Charlotte de Fraiture, IWMI-HQ, Colombo

Annex 16. Logframe of the Irrigation Cost Component

Intervention Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions
<p>Overall Objective</p> <p>To catalyze increased investment in agricultural water use for poverty reduction, food security, and economic growth in sub-Saharan Africa.</p>	<p>Increased levels of investment in agricultural water use in SSA.</p>	<p>Annual reports by donors and governments.</p> <p>National and regional policy documents.</p> <p>National statistics</p>	
<p>Immediate Objective</p> <p>To is to address the question of whether per hectare investment costs in irrigated agriculture in sub-Saharan Africa are high, identify factors contributing to costs; and where costs are indeed high, identify ways and opportunities for reducing these costs.</p>	<p>Set of clear recommendations on ways to reduce costs and to help reverse declining donor interest in irrigation development and investment.</p>	<p>Final Report.</p>	<p>Investors willing to invest in good projects. Water use for agriculture investments will give good returns. Cost-effective opportunities do exist.</p>
<p>Outputs</p> <ol style="list-style-type: none"> 1. Qualitative and quantitative analyses of reasons for high cost per hectare of irrigation establishing whether costs are high & corresponding reasons 2. Completed case projects in SSA (plus Asian cases analyses) 3. Concrete recommendations on specifically ways to reduce irrigation and make investments in irrigation in SSA more attractive 4. Recommendations for any necessary follow-up research. 	<p>Studies and sub-studies completed.</p>	<p>Periodic progress reports and Final Research Report</p>	<p>Data available for the analyses</p> <p>Governments will be responsive to recommendations made and strategies proposed.</p> <p>Funds will subsequently be available</p>
<p>Activities</p> <ol style="list-style-type: none"> 8. Framework development and 	<p>Accepted study framework</p>	<p>Study report</p>	<p>Appropriate consultants can be</p>

Intervention Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions
refinement 9. Literature search and review 10. Encoding & analyses of data from the World Bank, IFAD, ADB 11. Case studies and analyses 12. Preparation of recommendations and strategy formulation	Bibliography and citations Tables and analyses Contribution made/relevance to overall study Implementable strategic guidelines	Periodic reports and Final study report Study report Final Study Report Final Study Report	commissioned. Adequate relevant material available. World Bank, IFAD & ADB data can be made available. Representative cases available. In-country commitment and cooperation. Commitment to strategic thrusts

Annex 17 Gantt Chart of the Irrigation Cost Component

			Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
Task	Description	Key person	1	2	3	4	5	6	7	8	9	10	11	12
	1 Inception	AI												
Milestone	Inception report			★										
	Review and feedback by WB & WG	WB & partners												
	2 Desk review	AI/HS												
Milestone	Desk review report													
	Integration of desk review with other components						★							
	Review and feedback by WB & WG	WB & partners		??			??							
	3 Case studies	AI												
	Add 2 more SSA case studies	AI /HS/ Consultants												
	Write Asia case studies report	AI/ MK/ Consultants												
Milestone	Case studies report							★						
	Review and feedback by WB & WG	WB & partners												
	4 Cost Study component	AI												
	Donor data analyses	AI/HS/Junior consultant												
	Synthesis of results of Asia case studies	AI/MK/DM/IH/RXB/MS												
	Synthesis of results of SSA case studies	AI/HS/DM/ Consultants												
	Integration of all results	AI/ HS/DM												
milestone	Full component report													
	Review and feedback by WB & WG	WB & partners								★				
	Contribution to overall project synthesis	AI/ HS/DM												
milestone	Draft synthesis report											★		
	Workshop with key stakeholders and WG													
	Contribute to final synthesis report												★	
milestone	Final synthesis report													★

★ - milestones AI - Arlene Inocencio; HS - Hilmy Sally; DM - Doug Merrey; IH - Intizar Hussain; RXB - Randy Barker; MS - Madar Samad

Annex 18 Summary of Outcomes of Water for Food Security Session at Pan Africa Conference

OVERVIEW

- a. Water is critical for intensifying agriculture and achieving the agricultural growth rates necessary to lift Africa out of poverty and on a path to sustainable development.
- b. Participants in this well-attended session were highly supportive of the main thrusts of the NEPAD Comprehensive Africa Agriculture Development Program.
- c. We strongly recommend far greater attention to promoting investments to develop and improve water for agricultural production to achieve economic growth, food security and poverty reduction through agricultural water management.

SPECIFIC RECOMMENDATIONS

1. Pursue opportunities for innovative new technologies for agricultural water

- Examples: pro-poor gender-sensitive small scale and micro-irrigation; supplementary irrigation; household and in-field rainwater harvesting; groundwater.
- Formal public irrigation is important but is not a panacea; also encourage technologies that are inexpensive, poverty-reducing, and aimed at helping women farmers intensify agriculture.

2. Support innovative approaches to investment in agricultural water

- Examples: private investment by small, medium and larger businesses (including farmers); induce private investment through public-private sharing; learn from positive experiences and scale up; focus support on women farmers; encourage multiple use water infrastructure for large-scale storage and for local water supply schemes for productive and domestic uses.

3. Create conditions that encourage investment and increase likelihood of good returns to private & public investors while targeting poor people especially women

- Examples: market development at all levels; basic rural infrastructure; secure water and land rights; promote farmers' organizations, capacity building, research support; encourage local innovation building on tradition.
- Institutional and policy reform is key. Agriculture is 'engine' of economic growth.

4. Promote agricultural water in context of Integrated Water Resources Management

- Examples: seek to achieve high productivity of water; balance allocation among demands; attention to environmental issues; invest in innovative storage technologies.
- Developing effective institutional mechanisms for transboundary water management is extremely important to maximize and share benefits from limited resources.

5. Support the Collaborative Program on opportunities for investments in agricultural water in Africa

- Partners are ADB, FAO, IFAD, IWMI, World Bank with support of NEPAD.
- Objective is to identify ways to make agricultural water investments more attractive, cost effective.
- Social and economic benefits of investments in water for agriculture are very high