

Countries: Burkina Faso, Morocco and Uganda

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DEFINITION OF TERMS

Agriculture Water Management (AWM)

It refers to the continuum from rainfall management through to irrigation for the production of crops. It includes both physical and non physical interventions related to field water conservation, water harvesting, supplemental irrigation, ground water irrigation, surface water irrigation and drainage. Physical interventions refer to the development or rehabilitation/upgrading of infrastructure, such as irrigation schemes or storage systems, as well as the implementation of practices and techniques on the ground that aim to control water resources with the purpose of growing crops. Non-physical interventions include: (i) raising public awareness; (ii) policy approaches; (iii) legal frameworks; and (iv) institutions and service delivery.

Water productivity

It is a measure of the economic or biophysical gain from the use of a unit of water consumed in crop production and is expressed in units of kg/m^3 or $\$/\text{m}^3$.

Water use efficiency

Water use efficiency (WUE) is the ratio between effective water use and actual water withdrawal. In irrigation, WUE represents the ratio between estimated irrigation water requirements (through evapotranspiration) and actual water withdrawal. It is dimensionless and can be calculated at any scale (plant, field, irrigation schemes, basin, country, etc.).

Irrigation efficiency at scheme level can be sub-divided into:

- ◆ the *conveyance efficiency*, which represents the efficiency of water transport in canals. In this category, efficiency can be reduced due to: (i) Evaporation from the water surface; (ii) Deep percolation to soil layers underneath the canals (for earth canals); (iii) Seepage through the bunds of the canals; (iv) Overtopping the bunds; (v) Bund breaks; (vi) Runoff in the drain; (vii) Rat holes in the canal bunds.
- ◆ the *field application efficiency*, which represents the efficiency of water application in the field. In this category, efficiency can be reduced due to: (i) Surface runoff, whereby water ends up in the drain; (ii) Deep percolation to soil layers below the root zone.

Water harvesting

The collection of rainfall for direct application to a cropped area, either stored in the soil profile for immediate uptake by the crop or stored in a reservoir for future productive use.

Supplementary irrigation

Supplementary irrigation (SI) can be defined as the addition of small amounts of water to essentially rainfed crops during times when rainfall fails to provide sufficient moisture for normal plant growth, in order to improve and stabilize yields. The amount and timing of SI are not scheduled to provide moisture-stress-free conditions throughout the growing season, but to ensure that the minimum amount of water required for optimal (not maximum) yield is available during the critical stages of crop growth. In this sense, SI is a form of deficit irrigation, as maximum yields are not sought.

Deficit irrigation

Deficit irrigation is a practice whereby water is supplied below full crop-water requirements and mild stress is allowed with minimal effects on yield. Under conditions of scarce water supply and drought, deficit irrigation can lead to greater economic gains than maximizing yields per unit of water for a given crop; farmers are more inclined to use water more efficiently, and more water-efficient cash crop selection helps optimize returns. However, this approach requires precise knowledge of crop response to water as drought tolerance varies considerably by species, cultivar and stage of growth.

Water auditing

A systematic study of the current status and future trends in both water supply and demand, with a particular focus on issues relating to governance, institutions, finance, accessibility and uncertainty in a given spatial domain.

Water accounting

A systematic method of organizing and presenting information relating to the physical volumes and flows of water in the environment as well as the economic values of water through cost-benefit analysis.

EXECUTIVE SUMMARY

Africa is a rural continent where agriculture plays an important role in its social and economic development. For the region as a whole, the agricultural sector accounts for about 60 percent of the total labour force, 20 percent of total merchandise exports and 17 percent of the GDP. Notwithstanding the importance of the sector, productivity levels are far from reaching its full potential. For instance, yields in the continent do not exceed 40 percent under optimal conditions. Taking the example of rainfed maize, yields in sub-Saharan Africa have remained at around 1 tonne/ha in the past 50 years, while in Latin America and the Caribbean yields tripled from 1 tonne/ha to 3 tonnes/ha.

In rainfed areas, which are predominant in the continent, reliance on irregular and unreliable rainfall is one of the major causes behind the low crop yields that characterize African agriculture. In irrigated areas, the lack of modern irrigation systems and the bad state of infrastructure lead to considerable water losses, that eventually is translated into lower productivity levels. This, coupled with inadequate farming management practices, has resulted in low water productivity and use efficiency in both in irrigated and rainfed areas.

Improved agriculture water management (AWM) can play a key role in increasing water use efficiency and productivity. Within rainfed agriculture, AWM includes the more efficient use of green water (soil moisture), developing water harvesting capacity and using supplementary/deficit irrigation techniques. For irrigated agriculture, improved AWM would target at reducing water losses from drainage, seepage and non-productive evaporation.

The Comprehensive Africa Agriculture Development Programme (CAADP) provides a common framework for stimulating and guiding national, regional and continental initiatives for enhanced agriculture productivity. Its Pillar 1 aims to extend the area under sustainable land and water management in Africa. In line with CAADP's principles, FAO together with the Partnership for Agricultural Water in Africa (AgWA) has formulated this project with an overall goal to reduce hunger and poverty in three pilot African countries (Burkina Faso, Morocco and Uganda) by focusing on the improvement of AWM and mainstreaming AWM in national CAADP process.

The project has the following outputs: (1) Enhanced capacity for improved water productivity in small scale agriculture in Burkina Faso, Morocco and Uganda; (2) Enhanced capacity for increased water use efficiency in small scale irrigation in Burkina Faso, Morocco and Uganda; (3) Enhanced water harvesting capacity in Burkina Faso, Morocco and Uganda; (4) Outreach materials, including technical reports, on measures to increase water productivity and efficiency are prepared and widely disseminated to different stakeholders; (5) National water audits are prepared for Burkina Faso, Morocco and Uganda; (6) Defined bankable investment projects in AWM for Burkina Faso, to foster the investment flow into priority lines of intervention defined in its National Agriculture Investment Plan (NAIP); (7) An investment profile for the identification of AWM priorities at national level is produced and national capacity is built in Morocco in the context of the CAADP-Compact; (8) Defined bankable investment projects in AWM for Uganda to foster the investment flow into priority lines of action defined in its refined National Agriculture Investment Plan; (9) Outreach materials (including technical reports) on the mainstreaming of AWM in CAAP-Pillar 1 process are prepared and widely disseminated to different stakeholders.

The overall approach of the project is a combination of bottom up and top down activities in the field of AWM and different levels (micro, meso and macro levels). The main target group of the project are the technical experts, extension agents, and policy and decision makers. The ultimate beneficiaries of the project are the small scale and family farmers. At the micro level, the project will be working with extension agents and farmers' representatives; at the meso level, the project will be working with research institutes and regional governance structures; at the macro level the project will be working with National governments. The involvement and interaction of all levels in the project are essential for an integrated approach of AWM.

The long term vision of the project is that in the future, the in-country findings and processes which are of common nature can be synthesized and scaled up to other countries in a regional (South-South) cooperation process and globally. This will lead to the increase of investment in AWM in targeted countries that is socially equitable, profitable at the farm level, economically viable, environmentally neutral or positive and sustainable.

The project's sustainability will be ensured not only by the great commitment of the national governments and the support of a strong coalition of stakeholders, but also by the involvement of development partners at all stages of the process and their active participation in all the platforms created by the project. The alignment with the donors' strategies and the development of an agreed upon documents will create conducive environment for the mobilization of financial resources.

1. CONTEXT

1.1. Political, economical, social and environmental context

Africa is a rural continent where agriculture plays an important role in its social and economic development. For the region as a whole, the agricultural sector accounts for about 60 percent of the total labour force, 20 percent of total merchandise exports and 17 percent of the GDP.

Notwithstanding the importance of the sector, productivity levels are far from reaching its full potential. For instance, yields in the continent do not exceed 40 percent under optimal conditions. Taking the example of rainfed maize, yields in sub-Saharan Africa have remained at around 1 tonne/ha in the past 50 years, while in Latin America and the Caribbean yields tripled from 1 tonne/ha to 3 tonnes/ha.

In rainfed areas, which are predominant in the continent, reliance on irregular and unreliable rainfall is one of the major causes behind the low crop yields that characterize African agriculture. In irrigated areas, the lack of modern irrigation systems and the bad state of infrastructure lead to considerable water losses, that eventually is translated into lower productivity levels. This, coupled with inadequate farming management practices, has resulted in low water productivity and use efficiency in both in irrigated and rainfed areas.

Improved agriculture water management (AWM) can play a key role in increasing water use efficiency and productivity. Within rainfed agriculture, AWM includes the more efficient use of green water (soil moisture), developing water harvesting capacity and using supplementary/deficit irrigation techniques. For irrigated agriculture, water productivity can often be increased by increasing efficiency with the reduction of water losses from drainage, seepage and non-productive evaporation.

The New Partnership for Africa's Development (NEPAD) has identified agriculture and sustainable water management as central to achieving poverty alleviation, food and nutrition security and attaining the Millennium Development Goals (MDGs) in Africa. In this regard, NEPAD launched the Comprehensive Africa Agriculture Development Programme (CAADP) in 2003, with the objective of speeding economic growth through agriculture-led development. In particular, CAADP's Pillar 1 aims to extend the area under sustainable land and water management (SLWM) in Africa. The CAADP is intended as an ongoing process involving regular updating of strategies and plans, paying particular attention to issues of gender, livelihoods sustainability, climate change adaptation and mitigation and disaster risk management and crisis response.

In line with CAADP's principles and objectives, this project aims to support and complement countries' efforts in the implementation of this development programme. Burkina Faso and Uganda have already signed the CAADP Compacts¹ and prepared Agriculture Investment Plans. However, Morocco is lagging behind as it has not launched yet the CAADP implementation.

1.2. Problem description

Burkina Faso:

The agricultural sector in Burkina employs around 92 percent of the active population and accounts for 34 percent of the Gross Domestic Product (GDP) of the country. Despite the sector's contribution to social and economic development, levels of undernourishment are still around 26

¹ Producing a CAADP Compact starts with the organization of a country round table, where national key players come together to assess their own particular situation and develop a road map for going forward. This process leads to the identification of priority areas for investment in the agriculture sector that is signed by all key partners. Generally, after the signature of a CAADP Compact is followed by the preparation of a National Agriculture Investment Plan.

percent. The combination of climatic shocks, soaring food prices and regional political insecurity continues to strain the ability of vulnerable households to cope with these.

In Burkina, a large share of agriculture production (about 70 percent) is rainfed. Farmers are typically traditional and smallholders. The dependence on climate variability was made evident when in 2012, cereal production fell by 20 percent compared to the previous year due to a drought. It resulted in a 154 462 tonne deficit. With insufficient food production, many farming families consume their seed stocks of cereals and beans, leaving them with fewer seeds to plant during the next season. More than half of rural households are poor, do not own land and have few animals, which are a crucial source of nutrition and income.

According to the Global Yield Gap Atlas, the major agricultural constraints include the uneven spatial and temporal distribution of rainfall and the inherently low fertility of the soils. The soils are characterized by their advanced degrees of weathering, poor structure, low contents of active clay and organic matter, and their nutrient deficiencies, causing subsequent declines in crop yields. Data on yield gaps for the country is not available; however agricultural productivity is known to be low, because farming is practiced extensively on soils that receive small amounts of rainfall, being also irregularly distributed.

Considering this, the development of the water sector is of key importance to cope with water scarcity and with increasing food demand. It is important to increase the availability of water for crop production and to improve water use efficiency and productivity.

The investment plan prepared by Burkina under the CAADP framework highlights the need for an expansion of irrigated area and to support rainfed farming with supplementary irrigation. Supplementary irrigation can be boosted with the development of water harvesting systems including small dams and ponds/boulis. The improved management of low lands (“bas fonds”) and water resources in general is also an important sub-component. The project will take into account these main lines of action highlighted in the plan and shape them into concrete bankable investment project for the country to reach its objectives. In addition, the project will also include extensive learning and application of best practices.

Morocco:

Agriculture in Morocco accounts for 15 percent of the GDP and is a source of employment for 24 percent of the economically active population. Undernourishment is not an issue in the country, since around 5 percent of the population is considered to be undernourished.

Morocco is, however, a highly water-stressed country, and it is imperative that its increasingly scarce water resources be managed as efficiently and as economically as possible, so as to cope with the high energy costs involved in their mobilization. Such management necessarily entails a positive and sustainable use of irrigation water which accounts for more than 80 percent of mobilized water resources, with losses often exceeding 50 percent of the quantity of water drawn².

According to the World Bank, irrigation water productivity in the country is low (on average cubic meter of water generates only 1.63 Moroccan Dirham or around US\$0.2). Furthermore, much water is lost between the dam and the irrigated crops. The distribution networks between the dam and the field require rehabilitation and do not benefit from modern management systems to regulate releases and detect leaks. Between the field and the plant, evaporative losses are high - less than 10 percent of land is equipped with modern irrigation techniques.

Morocco is focusing its development agenda on agriculture and water resources development and management. There is a strong water development component in agriculture programmes. It includes the rehabilitation of the existing irrigation schemes, a shift of emphasis towards the development of small scale irrigation schemes, water harvesting, water productivity in rainfed areas, water savings and water use efficiency, phased development and vertical expansion.

² AfDB 2009. National Irrigation Water Saving Programme Support Project (PAPNEEI)

Nevertheless, there is a need to support national capacity for evidence-based analysis to tackle in particular, governance, institutional and financial barriers to sustain agricultural water management and formulate a plan to prepare the country's policy including water use efficiency and water productivity, involving ministries, representatives of civil society and private sector.

The project will therefore fill these technical and institutional capacity gaps and assist thereby the countries to foster agricultural water management through the effective implementation of the CAADP compact and post-compact process, the refinement of national agricultural water development strategies, and their alignment with food security policies and programmes. Moreover, the project will promote regional integration, coordination, and partnerships at national and regional level.

Uganda:

Agriculture plays an important role in the country. It accounts for 33 percent of the national GDP and employs around 77 percent of the total economically active population. Notwithstanding the predominance of the sector in Uganda, undernourishment levels are estimated at about 35 percent. Ugandan agriculture is largely dependent on small and medium scale farmers with average land holdings of 2.5 ha.

The low productivity of the agriculture sector is one reason behind these unacceptable levels of undernourishment. According to the *Agriculture Sector Development Strategy and Investment Plan (ASDSIP)*, for most crops, yields at farm level are well below those at the research stations (see Table 1). This means that farm level productivity is far below the attainable potential and that there is much room for improvement. The high dependence on rainfall of Ugandan agriculture systems is one major cause for the low yields; less than 1 percent of the total cultivated area is actually irrigated.

Table 1: Yield Gap of Selected Crops (kg/ha)

Crop	On farmers' fields	On research station	Yield gap (%)
Maize	551	5000-8000	807-1352
Beans	358	2000-4000	458-1017
Groundnuts	636	2700-3500	324-450
Bananas	1872	4500	140
Coffee	369	3500	849

Source: External Monitoring Unit of Agriculture Sector Programme Support, 2007

The 1993/94 drought in Uganda affected over 1.8 million people in terms of lack of food and water. Similarly, the drought that hit the country in 1998/99 affected over 3.5 million. The most recent drought was in 2006 but other localized dry spells also occurred in 2008, 2009, 2010 and 2011. The recurrent rainfall deficit has had significant negative impact on Uganda's economy and food security. It is expected that the variability and unpredictability of rainfall will continue to increase.

In addition to this, as per recommendations of the World Bank, Uganda would have to rely on a more intensive agriculture in order to feed a growing population.

This means that improving crop productivity is a must for the country. In this regard, the ASDSIP aims at (1) optimizing the use of rainwater for increased crop production; (2) maximising the utilisation of existing irrigation schemes in a sustainable manner; and (3) developing new irrigation schemes in a sustainable manner.

It is now time to translate these objectives into concrete bankable investment projects. There have been some attempts already in the formulation of these type of projects under the CAADP framework but without success. This project will take into account the obstacles that prevented the

implementation of these initiatives and will tackle them in order to achieve a successful performance.

1.3. Link to international/national policies/rationale

The project will contribute to the achievement of MDG1 (Eradicate extreme poverty and hunger) by improving agricultural productivity which will have an impact on countries' food security. The project aims at protecting water resources from the increased pressures resulting from rapid population growth and adaptation to climate change, which is key to reaching the increasing food security and poverty reduction.

Improved access to food and the eradication of poverty are also two of the main commitments made during the World Food Summit (WFS), held in Rome in 1996. In addition to this, the project will also contribute to another of the WFS commitments: the optimal allocation and use of public and private investments.

During the 2013 Forum on Irrigation and Pastoralism in the Sahel that took place in Dakar (Senegal), countries in the region acknowledged the importance of agriculture water management for the development of the sector and committed themselves to implement a set of strategies and investment programs to develop countries potential in terms of irrigation and water resources.

The project goes in line with CAADP's objectives of promoting agriculture growth in the African continent and in particular with its Pillar 1, that aims to extend the area under sustainable land management and reliable water control systems.

The implementation of this project will also contribute to one of the main goals of the Swiss Agency for Development and Cooperation (SDC), namely "Securing fair access to resources and services for the greatest number of people". This includes, among others, the sustainable use of land and water resources.

With its combined analytical, facilitation of dialogue, technical and institutional strengthening activities, the project comes strongly in line with AgWA's objectives spelled out in its five pillars (advocacy, resource mobilization, knowledge sharing, donor harmonization, and capacity building) to promote greater investment in AWM and the inclusion of this into national strategies and programmes for food security, agriculture and water.

At the national level, the project will aim at improving water management (for both rainfed and irrigated agriculture), increase water use efficiency and water productivity in the three countries, and will strongly enhance the technical and planning capacity at professional and institutions' level which would, in turn, foster mutual support and learning. It facilitates access to relevant adapted and adopted solutions on water management and expertise at all levels.

The project is also contributing to countries' efforts to improve food security and develop the agriculture sector by managing natural resources in a sustainable manner. This is illustrated below with a brief description of countries' main policy objectives for the agriculture sector.

Burkina Faso:

With the purpose of fostering the development of the agricultural sector the "Cadre d'action pour l'investissement Agricole au Burkina Faso" was developed recently in 2012, and underlined the importance of the implementation of the "La Politique Nationale de l'Eau (PNE)", with its following objectives: (1) Sustainable Use of Agricultural Natural Resources to satisfy water requirements (in terms of quantity and quality); (2) Water and soil protection and management of extreme weather events; (3) Management of transboundary water resources and conflict prevention; (4) Improving governance and Integrated Water resources Management Plan. Regarding CAADP implementation the improvement of water management is among the priority lines of intervention for the development of the agriculture sector, with the objective of promoting irrigation and the integrated management of water resources.

Morocco:

The country is guided by “La Strategie Nationale de l’Eau au Maroc”. The three pillars of this strategy are: (1) Water demand management and water valorisation; (2) Water resources management and development of water supply; (3) Preservation and protection of water resources, ecosystems and fragile areas. In addition to this, the strategic plan for Green Morocco (*Le Plan du Maroc Vert*) underlines the need to improve water use efficiency and productivity in the country. Regarding the CAADP process, the country has still not taken any steps towards its implementation.

Uganda:

The National Irrigation Master Plan (2010-2035) aims at promoting the use of water in agricultural production through supporting farming system diversification, private investment in bulk water infrastructure and service delivery and more Public-Private Partnerships. The National priorities are to enhance resilience of communities to drought and to deal with agricultural sector challenges, in particular to strengthen agro-pastoral and pastoral sector, through irrigation (intensification and productivity) and through water harvesting for pastoralist in rainfed areas. The government is also implementing the post CAADP compact process. In this framework the country prepared the *Agriculture Sector Development Strategy and Investment Plan: 2010/11 - 2014/15*. The strategy has four main programmes of action: (1) Enhancing production and productivity, (2) Market access and value addition, (3) Improving the enabling environment, and (4) Institutional strengthening in the agriculture sector. The first programme includes a component on water for crop production, that aims at developing the country’s irrigation potential, enhancing farmers’ capacity in water resource management and water harvesting.

1.4. Related projects

FAO and AgWA are jointly implementing a number of projects in Africa that are closely related to this project proposal (Table 2). These projects also aim to support the implementation of the CAADP process in different African countries and mainstreaming Agriculture Water Management in the process. As in this proposal, essential will be the application of the Diagnostic Tools for Investment (context, financial, institutional and policy) developed within the framework of AgWA partnership. Countries covered already in FAO/AgWA related projects are Tanzania, Nigeria, Egypt, Malawi, the Sudan, Swaziland, Kenya, South Sudan and Uganda.

This project will build on experiences learned from the implementation of these projects and will contribute to add three more African countries to this analytical work that has the ambition of covering as much of the continent as possible, contributing to AgWA’s pan African focus and to CAADP process at all Africa level. The added value of this proposal also lies in its outreach campaign (output 9) presenting the main findings, lessons learned and recommendations for the scaling up of the measures and processes to include AWM in agriculture policies and investment plans. The outreach campaign will also include experiences and lessons learned from other FAO/AgWA projects, thus more capitalizing the scale-up objective set by this project.

FAO, together with other partners, is also implementing a number of projects that go in line with outputs 1 to 5 of this proposal. These projects deal with the application of tools and knowledge that were developed through the normative programme of FAO. Specifically, MASSCOTE and its new Water Downed approach for small irrigation to evaluate and analyze different components of an irrigation scheme in order to improve water use efficiency, CROPWAT-AquaCrop to calculate irrigation water requirements and predict yield response to water under different water management practices and climatic conditions, as well as knowledge and tools to develop water harvesting and water auditing (Table 3).

This project will build on experiences and lessons learned from the implementation of these initiatives and will add value by applying those tools under different environments and conditions.

Table 2: FAO/AgWA related projects (Outputs 6 to 9)

PROJECT TITLE	PROJECT COUNTRIES	TIME FRAME	BUDGET (US\$)	FUNDING PARTNER	PROJECT OBJECTIVES
Building a Mature Partnership for Scaling up Agricultural Water Management in Africa (AgWA)	Regional Africa Tanzania and Nigeria	Oct 2011- Dec 2013	350 000	IFAD	To support AgWA to transform successfully to a mature, widely accepted and effective entity. To help identifying the Agricultural Water Management (AWM) components of IFAD's Country Strategic Opportunities Programs (COSOPs). To apply AgWA's diagnostic tools for investment in water for agriculture and energy.
Support to Agricultural Water Management (AWM) in the Horn of Africa through the Partnership for Agricultural Water in Africa (AgWA)	Kenya, South Sudan and Uganda	Nov 2013- March 2014	346 475	US Department of State	To support agricultural water management through the effective implementation of the CAADP Compact and post-Compact process in Kenya, South Sudan, Uganda, the refinement of national agricultural water development strategies, and the alignment to national strategies for food security strategies and programmes. To contribute to the medium and long-term planning of policies and programmes aimed at building longer-term resilience to drought and other disasters in the region..
Support to the pre- and post-CAADP compact process for improved agricultural water management	Egypt, Malawi, the Sudan and Swaziland	Oct 2013- March 2015	488 000	FAO	To assist Egypt, Malawi, the Sudan and Swaziland to foster agricultural water management through the effective implementation of the CAADP compact and post-compact process, the refinement of national agricultural water development strategies and the alignment to national strategies for food security strategies and programmes.
Assessment of the impact of agricultural water management projects funded by the African Development Bank (1990-2005)	Regional Africa		300 000	AfDB	The objective of the assessment is to evaluate past experiences, draw lessons learned and formulate recommendations to guide and inform the Bank's future investments in AWM projects in Africa, in the framework of CADDP Pillar1 and Country CADDP Compact Process. This will also enable the Bank (OSAN) to improve its visibility on AWM through the assessment of the impact of the last fifteen years (1990-2005) of investment.

Table 3: FAO related projects (Outputs 1 to 5)

PROJECT TITLE	PROJECT COUNTRIES	TIME FRAME	BUDGET (US\$)	FUNDING PARTNER	TOOL APPLIED
Modernisation de l'Agriculture Irriguée dans le Bassain de l'Oum Er Rbia	Morocco	Jan 2013- Dec 2017	1 991 493	Morocco	CROPWAT- AquaCrop
Uso del Modelo "AQUACROP" para estimar rendimientos agrícolas en Colombia, en el Marco del Estudio de Impactos Económicos del Cambio Climático (EIECC)	Colombia	Nov 2011– Dec 2013	228 000	FAO	CROPWAT- AquaCrop
Coping with water scarcity – the role of agriculture. Developing National Water Audits in Africa	Ethiopia	March.2009– April 2013	1 991 493	Italian Cooperation	Water Auditing
Coping with water scarcity – the role of agriculture. Phase III: Strengthening national capacities	Jordan and Lebanon	Oct 2010– June 2014	2 373 000	Italian Cooperation	MASSCOTE and CROPWAT- AquaCrop
Support Cooperation on Water Resource Management in the Lower Mesopotamia	Iran, Iraq and Syria	Jan 2013- Dec 2015	4 538 235	Italian Cooperation	MASSCOTE and CROPWAT- AquaCrop
Increasing small scale farmers resilience to drought by adopting best irrigation practices and modern irrigation technologies	Moldova	2014-2015		Hungary	MASSCOTE
Water Harvesting in the Southern Region of Syria	Syria	Sep 2007- Sep 2009	298 000	FAO	Water Harvesting

2. OBJECTIVES

2.1. Impact

Hunger and poverty is reduced in the selected project countries.

2.2. Project outcomes, expected outputs and activities

Outcome 1: Improved agriculture water management in Burkina Faso, Morocco and Uganda

Output 1. Enhanced capacity for improved water productivity in small scale agriculture in Burkina Faso, Morocco and Uganda

Improving water productivity (both under rainfed or irrigated conditions) requires an increase in crop yields, which can be obtained by changing crop, soil and water management. In rainfed agriculture, bridging crop water deficits during dry spells through supplementary irrigation stabilizes production and increases both production and water productivity dramatically. In irrigated agriculture, the water-soil-crop good management is key to ensure substantial water productivity gains, thus, increasing food production and alleviating the risks of its insecurity. Improving water productivity will be done by applying a recently developed FAO tool, namely, CROPWAT-AquaCrop. CROPWAT-AquaCrop is a crop water productivity model developed to simulate yield response to water of herbaceous crops under any climatic and soil conditions, including climate

change cases. The training programmes will target agricultural water extension agents and technical experts.

Activity 1.1. Conduct training programmes at regional/national levels targeted to agriculture water professionals³ and extension agents aimed at tutoring in the use of tools to enhance water productivity (CROPWAT-AquaCrop).

Activity 1.2. Apply and monitor the application of practical tools to enhance water productivity (CROPWAT-AquaCrop) under small scale farming conditions for rainfed and irrigated agriculture (two case studies per country) and examine possible changes in crop water management practices to improve water productivity.

Activity 1.3. Launch information campaigns in the three countries to promote changes in water management practices under both rainfed and irrigated agriculture, and widely disseminate the results of the application of practical tools to enhance water productivity to the farmers.

Output 2. Enhanced capacity for increased water use efficiency in small scale irrigation in Burkina Faso, Morocco and Uganda

This output would be targeted at improving the performance of irrigation systems for small scale irrigation and the use of water saving techniques in the three project countries. This will be done by applying a Water-Downed FAO tool to Mapping System and Services for Canal Operation Techniques (MASSCOTE). The Water-Downed MASSCOTE (WD-MASSCOTE) is an adaptation of the FAO's developed tool MASSCOTE, that is used to assess the performance of large irrigation schemes and develop a modernization plan, to fit the characteristics of small-scale irrigation schemes. The WD-MASSCOTE will be aligned to: baseline system analysis through Rapid Appraisal Procedures, and a vision of water services to users and integration of operation improvements into service oriented management options. The training programmes will target agricultural water extension agents and technical experts.

Activity 2.1. Organize training programmes at regional/national levels targeted to agriculture water extension agents and water professionals³, including those responsible of the management of irrigation schemes, in the use of tools to analyze and evaluate the performance of small scale irrigation systems (WD-MASSCOTE).

Activity 2.2. Apply practical tools to analyze and evaluate the performance of small scale irrigation systems (WD-MASSCOTE) in pilot cases in each of the three project countries, and examine possible improvements in operation and management of irrigation systems.

Activity 2.3. Develop a modernization plan for small scale irrigation in pilot cases in each of the three project countries.

Activity 2.4. Launch information campaigns in the three countries for the increase water use efficiency in small scale irrigation, and widely disseminate the results of the application of the WD-MASSCOTE to users including staff of authorities and farmers' representatives responsible for operation of irrigation systems.

Output 3. Enhanced water harvesting capacity in Burkina Faso, Morocco and Uganda

This output will be targeted at enhancing water harvesting for agricultural production in smallholder settings in the three countries. Investments in water harvesting techniques for supplementary irrigation improve farmers' resilience to dry spells, and, in combination with improved soil, nutrient and crop management can substantially increase the productivity of small-scale rainfed agriculture. Pilot water harvesting schemes for agricultural production, with the participation and contribution

³ From related ministries, research institutions and universities

of farmers will be used for demonstration and training purposes. The training programmes will target agricultural water extension agents and technical experts.

Activity 3.1. Carry out an assessment of the status of water harvesting sub-sector in the three countries including the mapping and evaluation of existing options.

Activity 3.2. Implement on-ground pilot projects per country based on assessment carried out through activity 3.1.

Activity 3.3. Develop and implement a training program on water harvesting to build the capacity of agricultural water extension agents and technical experts at relevant ministries.

Activity 3.4. Based on the results of the sub-sector assessment and the on-ground pilot projects, develop sub-strategies for water harvesting in the three countries that serve as input to national agriculture and water resources strategies.

Output 4. Outreach materials, including guides for decision makers and extension agents, on measures to increase water productivity and efficiency as well as water harvesting techniques prepared and widely disseminated to relevant stakeholders

The guide for decision makers will help policy makers gain a better understanding of how to increase water productivity and efficiency and the importance of advocating for the most adequate AWM solutions in their countries. The guide will assemble evidence, based on practical examples, for use by a policy and decision maker.

The guide for extension agents will combine information on available technology and approaches (AquaCrop, WD-MASSCOTE and water harvesting techniques) and will be useful to those working on the ground to create the most effective path for increasing water productivity and efficiency. The guidelines will include the special needs of different geographic locations, the need for community involvement, and case studies.

In addition to this, other outreach materials will describe the case studies where AquaCrop, WD-MASSCOTE and water harvesting techniques were applied and will present the main findings and recommendations for the scaling up of the measures identified that improved water productivity and efficiency. The preparation of these materials will thus benefit from results of activities 1.1. to 3.4. In addition to this, the following activities will have to be implemented:

Activity 4.1. Prepare guides decision makers and extension agents, technical reports, posters, brochures and information materials targeting for different stakeholders, capitalizing the results produced under outputs 1, 2 and 3.

Activity 4.2. Disseminate the outreach materials to wide range of stakeholders.

Activity 4.3. Organize a session/seminar in an African conference related to agriculture or water resources management (e.g. Africa Water Week).

Activity 4.4. Organize a session/seminar in a Global conference related to agriculture or water resources management (e.g. World Water Week).

Output 5. National water audits prepared for Burkina Faso, Morocco and Uganda

For each of the three countries, national water audits on current and projected surface water and groundwater resources availability and demand will be done. The audits will lead to a comprehensive assessment that forms the basis for countries' future water management and water policy, and a summary report with a compilation of key options for policy and decision makers.

The detailed assessment of agriculture and other sectors' water use, including its productivity, its value-in-use, and its efficiency during the water use process, will give the countries a better insight on how to adapt their water policy and how to improve their water management in the future. Different development options will be analyzed by building scenarios for different water use

sectors. This scenario approach will help discuss trade-offs between irrigation development, increase in domestic supply, and tourism

- Activity 5.1.** Prepare an updated national land and water resources database, supported by adequately performing water data processing and GIS software and hardware. This will contain geo-referenced time series on rainfall, river discharges and groundwater levels, base-line information including meteorological and (geo-) hydrological maps, soil maps, land use and land cover maps, irrigation maps, agricultural and gender disaggregated social statistics.
- Activity 5.2.** Conduct a training programme for relevant personnel on the operation and maintenance of the land and water resources database.
- Activity 5.3.** Examine trends of meteorological records, river discharges and ground water levels, providing insight in the extent to which water availability depends of variations in climate.
- Activity 5.4.** Prepare a water use assessment for each country that will include all water use sectors, with a special focus on agricultural water use assessment, supported by GIS software and hardware.
- Activity 5.5.** Develop a spatially distributed water accounting tool, linked to the upgraded database, applied for water resources scenarios including a users' manual. This output will provide the information needed to evaluate the implications of changes in boundary conditions (population, climate and trade) for the performance of the existing and projected future water management infrastructure.
- Activity 5.6.** Conduct a training programme for relevant personnel on the operation of the water accounting tool.
- Activity 5.7.** Implement an outreach and awareness campaign to disseminate the results of the Water Audit to stakeholders involved in water management on all levels.

Outcome 2: Agriculture Water Management (AWM) mainstreamed in the CAADP process (Pillar I) in Burkina Faso, Morocco and Uganda

Output 6: Defined Bankable investment projects in AWM for Burkina Faso to foster the investment flow into priority lines of intervention defined in its National Agriculture Investment Plan (Programme National d'Investissement Agricole, PNIA)

- Activity 6.1.** Establish a country team, in liaison with the national CAADP Task Forces, composed of members from the ministries, FAO national representation and representatives from the private sector and civil society organizations, with the role to coordinate the in-country post-Compact process related to Agricultural Water Management.
- Activity 6.2.** Organize a national workshop with all cooperating partners and lead by the national government to detail key AWM projects, based on the priority lines of intervention included in the National Agriculture Investment Plan.
- Activity 6.3.** Using the financial diagnostic tool developed within the CAADP framework, support the identification of financial and economic indicators, by project, to facilitate the scheduling of investments.
- Activity 6.4.** Conduct training on the above “financial diagnostic tool” for staff members of the relevant ministries and national organizations involved in the process.
- Activity 6.5.** Formulate bankable investment projects on AWM, including all necessary information (context analysis, project justification, target beneficiaries, technical

description of the project's objectives and implementation, budget, risks, monitoring and evaluation plan) for donors to decide on the allocation of financial flows.

Output 7. An investment profile for the identification of AWM priorities at national level is produced and national capacity is built in Morocco in the context of the CAADP-Compact process to tackle in particular knowledge, institutional, governance, regulatory and financial barriers to sustainable agricultural water management.

- Activity 7.1.** Assist Morocco to reach an agreement with development partners on their inputs and involvement in view of ensuring coordination and synergy in support to the CAADP-Compact process.
- Activity 7.2.** Under the coordination of the Ministry of Agriculture and Fisheries⁴ and the Ministry of Energy, Mines, Water and the Environment⁵ in Morocco, establish a Task Force with the role to coordinate the in-country CAADP-Compact process related to AWM.
- Activity 7.3.** In close collaboration with the government officials, formulate a detailed work plan and a strategy for the delivery of the assistance in preparing the country's CAADP Compact, in synergy with relevant Pillar institutions' activities.
- Activity 7.4.** Support the in-country process for technical evidence-based analysis, using the diagnostic tool developed within the CAADP (Pillar 1) framework, that will lead to: the review of past/ongoing agriculture development interventions in the country; and the identification of factors of success/failure, best practices, and lessons learnt.
- Activity 7.5.** Support the in-country process for policy and institutional evidence-based analysis, using the diagnostic tool developed within the CAADP (Pillar 1) framework, that will lead to: the assessment of the characteristics, effectiveness, and capacity of the agriculture and water sector institutions; the analysis of the legal and policy framework.
- Activity 7.6.** Support the in-country process for financial evidence-based analysis that will lead to realistic estimates and assessment of available means of finance from governments, donors and the private sector within short, medium and long-term time frames.
- Activity 7.7.** Prepare a National Investment Profile in order to: (a) review the programme areas to be targeted in the CAADP Compact based on the evidence-based analysis; (b) review of ongoing and pipeline agriculture development projects and programmes; (c) analysis of the adequacy of the investment areas identified in the Compact and ongoing and pipeline projects for achieving the CAADP growth target; and (d) identification of supplementary investment programme areas. The updated national Investment Profile will contribute to the AWM section of the CAADP Compact.

Output 8. Defined bankable investment projects in AWM for Uganda to foster the investment flow into priority lines of action defined in its refined National Agriculture Investment Plan (Agriculture Sector Development Strategy and Investment Plan: 2010/11-2014/15)

Uganda has already prepared and National investment plan (Agriculture Sector Development Strategy and Investment Plan: 2010/11- 2014/15) that will be refined through a project funded by the United States Department of State (Support to Agricultural Water Management (AWM) in the Horn of Africa through the Partnership for Agricultural Water in Africa). The refined investment plan will include a comprehensive Agricultural Water Management chapter that details the different programs, sets clear priorities, identifies activities and details costing in the form of a financing plan

⁴ Ministre de l'agriculture et de la pêche maritime

⁵ Ministre de l'énergie, des mines, de l'eau et de l'environnement

with clearly defined financing gap. The next step after the preparation of the refined investment plan is a further refinement of identified programmes into concrete bankable investment projects.

Activity 8.1. Establish a country team, in liaison with the national CAADP Task Forces with the role to coordinate the in-country post-Compact process related to AWM.

Activity 8.2. Organize a national workshop with all cooperating partners and lead by the national government to detail key AWM projects, based on the priority areas identified in the refined National Agriculture Investment Plan.

Activity 8.3. Using the financial diagnostic tool developed within the CAADP framework, support the identification of financial and economic indicators, by project, to facilitate the scheduling of investments.

Activity 8.4. Conduct training on the above “financial diagnostic tools” for staff members of the relevant ministries and national organizations involved in the process.

Activity 8.5. Formulate bankable investment projects on AWM that should include all necessary information (context analysis, project justification, target beneficiaries, technical description of the project’s objectives and implementation, budget, risks, monitoring and evaluation plan) for donors to decide on the allocation of financial flows.

Output 9. Outreach materials (including technical reports) on the mainstreaming of AWM in CAAP-Pillar 1 process prepared

These materials will describe the process of mainstreaming of Agriculture Water Management in the three project countries and will present the main findings and recommendations for the scaling up of the measures and processes to include AWM in agriculture policies and investment plans.

The preparation of these materials will thus benefit from results of activities 6.1. to 8.5. In addition to this, the following activities will have to be implemented:

Activity 9.1. Conduct interviews with members of country teams/task forces and workshop participants in each of the project countries.

Activity 9.2. Revision of relevant literature and CAADP-Pillar 1 related documents in each of the project countries.

Activity 9.3. Based on results of interviews and literature/policy review prepare technical reports, posters, brochures targeting different stakeholders describing the country CAADP implementation process and the mainstreaming of AWM in the process and including the key findings and recommendations for the successful implementation of CAADP Pillar 1 and the mainstreaming of AWM.

Activity 9.4. Disseminate the outreach materials, summarizing activities implemented and capitalizing main findings and recommendations, to wide range of stakeholders.

Activity 9.5. Organize a session/seminar in an African conference related to agriculture policy or water policy (e.g. Africa Water Week, the CAADP Partnership Platform, etc.)

2.3. Description of impact of project. How products/services of the project will produce effects and changes for the target group

The project ultimately aims to reduce hunger and poverty in the targeted countries in line with MDG1. More specifically, it aims at improving AWM practices and mainstreaming AWM in CAADP Pillar 1 processes in each of the project countries.

Concrete changes and effects on target groups are described below per project output:

Output 1 (Enhanced capacity for increased water productivity)

The trainings on CROPWAT-AquaCrop will be a pre requisite for the practical application of the tool in different farming conditions. The application of the tool will help: (i) analyze the reasons behind low productivity levels in selected case studies of the project countries; (ii) identify maximum yields if farming practices are optimized; and (iii) propose optimal farming practices to attain maximum yields. The trainings on this tool will enhance the capacity of professionals in improving water productivity targeting those coming from relevant ministries, research institutions and extension agents.

Once the optimal farming practices are tested and improvements in water productivity are attained⁶, lessons learnt and key findings will be disseminated via information campaigns in order to reach small scale farmers, with similar agro-ecological characteristics farming areas, to promote changes in water management practices and enhance water productivity.

Output 2 (Enhanced capacity for increased water irrigation efficiency)

The trainings on WD-MASSCOTE will be a pre requisite for the practical application of the tool in different irrigation schemes. The application of tool will help: (i) analyze the reasons behind low irrigation efficiency in the selected areas; and (ii) prepare a modernization plan. The trainings on this tool will enhance the capacity of professionals in improving irrigation efficiency targeting those coming from relevant ministries and farmers' representatives responsible for the operation of irrigation systems.

Once the modernization plan is implemented and improvements in water use efficiency are attained⁷, similar modernization plans as well as lessons learnt and key findings will be disseminated via information campaigns in order to reach small scale farmers, with similar irrigation schemes to achieve similar results.

Output 3 (Enhanced water harvesting capacity)

The implementation of pilot projects on water harvesting will help test promising techniques on the ground, that will eventually result in increased yields. The demonstration area for each country will be defined based on the initial assessment. The farms will serve as pilot for the installation of improved water harvesting technology for agricultural use, with the contribution and participation of beneficiary farmers. The farms will be monitored throughout the project period and will serve for conducting demonstration and field training of farmers as well as, extension agents and technicians working for the ministries. Towards the end of the project, a strategy for the development of water harvesting through expansion of the project experience will be developed. Successful systems as well as lessons learnt and key findings after piloting phase can be applied to other farming areas with similar characteristics to achieve similar results.

Output 4 (Guides for decision makers and extension agents, and outreach materials on water use efficiency and productivity and water harvesting)

The outreach materials (including technical reports) documenting the case studies and the pilot project implementation, and their wide dissemination (e.g. through the project web site, seminars in international conferences, etc) will help the scaling up of project outputs in farming areas in regions within project countries and/or other countries in the world. It will also increase knowledge on AWM for interested readers, mainly water management experts, extension agents, researchers, etc.

Output 5 (Water Auditing)

⁶ Despite not being the ideal scenario, if improvements in water productivity are not attained lessons learned and findings can also be derived and be helpful to other farmers.

⁷ Despite not being the ideal scenario, if improvements in water use efficiency are not attained lessons learned and findings can also be derived and be helpful to other farmers

It provides a country administration or a river basin organization with a comprehensive methodology for assessing, analysing and reporting of the use of scarce water resources. On the supply side, the audit provides information about the water availability. On the demand side, it gives a detailed picture, on how the water is used, for which purpose, and with which value. A detailed assessment of agricultural water use, including its productivity, its value-in-use, and its efficiency during the water use process, gives countries a baseline to adapt water policies and improve water management plans. The project expects to train and build capacity on various aspects of water auditing for experts and extension agents at relevant ministries and staff at research institutions and universities.

Output 6 and 8 (Defined bankable investment projects in Burkina Faso and Uganda)

The formulation of bankable investment projects for improved AWM will lead to its implementation and eventually result in improved water management for agriculture production at the field level. It will also help build the capacity of government officials involved in the CAADP process in terms of analytical capacity (through the training on the diagnostic tools) and project formulation

Output 7 (Investment profile for Morocco)

Although this component stays more at the policy level, where the direct impact of its implementation is more difficult to trace. It is expected that the preparation of the National Investment Profile, which includes the identification of investment areas in AWM will lead to the formulation and implementation of projects on the ground with the objective of improving AWM in the country.

Output 9 (outreach materials, including technical reports on the mainstreaming of AWM in CAADP-Pillar 1 process prepared and widely disseminated)

The outreach materials on the CAADP-Pillar 1 process and lessons learnt/recommendations for a successful approach in each of the countries and their wide dissemination (e.g. through the project web site, seminars in international conferences, etc) will help the scaling up and spreading CAADP implementation in other African countries.

2.4. Description of the target group

The target groups are the following:

1. Technical experts and extension agents at relevant ministries

The trainings on different FAO tools (CROPWAT-AquaCrop and Water Downed MASSCOTE) and Water Harvesting techniques will build capacity of technical experts and extension agents in governmental institutions in the analysis and improvement of water productivity and water use efficiency.

With the scaling up phase of the project (that will be supported by the preparation of technical guides) technical experts and extension agents in project countries, or other countries in Africa or the rest of the world will also benefit.

2. Policy and decision makers at relevant ministries

With the scaling up phase of the project (that will be supported by the preparation of guides for decision makers) policy and decision makers in project countries, or other countries in Africa or the rest of the world will also benefit.

The implementation of outputs 6 to 9 will build capacities of policy and decision makers in official institutions regarding the implementation of CAADP-Pillar 1 and the mainstreaming of AWM in policy processes. More specifically the trainings and application of the diagnostic tools will improve analytical skills for investment assessment and their capabilities for project formulation.

The needs of the most vulnerable groups of the national societies (women, youths, poor households, ethnic minorities, etc), which would undoubtedly be positively affected by increased agricultural production – and lower commodity prices – as an outcome of the project, will be adequately addressed, with a particular attention to local communities and traditional leaders. The project will encourage the participation of these vulnerable groups in all consultations planned at national level in order to foster community decision-making and improve their access to communal ecosystem resources.

Furthermore, mainstreaming gender issues in project implementation reflects a fundamental goal for AgWA Partnership, the SDC, and FAO. The organizations and their programme, integrate gender considerations in their daily work and in all phases of project management, from its inception to its implementation and evaluation. In particular, the organizations assist governments in integrating gender into development policies and programmes, expands training in gender mainstreaming (using tools pioneered by FAO's Socio-Economic and Gender Analysis Programme) and supports gender mainstreaming in agriculture and rural development. The current project will be no exception and will have the highest consideration for gender issues.

3. Staff at research institutions and universities

The trainings on different FAO tools (CROPWAT-AquaCrop and Water Downed MASSCOTE) and Water Harvesting techniques will build capacity of researchers and water professionals from universities and research institutions in the analysis and improvement of water productivity and water use efficiency.

The practical application of FAO's tools will provide material to produce research papers and other publications.

4. Indirect and ultimate beneficiaries

Small *scale farmers* and *family farmers* from selected case study/pilot areas for the implementation of CROPWAT-AquaCrop, Water Downed MASSCOTE and the implementation of water harvesting systems will benefit from increased yields through the improvement of water productivity and irrigation efficiency.

It is important to also focus on family farmers because in many developing countries family farms represent up to 80 percent of all farm holdings. Family farmers rely primarily on family members for labour and management and are embedded in territorial networks and local cultures. Taking into account that 2014 is the International Year of Family Farming the project will also be important to stress the vast potential family farmers have to eradicate hunger and preserve natural resources.

3. Implementing strategy

3.1. Description of the intervention approach / methodology / instruments

The project will be implemented along three phases:

3.1.1. Entry phase (6 months).

The overriding goal of this phase is to share the draft project proposal with a broad range of stakeholders and beneficiaries in each of the countries in order to refine it according to their interests and priorities and produce the final proposal for its endorsement.

Specifically, this phase aims to:

- ◆ identification of project stakeholders
- ◆ form the Project Implementation Units (PIUs) in each of the countries (see section 4.2.)
- ◆ appoint a National Project Coordinator in each of the countries (see section 4.2.)

- ◆ create or re-engage the CAADP country teams/task forces
- ◆ review/refine objectives, outputs and activities of the project
- ◆ prepare the project workplan and define roles of different actors/stakeholders
- ◆ specify costs of the project
- ◆ review potential risks in project implementation
- ◆ set the grounds for a supporting environment for the project

The first month of this phase will start with three inception missions where an FAO officer and the AgWA coordinator will meet with key government representatives to present the draft project proposal and seek their engagement in its design and implementation.

The following three months will be devoted to the identification and analysis of stakeholders, the formation of PIUs, the appointment of a National Project Coordinator and the creation/re-engagement of CAADP country teams.

Once these implementation cells are established and stakeholders are identified, the next three months of this phase will be used to share the project proposal among them and collect their feedback, comments and inputs.

This consultation phase at national level will culminate with the organization of three workshops dealing with three different project themes, namely: (i) Water productivity and efficiency (*Output 1, 2 & 3*); (ii) Water accounting (*Output 5*); (iii) Mainstreaming agriculture water management in the CAADP-Pillar 1 process (*Output 6, 7 & 8*).

The workshops will last for three days. The first day would have a national focus with three parallel country sessions and the other two days would have a regional focus, gathering national representatives from each of the project countries in the same session.

The proposed agenda of thematic workshops is presented in the table below:

The objectives of each of the workshops are presented below:

(i) Water productivity and efficiency (Output 1, 2 & 3)

- ✓ Gather main actors involved in the implementation of activities (officials and extension agents from relevant ministries, researchers from related institutions, farmer representatives, and farmer innovators).
- ✓ Present original proposal on related activities, outputs, workplan and roles and responsibilities.
- ✓ Present comments, feedback and inputs given by PIUs and other stakeholders.
- ✓ Discuss comments, feedback and inputs given by countries.
- ✓ Agree on what to include in the final project proposal.

(ii) Water accounting (Output 5)

- ✓ Gather main stakeholders involved in the implementation of activities (water experts from relevant governmental organizations and researchers from related institutions).
- ✓ Present original proposal on related activities, outputs, workplan and roles and responsibilities.
- ✓ Present comments, feedback and inputs given by PIUs and other stakeholders.
- ✓ Discuss comments, feedback and inputs given by countries
- ✓ Agree on what to include in the final project proposal

(iii) *Mainstreaming AWM in the CAADP-Pillar 1 process (Output 6, 7 & 8)*

- ✓ Facilitate mutual review of progress, performance and challenges in advancing the CAADP agenda and mainstreaming AWM.
- ✓ Facilitate dialogue on implementation priorities and common approaches of mainstreaming AWM in the CAADP.
- ✓ Foster alignment and coherency in implementation of CAADP and National Agriculture Investment Plans.
- ✓ Present original proposal on related activities, outputs, workplan and roles and responsibilities.
- ✓ Present comments, feedback and inputs given by PIUs and other stakeholders.
- ✓ Discuss comments, feedback and inputs given by countries.
- ✓ Agree on what to include in the final project proposal.

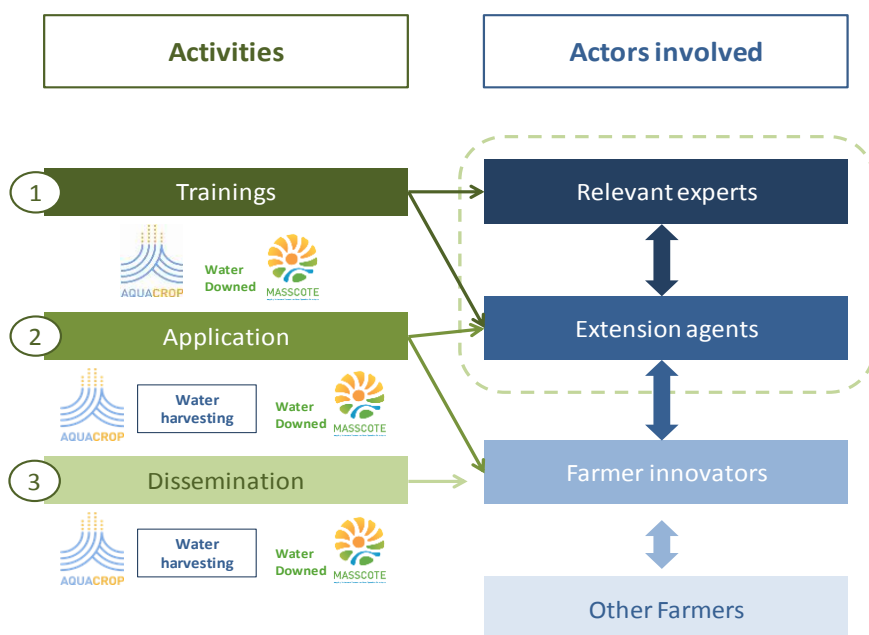
3.1.2. First implementation phase: African focus (3 years)

The endorsed project document will be implemented in the three proposed countries within three years. The intervention approach is to work closely with relevant government officials, extension agents, research institutions, and farmers’ representatives. The approach and methodology of intervention will be different depending on the output to attain. This is further explained below:

Output 1, 2, 3 and 4 (water productivity, efficiency, water harvesting and the information campaigns)

First of all, relevant experts and extension agents in related ministries will be trained in the implementation of the tools mentioned: CROPWAT-AquaCrop and Water-Downed MASSCOTE. For this purpose, a modular training workshop for each of the tools, gathering participants from the three countries will be organized. The trainings will be followed by the practical application of the tools for different case studies, in order to attain valid comparison (Figure 1). Sites will also be selected for the piloting of water harvesting schemes. Training on water harvesting component will focus on different topics, such as: 1) Water Harvesting principles and considerations for system selection and design; 2) Installation of project demonstration schemes; 3) Evaluation of water harvesting performance; and 4) Farmers field days.

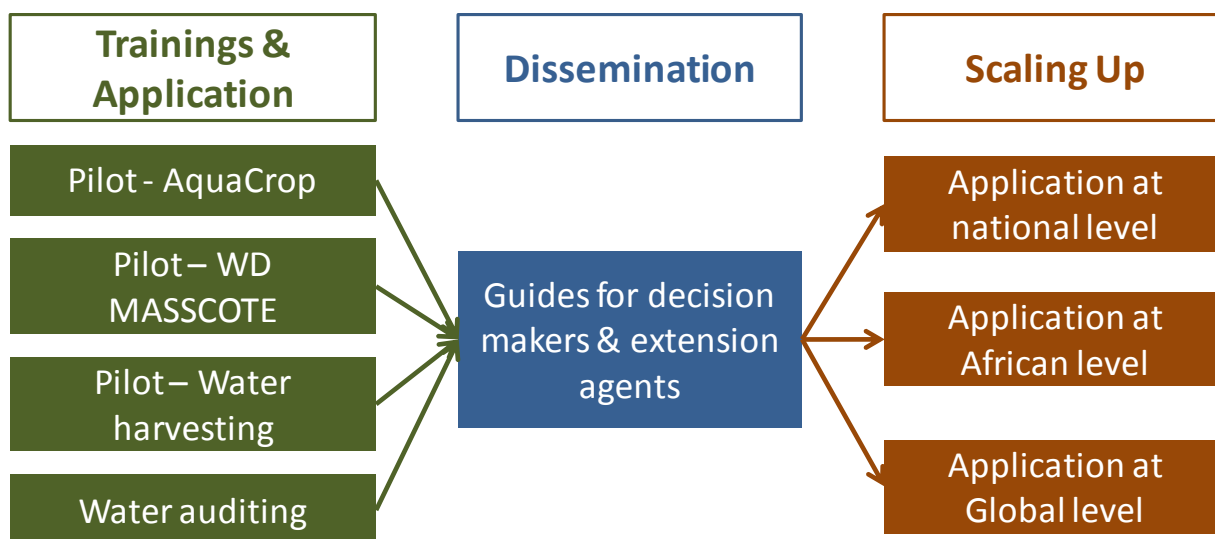
Figure 1: Levels of intervention and actors involved for Outputs 1, 2 & 3



These demonstration plots in the project region will be selected by involved officials in consultation with farmers’ representatives. Sites selected should be different farming plots, as opposed to experimental fields. For this, farmers would volunteer to have the tools/water harvesting systems tested on their lands. These farmers, from now on referred to as **farmer innovators**, would apply the tools/pilot project on water harvesting in collaboration with trained extension agents. Later on, in the second phase of the project (see 3.1.3.) innovators would play a key role in disseminating and spreading results of the tool application in order to trigger the interest of other farmers.

The outreach materials (including technical reports based on the case studies and pilot project implementation), the guides for decision makers and extension agents, and their wide dissemination (e.g. through the project web site, seminars in international conferences, etc) will help the scaling up of AWM policies and project outputs in farming areas in regions within project countries and/or other countries in the world (Figure 2). It will also enhance knowledge on AWM for interested readers, mainly water management experts, technical experts and extension agents at relevant ministries.

Figure 2: The development of the project



Output 5 (Water auditing)

An FAO Project Task Force (PTF) will be established. Under the lead technical unit (NRL), FAO headquarters and regional offices (Africa and Near East) will provide technical inputs and expertise from various divisions in order to support the operational project activities. The production of this output will build on previous water auditing projects implemented by FAO in other countries in the world (e.g. Okavango and the Nile).

In order to ensure sustainability of the project, the Water Audit will be executed in close cooperation with the ministries involved in water management. The databases and tools that will be developed are to be hosted and embedded in existing infra-structure (both organizational as physical) as available in one of the most involved ministries. Field campaigns and training sessions will be organized in close cooperation with ministerial staff to ensure a smooth transition when project is terminated.

In-country workshops, regional workshops and meetings will be conducted, as well as exchange visits between the countries involved. While the project will be working mainly in three countries, surrounding countries will benefit through participation in different training exercises, workshops and seminars. In subsequent phases of the project, water Audits may also be implemented in other countries.

Output 6, 7 and 8 (mainstreaming of AWM in CAADP process)

The intervention approach regarding these outputs will be the formation of country teams/task forces that will support CAADP implementation in each of the three project countries.

The implementation of trainings in the above mentioned diagnostic tools will also be of key importance to ensure satisfactory results.

3. Second implementation phase: Global focus (3 years)

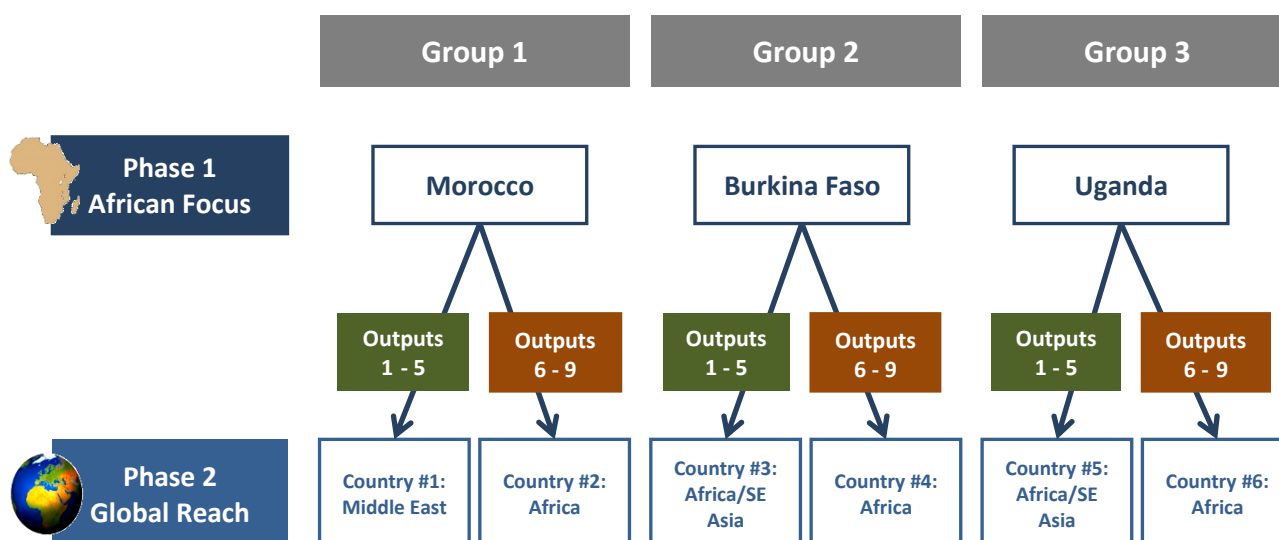
The second phase of the scaling up process will be to expand the project to other three countries in Africa, Middle East and South East Asia, and develop country cooperation to promote knowledge transfer and experience sharing in improving AWM and mainstreaming AWM in the CAADP process.

It should be noted that the scaling-up of the project with the outputs related to the CAADP process (outputs 6 to 9) can only be applied in African countries as it is a process that only pertains to that continent. Although the project will derive interesting recommendations on agriculture policy that could be used in countries all over the world, these recommendations will be most relevant in the African context.

The project will encourage South-South Cooperation where the three initial project countries will have a more prominent role in the implementation process. While FAO will still keep a coordinating role, countries would act as the technical arms in the application of tools recently learnt in phase 1 and the organization of trainings and meetings.

Figure 3 shows that for the development of the South-South Cooperation process, countries will be grouped in three, meaning that a group will be formed by a country included in the first implementation phase (Burkina, Morocco or Uganda) with two countries to be included in the second phase (one for the up-scaling of outputs 1 to 5, and the second for the up-scaling of outputs 6 to 9). It is very likely that lessons learnt by project implementation in Morocco will be more applicable to a country in the Middle East. As for Burkina Faso and Uganda, they will be grouped with other African or Asian country for the up-scaling of outputs 1 to 5. If an African country is chosen, this could be the same as for the up-scaling of outputs 6 to 9.

Figure 3: Up-scaling strategy



It is important that countries in the same group have similar characteristics (i.e. agro-ecological areas, stage in CAADP process) so that lessons learnt and recommendations drawn from phase 1 countries can have better applicability in phase 2 countries (see section 3.5).

Strong partnerships with international organizations and development banks (see section 3.4.) will be forged during this phase to make sure that results of phase 1 are widely disseminated at the international level.

3.2. Description of the partner organizations, their roles, experiences, added value, capacities and limitations

AgWA

With its combined analytical, facilitation of dialogue, technical and institutional strengthening activities, the project comes strongly in line with AgWA's objectives spelled out in its five pillars (advocacy, resource mobilization, knowledge sharing, donor harmonization, and capacity building) to promote greater investment in AWM and the inclusion of this into national strategies and programmes for food security, agriculture and water. The project also strongly aligns with the development assistance and investments within the priorities of its countries. It is also implicit the need to advocate and harmonize efforts amongst donors, according to country-led process, to mobilize resources in order to overcome barriers of efficient investment on Agricultural Water Management, where AgWA can play a key role.

The capacity built in the project-countries will contribute to water and food security through: tools learning/development/application for improved water management for both rainfed and irrigated agriculture, improved evidence-based analysis for urgent interventions; preparedness by national institutions for planning of policies and programmes aimed at building longer-term resilience in the region; as well as the development of a regional knowledge base of AWM best-practices.

The project strategy/methodology includes the support to the country's context, institutional and policy, and financial situation analysis, the training on tools/approaches for improved water management under rainfed and irrigation, the training on comprehensive assessment of countries' water resources that forms the basis for countries' future water management and water policy, the training and application of newly developed diagnostic instruments, the support to the identification of AWM priorities and to their inclusion in the CAADP National Agriculture Investment Plan, the building of capacity for the preparation of bankable investment projects, and the facilitation of investment flows to countries.

Each of the three countries identified will follow a specific and unique approach – despite the tools used and the overall vision and methodology are the same – in order to adapt the assistance to the country context and country status reached in the CAADP process as well as the past and ongoing projects supporting the implementation of CAADP in some countries, subject to the level of development of CAADP process at country level.

The project will foster, in all its phases and in all countries, a strong participatory process involving agriculture and water sector stakeholders at national and regional levels.

A series of workshops and roundtables will be organized to ensure the wide involvement and the exhaustive selection of AWM priorities, facilitate a broad information and knowledge sharing among all the stakeholders, and ensure the validation of the project outputs.

Stakeholder mapping will be conducted to define relevant stakeholders which will include representatives from international organizations and from the civil society, with more emphasis on NGOs and the private sector and, particularly, on those associations which promote the socio-economic advancement of vulnerable groups of the society (women, poor farmers, children) to ensure a broad ownership of the project and an incisive impact at all levels. The participants will be identified on the basis of their involvement in the agricultural and water sectors and will be asked to actively contribute to the workshops through the presentation of sectoral studies (agriculture and water) and through discussions and consultations which will enable a successful dissemination of information and eventually feed into regional/continental synthesis of results to be realized at a later stage of project development.

National institutions

Below one can find a list of proposed national institutions to become project partners at national level:

Burkina Faso

- ✓ Ministre de l'agriculture et de la sécurité alimentaire
- ✓ Ministre de l'eau, des aménagements hydrauliques et de l'assainissement
- ✓ Ministre de l'environnement et du Développement Durable
- ✓ Institut de l'Environnement et de Recherches agricoles (INERA)
- ✓ International Institute for Water and Environmental Engineering (2iE) (Institut International d'Ingénierie de l'Eau et de l'Environnement)
- ✓ Institute of Rural Development (Institut de Développement Rural) (IDR) in the Polytechnic University of Bobo-Dioulasso (UPB-IDR)

Morocco

- ✓ Ministre de l'agriculture et de la pêche maritime
- ✓ Ministre de l'énergie, des mines, de l'eau et de l'environnement
- ✓ National Agronomic Research Institute (INRA)
- ✓ The National School of Agriculture (ENA)
- ✓ The Agronomy and Veterinary Institute Hassan II (IAV Hassan II)

Uganda

- ✓ Minister for Agriculture, Animal Industry and Fisheries
- ✓ Minister for Water and the Environment
- ✓ National Agricultural Research Organisation (NARO)
- ✓ Mukono Zonal Agricultural Research and Development Institute
- ✓ National Environmental Management Authority (NEMA)
- ✓ Makerere University - Faculty of Agriculture

Regional/Global institutions/organizations

Below one can find a list of proposed national institutions to become project partners at regional/international level:

- ✓ African Development Bank
- ✓ Islamic Development Bank
- ✓ Asian Development Bank
- ✓ The World Bank
- ✓ African Ministers' Council on Water (AMCOW)
- ✓ The New Partnership for Africa's Development (NEPAD)
- ✓ Comprehensive Africa Agriculture Development Programme (CAADP)
- ✓ Association Régionale pour l'irrigation et le Drainage en Afrique l'Ouest et du Centre (ARID)
- ✓ Improved Management of Agricultural Water in Easter & Southern Africa (IMAWESA)

- ✓ Global Water Partnership (GWP)
- ✓ International Water Management Institute (IWMI)
- ✓ International Commission on Irrigation and Drainage (ICID)
- ✓ World Water Council (WWC)

3.3. Measures to ensure the sustainability of benefits, the scaling-up, and the exit strategy

Sustainability

All the activities of the project will focus on capacity development of both professionals and institutions in the project countries, the adoption of technically feasible workplans and strategies, and on the development of a set of concrete actions which will lead to substantial economic benefits to the populations – greater economic possibilities in terms of food production, food security, improved water management (for both rainfed and irrigation), sustainable management of water resources – while ensuring social and environmental sustainability.

The participatory process adopted during the implementation of the project will allow all the stakeholders, including the most vulnerable groups of the society, to contribute to the validation of best practices examined and plans prepared, the shaping of the strategy documents and the evidence based analyses, and, finally, the National Investment Plans.

The project's sustainability is also ensured not only by the great commitment of the national governments and the support of a strong coalition of stakeholders, but also by the strong involvement of donors at all stages of the process and their active participation in all the platforms created by the project. The alignment with the donors' strategies and the development of an agreed upon documents will create conducive environment for the mobilization of financial resources. Additionally, the capacity building activities undertaken within the project will set the basis for a solid technical implementation of different projects within a coherent strategic framework.

On the other hand, the AgWA Secretariat will work to avoid overlaps/duplication in partners' initiatives, ensure the sustainability of their actions, nurture the network of pools of AWM experts and identify among them who should best respond to specific demands from African governments for AWM assistance. Moreover, the AgWA Secretariat will coordinate activities under the five AgWA components, assigning the lead to one or more of the AgWA partners, and will coordinate the different sources of funding of the various activities (e.g. partners' own contribution; recently-created funding facilities such as ICA, AICD, InfraCo, AgDevCo, new potential funding channels such as the Africa Water Facility and bilateral sources; bilateral donor programmes).

Finally the project will support harmonization between AgWA's activities and the strategic priorities of the SDC, in particular with its Global Programme Water Initiatives, around issues related to policy, strategy, and lines of interventions.

Scaling-up

For Outputs 1, 2 and 3 the key aspect in the scaling up strategy is the selection of case study/pilot project areas. Areas have to be chosen taking into consideration agro-ecological characteristics (mainly in terms of soil, climate and crops produced) that can also be found in other regions within project countries, or in other countries in Africa or other parts of the world (Figure 4). This will enable the replication of results and will ensure that lessons learnt and recommendations made are useful. The outreach materials to be produced (output 4) will be a key instrument in the scaling up process.

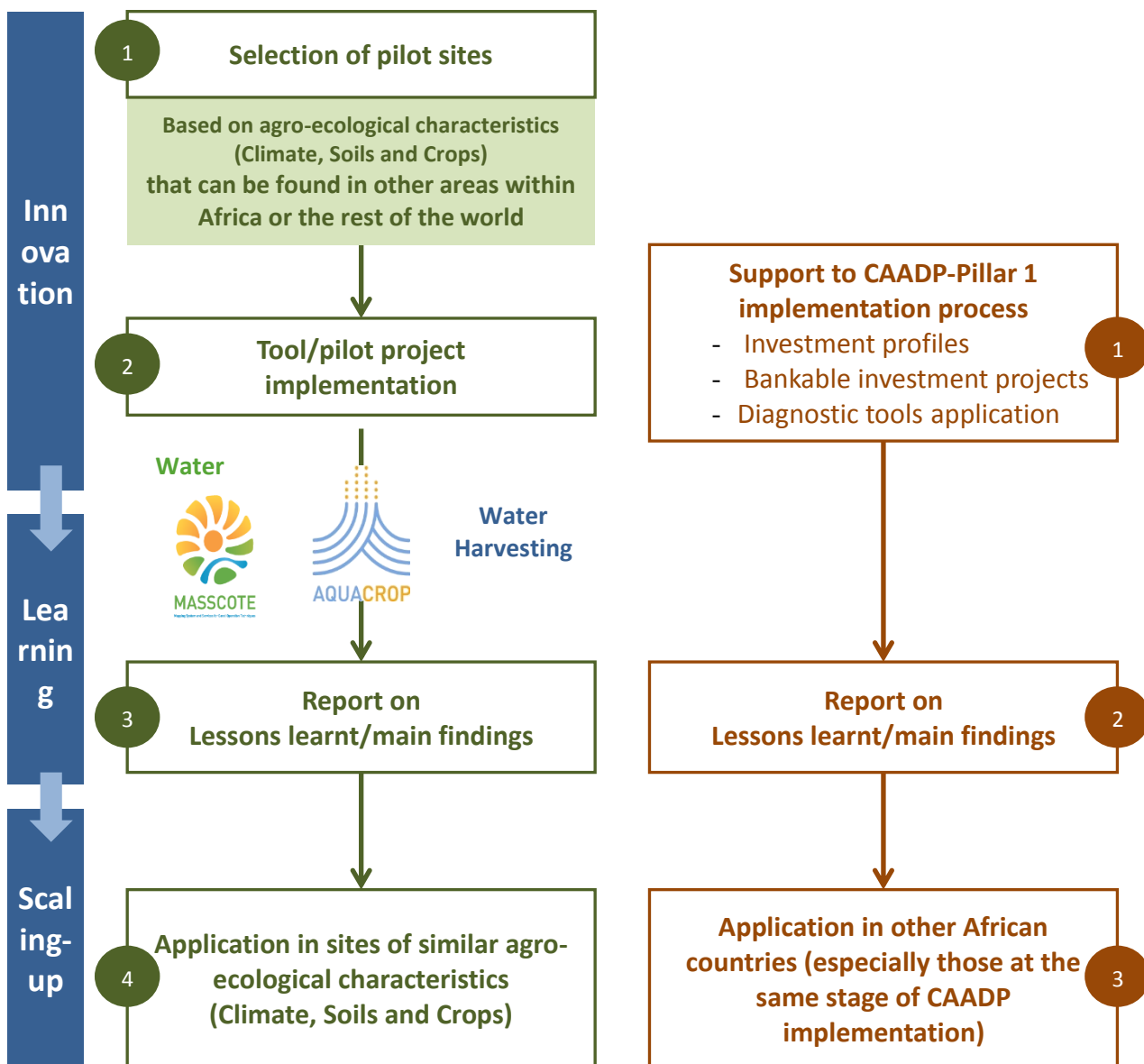
Regarding Output 5, while the project will be working mainly in three countries, surrounding countries could benefit through participation in different training exercises, workshops and seminars. In subsequent phases of the project, water audits may also be implemented in other countries.

As for Outputs 6, and 8, the development of the national CAADP Pillar 1 process in Burkina Faso and Uganda will result in defined bankable investment projects in AWM that can be replicable in other countries, especially those at similar stages in CAADP Pillar 1 implementation. The same can be said about the implementation of the CAADP in Morocco (output 7) that will result in a well defined AWM investment profile and national capacity building (Figure 4). The report to be produced (output 9) will be a key instrument in the scaling up process of these outputs.

Exit strategy

The intervention strategy of the project will also include an exit strategy to ensure a smooth transition when the project reaches the final stage. This will ensure that the project’s achievements are maintained and the dynamics implemented are pursued and expanded. The strategy of the project will be flexible, clear and phased. The flexibility component will allow the project to evolve during the implementation and ensure that procedures and deadlines do not stand in the way of necessary adjustments. The different phases of the project are essential in order to build up the capacities of the target group to the point where they are able to take over management of their own development.

Figure 4: Scaling-up strategy for Outputs 1, 2 & 3 and 6, 7 and 8



3.4. Measures to ensure country ownership

Taking the World Bank's definition, country ownership means that there is sufficient political support within a country to implement its developmental strategy, including the projects, programs, and policies for which external partners provide assistance. Ensuring country ownership in the context of this project, thus, means to make sure that it will have enough support from relevant institutions for its successful implementation. Putting in practice the principle of country ownership can be done in three different ways:

(i) Alignment of priorities

The project has to reflect countries' development priorities in terms of agriculture and water resources. In this regard, main policy documents are in section 1.3 to make sure that this project contributes to the goals that have been set for each of the countries. In addition to this, the entry phase of the project (section 3.1.1) will include a consultation process with government officials and a broad range of stakeholders in order to ensure that the project proposal reflects countries' interests and preferences.

(ii) Joint design and implementation

For countries to feel a greater ownership over the project, they are expected to have an important role in project design and implementation.

First, during the entry phase (section 3.1.1), this draft proposal will be presented to relevant governmental officials and stakeholders in order to have their views and collect their input and feedback. Countries should be able to modify and adapt the objectives and activities of the project if they are considered not be in line with their interests and preferences.

Second, the establishment of Project Implementation Units (PIUs) is another measure to ensure a greater country ownership over the project (section 4.2). PIUs are accountable entities to lead the implementation of the project. They are composed of members coming from ministry departments related to the project, relevant research institutions as well as farmers' representatives and independent experts. In addition to this, the project will make use of existing national expertise and institutions like research centers and universities to support implementation.

(iii) Reporting.

A reporting system will ensure that PIUs are accountable for achieving results, thus, increasing the sense of ownership over the project. PIUs will prepare and submit the six-month progress reports to the project Steering Committee.

4. Organization, Management and Administration

4.1. Initial time frame and tentative yearly breakdown of the first implementation phase (Burkina, Morocco and Uganda)

The project will be implemented within a time frame of three years. During the first year and a half of the project, a greater focus (in terms of time and resources) is placed in outputs 1 to 5, while in the second half of the project, emphasis will be put in outputs 6 to 9.

The reason being that the CAADP implementation related outputs (6-9) would benefit from results related to AWM improvement (outputs 1-5).

In the graph below, a tentative yearly breakdown of project implementation is presented. The different intensity of grey is used to represent the share of activities and resources (time and money) devoted to attain a certain output. Darker tones reflect higher number of activities/resources while lighter tones represent a lower share of activities/resources.

OUTPUTS		Year 1			Year 2			Year 3		
1	Enhanced capacity for improved water productivity in small scale agriculture in Burkina Faso, Morocco and Uganda									
2	Enhanced capacity for increased water use efficiency in small scale irrigation in Burkina Faso, Morocco and Uganda.									
3	Enhanced water harvesting capacity in Burkina Faso, Morocco and Uganda									
4	Outreach materials - Guide for decision makers and extension agents - on measures to increase water productivity and efficiency prepared and									
5	National water audits are prepared for Burkina Faso, Morocco and Uganda									
6	Bankable investment projects in AWM are defined for Burkina Faso to foster the investment flow into priority lines of intervention defined in its National Agriculture Investment Plan.									
7	An investment profile for the identification of AWM priorities at national level is produced and national capacity is built in Morocco in the context of the CAADP-Compact.									
8	Defined bankable investment projects in AWM for Uganda to foster the investment flow into priority lines of action defined in its refined National Agriculture Investment Plan									
9	A report and dissemination material on the mainstreaming of AWM in CAAP-Pillar 1 process prepared									

4.2. Management of the project (Organizational structure and Roles, tasks and responsibilities)

AgWA Partnership will be the counterpart institution. The Secretariat of AgWA will be designated to act as “regional project coordinator” working closely with the FAO team as well as other partners in the overall coordination and the smooth implementation of the planned activities.

A Steering Committee will be established, including, at least, one representative of each of the three countries, an AgWA representative, and FAO representative (the Lead Technical Unit of FAO), and the donor. The Steering Committee will have the overall responsibility for discussing the substantive and technical content and structure of the documents to be produced. The Committee will ensure the coordination among the activities carried out in the three countries and will be responsible to provide the necessary support to the Governments, under the substantive and technical aspects.

The country activities will be supervised by a Project Implementation Unit (PIU) composed of 10 members coming from ministry departments related to the project and relevant research institutions as well as farmers representatives and independent experts. The PIU will coordinate and ensure timely inputs from all parties involved in the implementation of the project. A National Project Coordinator, to be hired by the project, will be based at one of the ministries that are most involved in the project. The National Project Coordinator will be entrusted with the overall day-to-day responsibility for the implementation of the project, as well as for mobilizing the PIU and acting as its secretary.

The Lead Technical Unit (LTU) of the project will be the Land and Water Division (NRL) of FAO, While the AgWA Secretariat will be its operational arm. The Lead Technical Officer (LTO) of the project will be the water management expert from NRL. Technical support to the project will be provided by the expert pool of AgWA as well as by the Water Resources Technical Officers of FAO Regional Offices in Africa and in the Near East Region.

5. Resources

5.1. Overall budget

Entry phase

The entry phase will be characterized by the organization of three thematic workshops and the undertaking of field missions.

The thematic workshops will gather around 25 people (5 experts per country, FAO staff and donor representatives) with duration of three days.

In addition, inception/country missions will be undertaken by FAO-LTU, AgWA Coordinator and Supporting Technical Staff.

Component	Total (CHF)
Inception missions to Burkina Faso, Morocco, Uganda (one FAO Officer, AgWA Coordinator/1 week)	21 600
Mission Burkina Faso (one FAO Officer, AgWA Coordinator, one supporting staff/1 week)	10 800
Mission Morocco (one FAO Officer, AgWA Coordinator, one supporting staff/1 week)	10 800
Mission Uganda (one FAO Officer, AgWA Coordinator, one supporting staff/1 week)	10 800
Thematic Workshop 1: <i>Water productivity and efficiency</i>	54 000
Thematic Workshop 2: <i>Water accounting</i>	54 000
Thematic Workshop 3: <i>Mainstreaming AWM in the CAADP-Pillar 1 process</i>	54 000
Technical Support Services	30 650
Consultants	49 500
General operating expenses	7 200
Subtotal	303 350
Project Support Costs (13 percent)	39 435
TOTAL	342 785

Phase 1

The overall budget is presented in the table below, organized by project output. It is estimated based on previous FAO projects that produced similar outputs. These are:

- ✓ UTF /MOR/038/MOR Modernisation de l'Agriculture Irriguée dans le Bassain de l'Oum Er Rbia
- ✓ UTF/SAU/037/SAU Development of Irrigation Water Management and Improvement of Water Use Efficiency
- ✓ TCP/SYR/3101 Water Harvesting in the Southern Region of Syria
- ✓ GCP/INT/072/ITA. Coping with water scarcity – the role of agriculture. Developing National Water Audits in Africa
- ✓ TCP/INT/3404. Support to the pre- and post-CAADP compact process for improved agricultural water management (Egypt, Malawi, the Sudan, Swaziland)

Component	Total (CHF)
Personnel	702 000
Technical Adviser (2/3 time P4 level)	324 000
AWM expert (full time P2 level)	297 000
Administrative support	90 000
OUTPUT 1. Enhanced capacity for improved water productivity in small scale agriculture	250 000
OUTPUT 2. Enhanced capacity for increased water use efficiency in small scale irrigation	250 000
OUTPUT 3. Enhanced water harvesting capacity	250 000
OUTPUT 4. Outreach materials, including guides for decision makers and	102 000

extension agents, on measures to increase water productivity and efficiency as well as water harvesting techniques prepared and widely disseminated to relevant stakeholders	
OUTPUT 5. National water audits	315 000
OUTPUT 6. Bankable investment projects in AWM for Burkina Faso	135 000
OUTPUT 7. Investment profile for the identification of AWM priorities at national level is produced and national capacity is built in Morocco in the context of the CAADP-Compact	135 000
OUTPUT 8. Defined bankable investment projects in AWM for Uganda	135 000
OUTPUT 9. Outreach materials (including technical reports) on the mainstreaming of AWM in CAAP-Pillar 1 process prepared	102 000
Hospitality	45 000
Technical Support Services	104 760
General operating expenses	90 000
Subtotal	2 615 760
Project Support Costs (13 %)	340 049
TOTAL	2 955 809

6. Risk Analysis

Risk	Impact	Probability	Mitigation
1. Insufficient commitment of the national institutions	Inefficient decision-making	Low	Actively involve all the governments in the process and products and strengthen the communication link with AgWA Partnership and FAO, and strongly engage and empower the local farmers' organizations. Commitment will also be enhanced through the strong involvement of donors in the process and products.
2. Insufficient commitment of the private and civil society organizations	Lack of a participatory approach and scarce social impact of the outputs of the project	Low	Promote the dialogue, in the preparation phase, among civil society organizations of different countries and among them and the respective governments
3. Proposed consultation and papers not completed in the estimated time frame	Loss of momentum in key drivers of the process	Low	Encourage multi-stakeholders approach drawing on national authorities as well as private sector, research institution expertise
4. Stable social conditions in the countries deteriorate	Participatory process is compromised	Medium	Assume that governments facing instabilities or social difficulties continue positive direction

7. Monitoring and Evaluation

7.1. M&E plan

Monitoring of project process and implementation will be the primary responsibility of the LTU, following standard monitoring and evaluation guidelines which include: measurable indicators, reviews and evaluation reports of the project impact. The Technical Divisions of FAO will provide technical guidance for the monitoring of the project activities and a simple internal monitoring system will be established.

Furthermore, the concerned institutions in each country will play a critical role in the monitoring of the project, particularly regarding indicators such as the degree of participation of national actors in consultations, the number of communication and meetings held, the timeliness in workplan implementation.

7.2. Result-oriented reporting system (focus on outcome monitoring with reference to logframe and budget)

All experts of the project will prepare mission reports whenever they undertake travel related to project activities. In addition, the six-month progress reports highlighting major outputs achieved; constraints faced and planned activities for the next quarter will be submitted by the Project Implementation Unit (PIUs) to the donor after the clearance of the Project Steering Committee.

Towards the end of project implementation, a terminal statement will be prepared and submitted to donor highlighting project achievements and recommendations for follow-up actions.

7.3. Planned (internal/external) review(s)/evaluation

SDC and FAO standards and requirements for project evaluation will be applied. The project will be subject to external review in the middle and in the end phase of the project. An external review of the project will be conducted by a team of independent consultants of the SDC.

Annex 1: Project Logframe

Hierarchy of objectives Strategy of Intervention		Key Indicators	Data Sources Means of Verification	
Impact (Overall Goal)		Impact Indicators		
Hunger and poverty is reduced in the selected project countries.		Levels of undernourishment Poverty Headcount ratio	FAO's SOFI publication. World Bank indicators	
Outcomes		Outcome Indicators		External Factors (Assumptions & Risks)
Outcome 1: Improved agriculture water management in Burkina Faso, Morocco and Uganda		Water use efficiency at farm level Water productivity at farm level (kg/m ³ and US\$/m ³)	Water efficiency studies after the application of Water-Downed MASSCOTE in project countries Water productivity studies after the application of CROPWAT-AquaCrop in project countries	Commitment and maintained interest of national authorities in the process. Commitment and maintained interest of farmers involved. Availability of information and expertise.
Outcome 2: Agriculture Water Management (AWM) mainstreamed in the CAADP process (with a focus on Pillar I) in Burkina Faso, Morocco and Uganda		AWM projects are formulated under CAADP framework (Burkina Faso and Uganda) AWM component is demonstrated in CAADP Compact (Morocco)	Bankable investment projects on AWM for Burkina Faso and Uganda CAADP Compact for Morocco	Commitment and maintained interest of national authorities in the process. Availability of information and expertise.
Outputs (per outcome) and costs		Output Indicators	Sources and Means of Verification	
For outcome1: Improved agriculture water management in Burkina Faso, Morocco and Uganda				
Output 1	Enhanced capacity for improved water productivity in small scale agriculture in Burkina Faso, Morocco and Uganda	Training programmes on the application of CROPWAT-AquaCrop in the three project countries implemented. Application of CROPWAT-AquaCrop under small scale farming (rainfed and irrigated) in three project countries. Materials for the outreach and awareness campaign produced.	Training records. Published three 20 pages reports on the application of CROPWAT-AquaCrop to the country cases. Promotional material such as brochures, posters and website.	Commitment and maintained interest of national authorities in the process. Commitment of trained participants. Suitable national consultants can be found. Availability of techniques, information and expertise at FAO - secured through internal coordination.
Output 2	Enhanced capacity for increased	Training programme on Water-Downed	Training records on Water-Downed	Commitment and maintained interest of

Hierarchy of objectives Strategy of Intervention		Key Indicators	Data Sources Means of Verification	
	water use efficiency in small scale irrigation in Burkina Faso, Morocco and Uganda.	<p>MASSCOTE in the three project countries is implemented.</p> <p>Application of Water-Downed MASSCOTE in the three countries.</p> <p>Modernization plan for small scale irrigation in project countries prepared.</p> <p>Manual on water saving techniques/best practices produced.</p> <p>Training programme on water saving techniques/best practices in the three project countries is implemented.</p>	<p>MASSCOTE for each of the project countries</p> <p>Published three 20 pages reports on the application of Water-Downed MASSCOTE to the three country cases.</p> <p>Published a modernization plan for small scale irrigation in each of the project countries</p> <p>Training records on water saving techniques/best practices for each of the project countries.</p>	<p>national authorities in the process.</p> <p>Commitment of trained participants.</p> <p>Suitable national consultants can be found.</p> <p>Availability of techniques, information and expertise at FAO - secured through internal coordination. A remedial measure will be taken if suitable national consultants for the FAO expertise can't be found.</p>
Output 3	Enhanced water harvesting capacity in Burkina Faso, Morocco and Uganda	<p>An assessment report produced on water harvesting in each of the project countries.</p> <p>A training programme for about 120 people on water harvesting technology in each of the project countries</p> <p>A proposed sub-strategy for increased water harvesting development in each of the project countries.</p>	<p>Published assessment report.</p> <p>Training records.</p> <p>Published sub-strategy for water harvesting development.</p>	<p>Commitment of national authorities to the process;</p> <p>Commitment of FAO Management and Technical Officers to the process;</p> <p>Suitable consultants can be found.</p> <p>Stakeholders maintain interest and engagement in the process.</p>
Output 4	Outreach materials, including guides for decision makers and extension agents, on measures to increase water productivity and efficiency as well as water harvesting techniques prepared and widely disseminated to relevant stakeholders	<p>Report on AquaCrop application in each of the selected case studies</p> <p>Report on Water Downed MASSCOTE application in each of the selected case studies.</p> <p>Report on lessons learnt and key findings after pilot project implementation on water harvesting</p> <p>Joint report including the three reports produced under activities 4.1, 4.2. & 3.2.</p> <p>Guides for decision makers and extension agents.</p> <p>Brochure and case study/pilot project fact sheets.</p> <p>Seminars organized in African and Global</p>	<p>Published reports on AquaCrop application.</p> <p>Published reports on Water Downed MASSCOTE application.</p> <p>Published report on water harvesting.</p> <p>Published joint report.</p> <p>Published brochure and case study/pilot project fact sheets.</p> <p>Published guides for decision makers and extension agents.</p> <p>Number of participants in seminar.</p> <p>Evaluation forms of seminar.</p>	<p>Availability of information and expertise.</p> <p>Suitable consultants can be found.</p>

Hierarchy of objectives Strategy of Intervention		Key Indicators	Data Sources Means of Verification	
		conference.		
Output 5	National water audits are prepared for Burkina Faso, Morocco and Uganda	<p>An updated land and water resources database produced.</p> <p>Five to ten people trained in the operation of the database.</p> <p>Country reports produced (with an analysis of hydrological and meteorological trends and performance of the monitoring networks).</p> <p>A report with the analyses of the water supply and demand prepared.</p> <p>An operational spatially distributed water accounting tool developed.</p> <p>A users' manual to operate the water accounting tool produced.</p> <p>Five to ten people trained in the operation of the water accounting tool.</p> <p>Materials for the outreach and awareness campaign produced.</p>	<p>Land and water resources database.</p> <p>Training records on the operation the database</p> <p>Country and consultants reports</p> <p>Water accounting tool and consultants report</p> <p>User manual and consultants report</p> <p>Training records on the operation of the accounting tool</p> <p>Country and consultants reports</p> <p>Promotional material such as brochures, posters and web site.</p>	<p>Commitment of national authorities to the process;</p> <p>Commitment of FAO Management and Technical Officers to the process;</p> <p>Suitable national consultants are available in each participating country.</p> <p>Suitable international consultants can be found</p> <p>Stakeholders maintain interest and engagement in the process.</p>
Costs of outputs for outcome 1:				
For outcome 2: To mainstream Agriculture Water Management (AWM) in the CAADP process (with a focus on Pillar I) in Burkina Faso, Morocco and Uganda				
Output 6	Defined Bankable investment projects in AWM for Burkina Faso to foster the investment flow into priority lines of intervention defined in its National Agriculture Investment Plan (Programme National d'Investissement Agricole, PNIA)	<p>Bankable project documents prepared</p> <p>CAADP Country team established</p> <p>National workshop on AWM projects conducted</p> <p>Diagnostic tool applied for financial analysis</p> <p>Training on diagnostic tool conducted</p>	<p>Country team agreement</p> <p>National Workshop records available</p> <p>Diagnostic tool application report available</p> <p>Training records available</p> <p>Bankable project documents available</p>	<p>Commitment of country team members</p> <p>Commitment of partners</p> <p>Availability of data</p> <p>Commitment of trainees</p> <p>Trained officers able to carry out functions</p> <p>Investment projects are implemented</p>
Output 7	An investment profile for the identification of AWM priorities at national level is produced and	<p>Investment profile for Morocco produced</p> <p>Signed agreements between Morocco and development partners</p>	<p>The signed agreements available</p> <p>Task Force agreement</p> <p>Work plan and strategy available</p>	<p>A shared view is reached between stakeholders</p> <p>Agreements are actually implemented</p>

Hierarchy of objectives Strategy of Intervention		Key Indicators	Data Sources Means of Verification	
	national capacity is built in Morocco in the context of the CAADP-Compact process to tackle in particular knowledge, institutional, governance, regulatory and financial barriers to sustainable agricultural water management.	National CAADP Task Force established Work plan and strategy for the preparation of the CAADP Compact produced Diagnostic tools applied for technical, financial, policy and institutional analysis. Investment profile produced Training workshop on diagnostic tools conducted	Diagnostic tool application report available Financial analysis report available Investment profile available Training records available	Commitment of task force members Commitment of government officials Availability of data Documents produced are easily accessible Trained officers able to carry out functions
Output 8	Defined bankable investment projects in AWM for Uganda to foster the investment flow into priority lines of action defined in its refined National Agriculture Investment Plan	Bankable project documents prepared CAADP Country team established National workshop on AWM projects conducted Diagnostic tool applied for financial analysis Training on diagnostic tool conducted	Country team agreement National Workshop records available Diagnostic tool application report available Training records available Bankable project documents available	Commitment of country team members Commitment of partners Availability of data Commitment of trainees Trained officers able to carry out functions Investment projects are implemented
Output 9	Outreach materials (including technical reports) on the mainstreaming of AWM in CAAP-Pillar 1 process prepared	Reports describing the country CAADP-Pillar 1 implementation process Brochures and country fact sheets, summarizing activities implemented and main findings and recommendations. Seminar organized in African conference.	Published reports. Published brochures and country fact sheets. Number of participants in seminar. Evaluation forms of seminar.	Availability of information and expertise. Suitable consultants can be found.
Costs of outputs for outcome 2:				

Activities (per output)	Inputs	Inputs Assumptions & Risks
<p>List of activities for output 1:</p> <p>1.1. Conduct training programmes at regional/national levels targeted to agriculture water professionals and extension agents aimed at tutoring in the use of tools to enhance water productivity (CROPWAT-AquaCrop).</p> <p>1.2. Apply and monitor the application of practical tools to enhance water productivity (CROPWAT-AquaCrop) under small scale farming conditions for rainfed and irrigated agriculture (two case studies per country) and examine possible changes in crop water management practices to improve water productivity.</p>		

Activities (per output)	Inputs	Inputs Assumptions & Risks
<p>1.3. Launch information campaigns in the three countries to promote changes in water management practices under both rainfed and irrigated agriculture, and widely disseminate the results of the application of practical tools to enhance water productivity to the farmers.</p>		
<p>List of activities for output 2:</p> <p>2.1. Organize training programmes at regional/national levels targeted to agriculture water extension agents and water professionals, including those responsible of the management of irrigation schemes, in the use of tools to analyze and evaluate the performance of small scale irrigation systems (WD-MASSCOTE).</p> <p>2.2. Apply practical tools to analyze and evaluate the performance of small scale irrigation systems (WD-MASSCOTE) in pilot sites in each of the three project countries, and examine possible improvements in operation and management of irrigation systems.</p> <p>2.3. Develop a modernization plan for small scale irrigation in pilot sites in each of the three project countries.</p> <p>2.4. Launch information campaigns in the three countries for the increase water use efficiency in small scale irrigation, and widely disseminate the results of the application of the WD-MASSCOTE to users including staff of authorities and farmers' representatives responsible for operation of irrigation systems.</p>		
<p>List of activities for output 3:</p> <p>3.1. Carry out an assessment of the status of water harvesting sub-sector in the three countries including the mapping and evaluation of existing options.</p> <p>3.2. Implement on-ground pilot projects per country based on assessment carried out through activity 3.1.</p> <p>3.3. Develop and implement a training program on water harvesting to build the capacity of technical experts and extensionists<u>extension agents</u> at relevant ministries and small scale farmers.</p> <p>3.4. Based on the results of the sub-sector assessment and the on-ground pilot projects, develop sub-strategies for water harvesting in the three countries that serve as input to national agriculture and water resources strategies.</p>		
<p>List of activities for output 4:</p> <p>4.1. Prepare guides decision makers and extension agents, technical reports, posters, brochures and information materials targeting for different stakeholders, capitalizing the results produced under outputs 1, 2 and 3.</p> <p>4.2. Disseminate the outreach materials to wide range of stakeholders.</p> <p>4.3. Organize a session/seminar in an African conference related to agriculture or water resources management (e.g. Africa Water Week).</p> <p>4.4. Organize a session/seminar in a Global conference related to agriculture or water resources management (e.g. World Water Week).</p>		
<p>List of activities for output 5:</p> <p>5.1. Prepare an updated national land and water resources database, supported by adequately performing water data processing and GIS software and hardware. This will contain geo-referenced time series on rainfall, river discharges and groundwater levels, base-line information including meteorological and (geo-) hydrological maps, soil maps, land use and land cover maps, irrigation maps, agricultural and gender disaggregated social statistics.</p> <p>5.2. Conduct a training programme for relevant personnel on the operation and maintenance of the land and water resources database.</p> <p>5.3. Examine trends of meteorological records, river discharges and ground water levels, providing insight in the extent to which water availability depends of variations in climate.</p> <p>5.4. Prepare a water use assessment for each country, that will include all water use sectors, with a special focus on agricultural water use assessment, supported by GIS software and hardware.</p> <p>5.5. Develop a spatially distributed water accounting tool, linked to the upgraded database, applied for water resources scenarios including a users' manual. This output will provide the information needed to evaluate the implications of changes in boundary conditions (population, climate and trade) for the</p>		

Activities (per output)	Inputs	Inputs Assumptions & Risks
<p>performance of the existing and projected future water management infrastructure.</p> <p>5.6. Conduct a training programme for relevant personnel on the operation of the water accounting tool.</p> <p>5.7. Implement an outreach and awareness campaign to disseminate the results of the Water Audit to stakeholders involved in water management on all levels.</p>		
<p>List of activities for output 6:</p> <p>6.1. Establish a country team, in liaison with the national CAADP Task Forces, composed of members from the ministries, FAO national representation and representatives from the private sector and civil society organizations, with the role to coordinate the in-country post-Compact process related to Agricultural Water Management.</p> <p>6.2. Organize a national workshop with all cooperating partners and lead by the national government to detail key AWM projects, based on the priority lines of intervention included in the National Agriculture Investment Plan.</p> <p>6.3. Using the financial diagnostic tool developed within the CAADP framework, support the identification of financial and economic indicators, by project, to facilitate the scheduling of investments.</p> <p>6.4. Conduct a training on the above “financial diagnostic tool” for staff members of the relevant ministries and national organizations involved in the process.</p> <p>6.5. Formulate bankable investment projects on AWM, including all necessary information (context analysis, project justification, target beneficiaries, technical description of the project’s objectives and implementation, budget, risks, monitoring and evaluation plan) for donors to decide on the allocation of financial flows.</p>		
<p>List of activities for output 7:</p> <p>7.1. Assist Morocco to reach an agreement with development partners on their inputs and involvement in view of ensuring coordination and synergy in support to the CAADP-Compact process.</p> <p>7.2. Under the coordination of the Ministry of Agriculture and Fisheries and the Ministry of Energy, Mines, Water and the Environment in Morocco, establish a Task Force with the role to coordinate the in-country CAADP-Compact process related to AWM.</p> <p>7.3. In close collaboration with the government officials, formulate a detailed work plan and a strategy for the delivery of the assistance in preparing the country’s CAADP Compact, in synergy with relevant Pillar institutions' activities.</p> <p>7.4. Support the in-country process for technical evidence-based analysis, using the diagnostic tool developed within the CAADP (Pillar 1) framework, that will lead to: the review of past/ongoing agriculture development interventions in the country; and the identification of factors of success/failure, best practices, and lessons learnt.</p> <p>7.5. Support the in-country process for policy and institutional evidence-based analysis, using the diagnostic tool developed within the CAADP (Pillar 1) framework, that will lead to: the assessment of the characteristics, effectiveness, and capacity of the agriculture and water sector institutions; the analysis of the legal and policy framework.</p> <p>7.6. Support the in-country process for financial evidence-based analysis that will lead to realistic estimates and assessment of available means of finance from governments, donors and the private sector within short, medium and long-term time frames.</p> <p>7.7. Prepare a National Investment Profile in order to: (a) review the programme areas to be targeted in the CAADP Compact based on the evidence-based analysis; (b) review of ongoing and pipeline agriculture development projects and programmes; (c) analysis of the adequacy of the investment areas identified in the Compact and ongoing and pipeline projects for achieving the CAADP growth target; and (d) identification of supplementary investment programme areas. The updated national Investment Profile will contribute to the AWM section of the CAADP Compact.</p>		

Activities (per output)	Inputs	Inputs Assumptions & Risks
<p>List of activities for output 8:</p> <p>8.1. Establish a country team, in liaison with the national CAADP Task Forces with the role to coordinate the in-country post-Compact process related to AWM.</p> <p>8.2. Organize a national workshop with all cooperating partners and lead by the national government to detail key AWM projects, based on the priority areas identified in the refined National Agriculture Investment Plan.</p> <p>8.3. Using the financial diagnostic tool developed within the CAADP framework, support the identification of financial and economic indicators, by project, to facilitate the scheduling of investments.</p> <p>8.4. Conduct a training on the above “financial diagnostic tools” for staff members of the relevant ministries and national organizations involved in the process.</p> <p>8.5. Formulate bankable investment projects on AWM that should include all necessary information (context analysis, project justification, target beneficiaries, technical description of the project’s objectives and implementation, budget, risks, monitoring and evaluation plan) for donors to decide on the allocation of financial flows.</p>		
<p>List of activities for output 9:</p> <p>9.1. Conduct interviews with members of country teams/task forces and workshop participants in each of the project countries.</p> <p>9.2. Revision of relevant literature and CAADP-Pillar 1 related documents in each of the project countries.</p> <p>9.3. Based on results of interviews and literature/policy review prepare technical reports, posters, brochures targeting different stakeholders describing the country CAADP implementation process and the mainstreaming of AWM in the process and including the key findings and recommendations for the successful implementation of CAADP Pillar 1 and the mainstreaming of AWM.</p> <p>9.4. Disseminate the outreach materials, summarizing activities implemented and capitalizing main findings and recommendations, to wide range of stakeholders.</p> <p>9.5. Organize a session/seminar in an African conference related to agriculture policy or water policy (e.g. Africa Water Week, the CAADP Partnership Platform, etc.)</p>		