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Agricultural Water Management (AWM)

Gestion de l'Eau Agricole (GEA)

NEAR EAST FOUNDATION

Helping Build Sustainable, Prosperous Communities since 1915

Final Report

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AMAL Tendrara

Association des Coopératives Agricoles Figuig

Near East Foundation

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ATTACHMENTS

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Cover Photo: A community leader from the village of Gafait sits on the edge of the village's new cistern as it is being filled by the new solar pump. The pump and cistern - constructed by the water users association with support from NEF and USAID - are enabling local farmers to grow and market more tomatoes, peas, and beans with less water.

ABBREVIATIONS AND ACRONYMS

ABHM	Agence du Bassin Hydraulique de la Moulouya
ACAF	Association des Coopératives Agricoles de Figuig/ Association of Agricultural Cooperatives Figuig
AMAD	Association Marocain pour l'Action et Développement/ Moroccan Association for Action and Development
AMAL	Association Marocaine pour l'Appui au Développement Local
AWUA	Agricultural Water User Association
AWAP	Agricultural Water Action Plans
AWM	Agricultural Water Management Project
CLEF	Comité Local pour les Eaux de Figuig
CR	Communes Rurales
DPA	Direction Provinciale de l'Agriculture
DRAO	Direction Régionale de l'Agriculture de l'Orientale
DREF	Direction Régionale des Eaux et Forets
INDH	National Initiative for Human Development/Initiative National pour le Développement Humain
INRA	Institut National de la Recherche Agronomique
M&E	Monitoring and Evaluation
MCC	Millenium Challenge Corporation
MEC	Morocco Economic Competitiveness program
MP	Microproject
NEF	Near East Foundation
NGO	Non-Governmental Organization
ODCO	Office du Développement de la Coopération
ONSSA	Office National de Sécurité Sanitaire des Produits Alimentaires
ORMVA	Office Régional de la Mise en Valeur Agricole
ORMVAM	Office Régional de la Mise en Valeur Agricole Moulouya
PC	Program Committee (NEF-AMAD-ACAF)
PMV	Plan Maroc Vert
USAID	United States Agency for International Development

I. EXECUTIVE SUMMARY

In a significant effort that mobilized 22 communities and impacted over 9,000 individuals, the Agricultural Water Management (AWM) project improved livelihoods and environmental sustainability in the Oriental Region of Morocco—one of the poorest, most water-scarce areas of the country—through participatory watershed management and water-efficient, market-oriented agricultural development.

Implemented between November 2010 and May 2013 by the Near East Foundation (NEF), in partnership with the *Association Marocain pour l'Appui au Development Local* (AMAL) and the *Association des Coopératives Agricoles de Figuig* (ACAF), the project was funded through Cooperative Agreement No. 608-A-00-11-00004 with the United States Agency for International Development (USAID).

The AWM project met - and exceeded - its performance indicators. In the project area, training sessions on improved watershed management had nearly 5000 participants. Over 134,000 hectares in the broader watershed have been impacted by improved participatory community management following the creation of 22 community Agricultural Water Action Plans. The effort engaged men, women, and youth along with local and regional authorities, building relationships, overcoming cultural barriers, and creating a successful model for sustainable water management and agricultural development.

AWM project activities:

- Mobilized **22 farming communities** around water conservation. Over **4000 individuals** increased awareness of practical measures to use agricultural water more efficiently - resulting in a reduction in water consumption and amount of time spent on irrigation.
- Promoted more efficient use of agricultural water through implementation of simple technologies (drip irrigation, solar pumps, etc.), restoration and

SUCCESS STORY:

Women's Cooperative Expands Business through Microproject

With AWM assistance, the women's cooperative of Zenaga in Figuig expanded its prepared couscous business. The Women's Solidarity Cooperative for Production and Commercialization came together to apply for a microproject grant through the AWM project to purchase new equipment in order to improve their production capacity, and in turn the economic position of participating women.

By eliminating milling and transporation expenses that they previously outsourced, the women have more quality control and expect to increase their production by 25% and their revenues by almost 50%.

rehabilitation microprojects, and management techniques (action plans, etc.) for smallholders - resulting in improvements to water infrastructure, supply, and management capacity.

- Promoted the sustainable growth of agriculture through market-oriented agricultural value chain development, using efficient harvesting and management of water resources - resulting in improved production and water conservation, and income increases of up to 20%.

Community involvement in all project aspects, as well as the mobilization and involvement of local/regional institutions (DRAO, DPA, DREF, ABHM, and INRA) and partners (MAAK) provided a foundation for the sustainability of project impacts. Farmers and Agricultural Water User Associations (AWUAs) are better able to work with partners in the region and access resources to promote improved water management and agricultural production. The project provided opportunities for contact, communication, and collaboration between institutions and local communities. Further, by working with local partners AMAL and ACAF, the project strengthened the ability of these organizations to work with and support communities using a participatory approach.

The project demonstrated significant and important results in the targeted communities in Morocco's Oriental Region:

Target	Achievement
• 2500 people participate in trainings on watershed management.	• **4,886** participants in project training sessions focused on improved watershed management. Trainings included agricultural water management, efficient water management, and crop/farming techniques to maximize production and preserve water. Participant evaluations of the trainings were very positive.
• 5000 hectares under improved natural resource management.	• **2,855ha** are now under improved participatory community management (**134,251ha** in broader watershed) through the participatory design and implementation of community Agricultural Water Action Plans.
• 2000 people have increased economic benefits.	• **9,022 individuals** in targeted communities have increased economic benefits.
• 10% increase in income among project participants.	• Average increase of **15%** among project participants noted by surveyed participants to date. Date producers increased revenues by **20%** and olive producers have already increased revenues by **9%** (prior to harvests benefiting from microproject activities).[1]
• 2000 farmers adopt new technologies or management	• **2,282 individuals** adopted new technologies and management practices as a result of project activities,

[1] Further information on this indicator and calculation is included on page 61.

practices.	including drip irrigation, solar pumps, pruning techniques, and fertilization techniques.
• 85% of project participants report high levels of satisfaction with trainings.	• **90%** of participants expressed high satisfaction in post-training evaluations.
• 15 agreements promoting sustainable natural resource management and conservation are implemented.	• **22 Agricultural Water Action Plans** developed, signed, and implemented by targeted communities.

Specific key achievements and impacts of the AWM project include the following:

- **22 communities and Agricultural Water User Associations** came together to develop Agricultural Water Action Plans for their communities—providing a concrete road map for farmers to improve their agricultural water management. These plans were based on the participatory development of community monographs, mapping exercises, and discussions between community members (both male and female).
- **21 microprojects were implemented,** with the involvement and contribution of the targeted communities. Microprojects had significant results in terms of achieving indicators, participation, and contributions. **2 women's cooperatives** created microprojects.
- **Introduced new and more highly demanded/valued crops**, including tomatoes, cauliflower, and beans to more than 150 producers.
- Soil fertility testing and training was conducted in **20 villages** and **458 farmers** were trained on fertility management to promote water conservation and improved agricultural production.
- **Raised awareness of authorities** and partners in the Oriental Region on watershed management through project activities, and built relationships that pave the way for continued collaborations in the future
- Developed olive, date, and vegetable **value chains** in the Oriental Region through training and support provided to farmers. Workshops brought together producers, aggregators, and sellers for discussions on how to improve value chains.
- **29 youth** were trained in pruning techniques, with the goal of facilitating business opportunities. Seven youth in Telouate formed a cooperative to offer pruning services for hire.
- Over **50 youth** trained in drip irrigation techniques. With this knowledge, youth will be able to provide support in the design, implementation, and maintenance of these systems in their villages. This provides an important economic activity for youth participants, and a service to local farmers.
- Formed and supported a **women's cooperative** and a **women's association**.

- Community involvement in all project aspects, as well as the mobilization and involvement of local/regional institutions (DRAO, DPA, DREF, ABHM, and INRA) and partners (AMAL, ACAF, MAAK) provide a foundation for the sustainability of project impacts.

In addition to these impacts, the project contributed a number of notable development "firsts" in the area:

- Introduced **solar technology** for use in collective irrigation systems for the first time in the Oriental Region.
- Held the first-ever **workshop on integrated and participatory management of watersheds** with local and regional authorities and partners.
- First project to mobilize partners in the region to **contribute to the financing** of projects. Partners were required to commit 25% of funds for microprojects, which builds investment and ownership in their success and maintenance.
- Held the first-ever **roundtable on value chain development** with stakeholders including producers and distributers along with local and regional authorities.
- Negotiated a role for the Figuig Water Council to **manage water from a new dam**, representing a macro-level water management impact that will affect the Figuig Oasis.

SUCCESS STORY:
Drip Irrigation Helps Farmers Reduce Water Consumption by 50%

In the water-scarce community of Oulad Yahya, smallholder farmers are cautious about taking risks. Amar Elakrouchi's 50% water savings is serving as an example to his neighbors on how to improve irrigation efficiency and prospects for the future.

After receiving training in efficient water management through the AWM project, Elakrouchi sought and received a Moroccan government grant to install a drip irrigation system - with AWM support - that saves him water and money.

Before participating in the project, Amar irrigated the fruit trees and vegetables on his farm through unlined canals, which resulted in significant water pumping and labor costs. This is a common problem facing farmers in Morocco, where up to 60% of water is lost through seepage in the generations-old traditional canal irrigation systems.

Elakrouchi reports a tremendous 50% water savings and additional savings in time and energy previously spent filling, opening and closing canals.

AWM support for implementation of microprojects had a positive impact in terms of improving the volume of water received by farmers on their plots, promoting time savings in farmer labor, and further mobilizing the participation of farmers. This increased amount of water provided an opportunity for farmers to intensify and diversify crops, leading to increases in yield and income.

Impacts achieved at the community-level in some areas through AWM microprojects include (*see Section E.2 for full list*):

- 100% reduction in water storage basin loss.
- Restoration of water flow in a spring that had been dormant for 7 years.
- 40% reduction in time spent on irrigation.
- 100% reduction in energy costs.
- 58% increase in cultivation area.
- 33% increase in water rates.
- Up to $215 per hectare increase in revenue.

Project activities required the sustained, cumulative efforts of the AWM team, which successfully engaged community members (including women and youth) in activities despite numerous barriers - such as cultural norms, distrust of outside organizations, and reluctance to adopt new technologies. The AWM achievements provide an example to neighboring communities and authorities of positive improvements in agricultural water management.

At the project's conclusion, project partners and community members were enthusiastic about the impact and results of the project. In a random survey of over 100 participants:

- 87% of respondents said they have shared their new knowledge with other individuals in their communities.
- 92% had improved irrigation techniques on their land.
- 91% had cultivated more land as a result of the project.
- 98% were able to increase their amount of agricultural production and income as a result of their participation in the project.

Additional impacts of many microprojects will continue to be realized in agricultural production in the coming months—and years.

The following report provides an overview of the project, its key activities and impacts, microprojects implemented, a summary of challenges and lessons learned, and a compilation of project indicators.

II. PROJECT BACKGROUND

Agriculture and Agricultural Policy. The importance of agriculture to the Moroccan economy as a whole is reflected in the Government's ambitious *Plan Maroc Vert*, which seeks to strengthen agriculture's role as a motor for economic development and rural poverty alleviation. The U.S. government has sought to support Morocco's efforts in improving water efficiency and water use, as a means of fostering broad-based economic growth. Accordingly, the AWM project was designed to support these objectives, and complement existing programs, in improving agricultural water usage to promote economic development in the Oriental Region. The AWM project sought to contribute to the second pillar of the *Plan Maroc Vert*, which aims to improve the incomes of small farmers through crop diversification and intensification.

Water flows through the canal system in Zenaga (Figuig) again - for the first time in 7 years. Through an AWM microproject, community members received support to rehabilitate a damaged canal.

Water Situation. The Oriental Region is one of the poorest and most water-scarce regions in Morocco. Despite this, agriculture remains a mainstay of the local economy, with high growth potential that can help to alleviate rural poverty. Only 15% of the total agricultural area is irrigated, or about 107,330 hectares; 65,400 hectares are irrigated through large-scale structures and about 42,000 hectares through small and medium structures.

The mobilization of water for agriculture in the Oriental region has been a major challenge for several reasons. Rainfall in the region is low overall, ranging from 200 to 300 mm per year in the far north to below 100 mm per year in the south. There is significant inter- and intra-annual variability, and surface water is intermittent in many places. Due to decreasing rainfall—compounded by overuse—both surface water and groundwater have decreased in recent years. Secondly, geological formations do not generally allow sufficient infiltration or storage and rainwater evaporates largely as a result of runoff. Finally, the single large watershed, the Moulouya, already suffers chronic water shortage.

Proposed Objectives. The Near East Foundation (NEF), in partnership with two local NGOs, the Moroccan Association for Support to Local Development (AMAL) of Oujda and the Association of Agricultural Cooperatives Figuig (ACAF), sought to work with communities in the Provinces of Berkane, Taourirt and Figuig to improve income through participatory watershed management and water-efficient, market-oriented agricultural development. The project worked to support the Moroccan government's development of

the region through the promotion of water-saving technologies and techniques, and to direct rural populations toward more productive, drought-resistant, and environmentally sustainable crops. To achieve this goal, the AWM project had three broad objectives:

Intermediate Objective 1: Mobilize farming communities around water conservation and raise awareness of practical measures to use agricultural water more efficiently by introducing Community-based Watershed Management.

Intermediate Objective 2: Promote more efficient use of agricultural water using simple technologies and management techniques for 2,500 smallholders.

Intermediate Objective 3: Promote the sustainable growth of agriculture through market-oriented agricultural value chain development, using efficient harvesting and management of water resources.

The project sought to mobilize communities around improved agricultural water management and provide training in water management and agricultural techniques. To facilitate implementation, the project provided support to community organizations in the application of training through agricultural projects that promoted market-oriented agricultural value chain development and the conservation of water resources.

III. ACTIVITIES & ACCOMPLISHMENTS

A. Mobilization Around Agricultural Water Management

A.1. Site Selection

In collaboration with project partners, the AWM team developed criteria for the selection of project sites to ensure transparency and fairness. Selection was based on criteria including level of poverty, agricultural potential, agricultural water infrastructure (irrigation, drainage, etc.), possibilities for value chain development, capacity of the Agricultural Water User Association (AWUA), and capacity of the community's organizational structures (including the role of women and youth).

Based on these selection criteria, the NEF project partners selected 10 initial sites in the project's first year, and added an additional 12 sites in the project's second year.

Province	Perimeters Year 1	Perimeters Year 2
Berkane	Oulad Yahia	
	Oulad Yaacoub	
	Aghbal	
Taourirt	Mestagmer	Irsan
	Telouate	Tencherfi
	Laayate	
Figuig	Berkoukesse	Tisserfine
	Zenaga	Oulad Sliman
	Oudaghir	Laarja
	Hmame Foukkani	Lamaiz
		Laabidat

		El Hammam Tahtani
Oujda/Jerrada		Gafait
		Mestferki
		Zkarra Sidi Moussa
		Tinissan

A.2. Mobilization and Engagement of Communities and Partners

The AWM project worked to involve all potential partners, seeking to ensure the participation of a wide variety of actors—AWUAs, community members (male and female), government agencies, and others. From the project's outset, the AWM project team worked to establish links between local communities, Rural Communes, institutional partners, and AWUAs.

Conducted Kick Off Workshops

In collaboration with project partners, the Near East Foundation organized kick-off workshops to introduce the project and mobilize community members in the selected sites. During the workshops, the project team introduced the objectives and strategy of the project, the project team, the project work plan, and planned activities. Participants included community members, representatives from the Regional Directorate of Agriculture in the Oriental Region (DRAO), representatives from other regional projects (MEC, etc.), and members of the press.

Presentation in a community kick-off event.

These events took place:

- Province of Taourirt: April 14, 2011 at the Taourirt Technical Center
- Province of Berkane: April 15, 2011 at the Agricultural Club of Moulouya
- Province of Figuig: April 17, 2011


Women in Laayat participate in the development of diagnostics.

Conducted Research and Prepared Monographs

In collaboration with project and institutional partners, the AWM project team compiled brief monographs of the targeted communities, with the purpose of developing an overview of the

situation in each project site. The monographs were prepared in a participatory manner, encouraging community members to share their views on the opportunities and challenges facing their communities.

The monographs contain elements essential to developing a deeper understanding of the targeted communities. Information includes:

- *Community Life:* Education and Health; Associations; Other Projects
- *Population and Demographic Overview:* Age breakdown; Education
- *Agriculture and Agricultural Water:* Crops; Agricultural Revenue; Calendar of Agricultural Activities; Water Sources; Irrigation Systems; Challenges and Needs
- *Agricultural Water User Association:* Information; Challenges; Needs
- *Gender Analysis:* Key Challenges and Opportunities for Women
- *Youth Analysis:* Key Challenges and Opportunities for Youth
- *Photographs and Maps*

These monographs provide background information on the area. This information not only guided the implementation of the AWM project, but may be used to inform future development or other initiatives in the region. They are included in attachment to this report.

Hosted Closing Ceremony

Community engagement activities were officially closed in the closing ceremony, which brought together project partners and beneficiaries in May 2013 in Oujda to share the impact and learnings from the AWM project and its activities. 78 individuals from DRAO, INRA, regional authorities, ORMVAM Berkane, MEC, MAAK, ACAF, AMAL, and project beneficiaries came together for this workshop.

Closing Workshop participants.

A.3. Conducted Participatory Mapping Exercise

AWM led participatory mapping in each of the 22 target communities. The exercise involved all community members in designing community maps that showed natural resources, land use, and water management infrastructure in their area. In addition to information gathering, a goal of this activity was to better understand community perceptions of their perimeter. The resulting discussions between farmers allowed for the identification of physical constraints and existing infrastructure that relates to agricultural water management (e.g., water sources, drilling, protection) and value chains (e.g., roads traveled to sell products).

Participatory Mapping Exercise.

Farmers plotted the information gathered on satellite images of the perimeter. This discussion and work contributed to the development of community action plans, and served as a tool for AWUAs in advocating for resources to complete necessary projects. This participatory mapping exercise helped to improve the capacity of AWUAs to plan actions and better work together to understand and present the interests of the community.

In total, 603 individuals participated in mapping activities (366 men and 229 women, 204 of them youth[2]). Because of restrictions against male trainers working with women in the target villages, AWM organized 8 additional, separate mapping exercises with women. Understanding women's perceptions of their perimeter and the challenges and opportunities for improved water usage were important for the project; their perspectives informed project planning and activities.

[2] For the AWM project, youth was defined as individuals up to 35 years of age.

Activity	Number of Participants[3]					
	Total	Men	Women	Youth	Authorities & Other	AWM
Od Yaacoub 2011	**17**	16	-	9	1	4
Aghbal 2011	**17**	16	-	5	1	3
Laayate 2011	**23**	23	-	7	-	3
Telouate 2011	**14**	14	-	5	-	3
Mestegmer 2011	**19**	18	-	3	1	3
Od Yahia 2011	**12**	12	-	6	-	3
Oudaghir 2011	**16**	16	-	11	-	5
Berkoukesse 2011	**11**	11	-	6	-	5
Hmame Fouk 2011	**26**	26	-	10	-	4
Zenaga 2011	**14**	13	-	9	1	3
Tinissan 2012	**13**	13	-	-	-	2
Irsan 2012	**13**	13	-	-	-	2
Gafait 2012	**20**	20	-	8	-	2
Mestferki 2012	**29**	29	-	14	-	3
Zkarra 2012	**15**	15	-	-	-	2
Tencherfi 2012	**17**	17	-	6	-	2
Hamam Tahtani 2012	**14**	14	-	-	-	4
Oulad Sliman 2012	**15**	15	-	-	-	2
Laabdiat 2012	**20**	20	-	-	-	2
Lmaaiz 2012	**16**	16	-	-	-	2
Tisserfine 2012	**12**	12	-	-	-	2
Laarja 2012	**17**	17	-	-	-	4
Irsan Women 2012	**36**	-	36	16	-	1
Aghbal Women 2012	**16**	-	15	8	1	1
Gafait Women 2012	**43**	-	42	24	1	1
Mestferki Women 2012	**62**	-	62	35	-	1
Zkarra Women 2012	**49**	-	49	18	-	1
Tencherfi Women 2012	**6**	-	6	2	-	1
Oulad Slliman W 2012	**8**	-	8	2	-	3
Zenaga Women 2012	**13**	-	11	-	2	2
Total	**603**	366	229	204	8	76

A.4. Developed 22 Agricultural Water Action Plans (AWAPs)

While Agricultural Water User Associations were created in 1990, none of these organizations had action plans. Agricultural Water Action Plans (AWAPs) are community plans for watershed and water management. The AWM project team worked with each participating community to develop an AWAP tailored to address local agricultural water management needs. Working sessions were organized using a participatory approach

[3] Explanation of Participation Tables: The participation table provides information on the participants in each project activity. "Total Participants" provides the total number of community members and other participants (not AWM team members) who participated in the event (men + women + other participants). "Men" and "Women" provide the total number of targeted community members in an event. "Youth" provides the total number of participants (both male and female) who participated and are 35 years of age or under. This column is not included in the total as youth participants are already counted as either male or female. "Authorities and Other" includes commune representatives, local authorities, DRAO officials, or other local partners who participated in the event. "AWM" includes NEF, ACAF, or AMAL team members; these are not included in the total participants.

involving the full range of water users in the community. The development process is as important as the product; it builds capacity in communities to conduct similar exercises when issues arise in the future.

The AWAPs identify opportunities, needs, and planned solutions. They also provide an important document that Water User Associations can use to advocate for resources and support from authorities.

A total of 2855ha in the targeted perimeters and 134,000ha in the broader sub-basin are under improved management as a direct result of the development of these plans.

Based on the AWAPs, communities designed microprojects to improve their local agricultural water management.

The majority of communities in Figuig (7) submitted their plans to the Commune and DPA; in the northern sites, eight shared their plans with the DPA and ORMVAM. In Mestferki, the DPA has agreed to reconstruct irrigation canals based on the community's AWAP. Communities continue to use and follow the AWAPs in their planning.

A.5. Hosted Workshop on the Integrated and Participatory Management of Watersheds

In collaboration with project partners, NEF organized the first ever workshop on the integrated and participatory management of watersheds. This workshop took place on December 2, 2011 in Oujda, bringing together direct partners (the Department of Agriculture, Moulouya Basin Agency, Regional Commission for Water and Forests, and local authorities) and indirect partners (Water User Associations and other local associations) for the first time. The workshop resulted from the project's mobilization and constant consultation with administrative partners.

The workshop helped to raise awareness on the interventions and actions being carried out in watershed management. Participants began to rethink approaches for the management of water to better meet communities' needs and ensure sustainable development.

42 people participated in this important exercise.

Activity	Number of Participants					
	Total	Men	Women	Youth	Authorities & Other	AWM
Workshop on the integrated management of watersheds	**42**	16	2	-	24	5

"Other" participants included:

- Agence du bassin de Moulouya (1 person)
- Direction Régionale des Eaux et Forets (1 person)
- Centre de Recherche agronomique (INRA) (2 people)
- ACAF Representative (1 person)
- AMAD Representatives (4 people)
- Rural Communes (1 person)
- MEC (1 person)
- USAID (1 person)
- Environmental Associations (2 people)
- University of Oujda /Department of Water (1 person)
- University of Oujda / Department of Geography (1 person)
- DRAO (3 people)

B. Capacity Building – Water and Watershed Management

Based on the identified needs of targeted communities and their Agricultural Water User Associations, the AWM project team organized trainings and workshops to support capacity building in water and watershed management.

B.1 Provided Introductory Training on Watershed Management

Watershed management trainings provided participants with a basic understanding of the dynamics of watersheds and watershed management. The training was a foundation of the AWM approach: to cultivate an understanding of the interconnection between water availability, use, and flow in agricultural areas and the broader landscape so that communities can make more informed water management decision.

Representatives from the regional and provincial directorates of agriculture, Communes, provinces, and the Moulouya River Basin Agency also participated in trainings. The mixture of project participants strengthened the workshops and deepened discussions as it initiated a dialogue between local residents and government officials.

A total of 564 people participated in watershed management trainings (295 male and 251 female community members participated in these trainings, of those 158 youth; 18 authorities and partners also participated). Because of restrictions against male trainers working with women in the target villages, the project organized separate training workshops for women, in parallel with the training of men. The following table provides information on the number of training participants:

Activity	Number of Participants					
	Total	Men	Women	Youth	Authorities & Other	AWM
Laayat (June 14, 2011)	**36**	32	1	11	3	5
Oulad Yahia (June 15, 2011)	**26**	20	-	6	6	4
Figuig 2011	**35**	26	2	11	7	6
Tinissan 2012	**13**	13	-	-	-	2
Irsan 2012	**13**	13	-	-	-	2
Gafait 2012	**20**	20	-	8	-	2
Mestferki 2012	**29**	29	-	14	-	3
Zkarra 2012	**15**	15	-		-	2
Tencherfi 2012	**17**	17	-	6	-	2
Hamam Tahtani 2012	**14**	14	-	-	-	4
Oulad Sliman 2012	**15**	15	-	-	-	2
Laabidad 2012	**20**	20	-	-	-	2
Lmaix 2012	**16**	16	-	-	-	2
Tenserfine 2012	**12**	12	-	-	-	2
Laarja 2012	**17**	17	-	-	-	4
Irsan 2012 Women	**33**	-	33	24	-	1
Mestferki 2012 Women	**50**	-	49	13	1	1
Tencherfi 2012 Women	**48**	-	48	26	-	1
Zkara 2012 Women	**45**	-	44	25	1	1
Aghbal 2012 Women	**18**	-	18	14	-	1
Gafait 2012 Women	**13**	-	13	-	-	1

Oulad Sliman 2012 Women	**11**	-	11	-	-	1
Zenaga 2012 Women	**13**	-	13	-	-	1
Laabidat 2012 Women	**9**	-	9	-	-	-
Hamam Tahtani 2012 Women	**10**	-	10	-	-	-
Berkoukesse (Oct. 2012)	**16**	16	-	-	-	2
Total	**564**	295	251	158	18	54

B.2 Conducted Training on Efficient Water Management

AWM training on efficient water management was another core project module. The first session focused on calculating crop water needs (frequency, needs of each crop, and timing of irrigation). The second session focused on techniques for efficient water management (reduction of conveyance loss using piping/California drip irrigation, sprinklers, soil tamping, lining tertiary canals, preparation of micro-basins for trees, weeding).

Activity	Number of Participants					
	Total	Men	Women	Youth	Other Participants	AWM
Irsan 2012	**21**	21	-	-	-	2
Mestferki 2012	**39**	39	-	9	-	2
Tencherfi 2012	**26**	26	-	-	-	2
Zkara 2012	**37**	37	-	-	-	2
Gafait 2012	**43**	43	-	6	-	2
Oulad Sliman 2012	**28**	28	-	-	-	2
Tisserfine 2012	**19**	19	-	-	-	2
Laabidat 2012	**16**	16	-	-	-	2
Hamam Tahtani 2012	**36**	36	-	-	-	2
Lamaiz 2012	**27**	27	-	-	-	2
Elarja 2012	**30**	30	-	-	-	2
Figuig 2012	**91**	76	-	-	15	4
Tinissan 2012	**28**	28	-	4	-	2
Berkoukesse 2012	**16**	16	-		-	2
Total	**457**	442	-	10	15	30

27 farmers participated in a training on water management using solar pumping systems. The session focused on how solar pumps work, measures for care, and maintenance.

Activity	Number of Participants					
	Total	Men	Women	Youth	Other Participants	AWM
1.4 Gafait	**10**	10		3	3	2
1.4 Oulad Yahya Laayat	**6**	6		1	3	2
1.18 Tencherfi	**8**	8		4	3	2
1.4 Tisserfine Mestferki	**3**	3		1	3	2
Total	**27**	27	**-**	9	3	2

** Note: Other includes 3 members of the Kenidra Association who provided the training. These are not included in the total trained.*

B.3 Provided Training and Support Sessions to Water User Associations

Good Governance for Water User Associations. The AWM project team organized a training session on good governance that provided AWUAs with the tools needed to ensure transparency and communication between members and their communities. With improved management and communication skills, AWUA's were better able to advocate and implement activities moving forward. For example, in Mestferki, the AWUA was able to work with the Ministry of Agriculture to obtain pruning equipment for youth. With improved communication skills, the AWUA was able to build this relationship and support community members.

Activity	Number of Participants					
	Total	Men	Women	Youth	Other Participants	AWM
Training Session on Good Governance (September 19, 2011)	**16**	15	-	3	1	5
Total	**16**	15	0	3	1	5

Conflict and Consensus Management (CLEF). The management of agricultural water often brings about conflict due to its scarcity and disagreements about how it should be managed. To address this challenge, the AWM project organized a session on conflict management to strengthen the technical and operational capacities of AWUA members. The training introduced AWUAs to tools, methodologies, and approaches to mediation and negotiation with both internal and external actors, enabling them to be more effective in their management of water. A total of 48 individuals participated in this training. In one outcome, community members in Berkoukesse applied skills learned in the training to manage conflict over land in their community.

Figuig Water Council Support. The AWM project was able to broker a role for the existing community-based Water Council to manage water from a new dam. This represents a macro-level impact of AWM on water management that will affect the entire Figuig Oasis. In preparation for this, the AWM project supported the professional development of the Figuig Water Council.

Comprised of representatives from each of the Water User Associations in Figuig, the Water Council will manage the distribution of water from the 30-million-cubic-meter dam and 85-kilometer conduit of the Oued Sfasif Dam. This new water system requires a sound management structure to ensure sustainability and efficiency.

Based on consultations with DRAO, the AWM project worked to build the capacity of the Water Council to manage and maintain infrastructure. The meetings and trainings concluded with two field visits: (1) a visit by Water Council members to Taroudant to observe the private company AmenSouss's approach to agricultural water management, and (2) a visit to the Agricultural Development Authority of Moulouya (ORMVAM), located in the province of Berkane, to learn about volume-based agricultural water pricing methods based on the experience of Mechraa Hammadi Dam. Based on trainings and field visits, the Local Water

Council is pursuing a system of volume-based payment for water from the dam when the system is completed.

Activity	Number of participants					
	Total	Male	Female	Youth	Other Participants	AWM
Figuig Water Council	**17**	14	-	4	3	3
Total	**17**	14	-	4	3*	3

**Other: Participants from DRAO.*

C. Capacity Building – Agricultural Production for Water Conservation and Improved Livelihoods

C.1. Introduced Techniques for Optimum Crop Production and Water Management

The AWM team conducted 12 trainings to introduce farmers to appropriate techniques that maximize agricultural production, while also optimizing the use of irrigation water. The trainings deepened and improved farmers' knowledge of irrigation techniques, fertilizing techniques, and use of water. Through this training, farmers better understood why irrigation is important, as well as the amounts of water to be applied to crops to derive maximum profits. Farmers had the opportunity to apply what was learned in field plots.

Field training on techniques for crop optimization.

The topics covered in this session included: management techniques; optimization of water; calculation of water needs; frequency of irrigation; and the evaluation of water reserves in the soil. Trainings were conducted as follows:

- Telouat: June 22, 2011
- Ouled Yaacoub: June 23, 2011
- Aghbal: June 24, 2011
- Ouled Yahia: June 30, 2011
- Aghbal: July 12, 2011
- Telouate: September 29, 2011
- Oulad Yahya: October 13, 2011
- Aghbal: October 15, 2011
- Laayat: October 19, 2011
- Oulad Yaacoub: October 22, 2011
- Mestegmer: December 14, 2011
- Laayat: December 1, 2011 (women)

Because the training sessions proved to be very popular, additional sessions were scheduled with farmers.

Activity	Number of Participants					
	Total	Men	Women	Youth	Other	AWM
Training Agricultural Techniques	**252**	210	40	97	2	1
Training for women in Laayat	**22**	-	22	22	-	1
Total	**274**	210	62	119	2	2

C.2. Improved Soil Fertility Testing and Management

In partnership with DRAO, the AWM project conducted soil tests to meet the needs expressed by farmers to improve agricultural production. Based on these tests and in conjunction with trainings on field-level water management, the soil management training cycle provided community members with information and skills on maintaining soil fertility, including fertilizer selection and timing for application.

In partnership with the AWUAs, soil samples were taken (four samples per site, at depths of 30cm and 60cm) at 20 sites covering an area of 1367 hectares. Analysis of the samples was completed by ORMVAM. Two additional communities (Telouate, Mestegmer) conducted soil analysis directly via ORMVAM, following the AWM training in soil fertility management.

Follow-up training and technical assistance was organized as needed, based on the agricultural calendar and the results of soil testing and field-level trials of improved vegetable crop production.

Activity	Number of Participants					
	Total	Male	Women	Youth	Other	AWM
Gafait	**65**	64	-	0	1	2
Irssan	**14**	14	-	0	-	2
Laayat	**8**	8	-	2	-	2
Figuig	**20**	20	-	8	-	2
Oulad Yaacoub	**9**	9	-	5	-	1
Aghbal	**7**	7	-	1	-	2
Tencherfi	**32**	32	-	5	-	2
Oulad Yahia	**13**	13	-	6	-	2
Mestferki	**39**	39	-	11	-	2
Irsan	**26**	26	-	0	-	2
Zkara	**35**	33	2	0	-	2
Oulad Sliman	**29**	29	-	0	-	2
Tisserfine	**18**	18	-	0	-	2
Laabidat	**16**	16	-	0	-	2
Hamam Tahtani	**39**	39	-	0	-	2
Eljara	**31**	31	-	0	-	2
Tinissan	**28**	28	-	4	-	2
Lmaiz	**29**	29	-	0	-	2
Total	**458**	455	2	42	1	35

C.3 Improved Olive Production

Olives Orchard Management. In order to support olive farmers in optimizing olive production, the AWM project provided a seasonal training on the basic maintenance of olive orchards, which included irrigation, fertilization, and non-pesticide pest management.

Activity	Number of Participants					
	Total	Male	Women	Youth	Other	AWM
Laayat	**24**	24	-	-	-	2
Mestferki	**79**	79	-	28	-	2
Tencherfi	**47**	47	-	-	-	2
Gafait	**51**	51	-	-	-	2
Irsan	**46**	46	-	-	-	2
Oulad Yaacoub	**24**	24	-	-	-	2
Tencherfi	**9**	9	-	-	-	2
Zkara	**14**	14	-	-	-	2
Aghbal	**12**	12	-	-	-	2
Tinissan	**11**	11	-	-	-	1
Total	**317**	317	0	28	0	19

Olive Harvest & Post Harvest Techniques. Through 11 workshops, the AWM project provided coaching and support to 158 olive farmers to improve their harvest and post harvest techniques. This support covered a variety of harvesting methods (by hand, by pole, and by vibrators), techniques for ensuring the quality of the final product, and techniques for oil storage. Separate workshops were held to meet the needs of women, focusing on methods for picking olives that prevent damage and promote quality and value.

Activity	Number of Participants					
	Total	Male	Women	Youth	Other	AWM
Irsan	**8**	8	-	-	-	2
Mestferki	**25**	25	-	2	-	2
Tencherfi	**9**	9	-	1	-	2
Zkara	**12**	12	-	-	-	2
Gafait	**21**	21	-	-	-	2
Oulad Yaacoub	**11**	11	-	-	-	2
Laayat	**12**	12	-	5	-	2
Telouate	**11**	11	-	-	-	2
Oulad Yaacoub (women)	**11**	11	-	9	-	2
Laayat (women)	**28**	28	-	22	-	2
Mestferki (women)	**10**	10	-	6	-	2
Total	**158**	158	0	43	0	22

Olive Tree Pruning. The AWM project also organized three training workshops in which farmers learned hands-on techniques to improve their tree pruning as well the principles behind the impact of pruning on olive tree health, productivity, and product quality. Fifty-five (55) individuals participated in trainings. Project monitoring has shown that farmers have applied new techniques in their orchards. It takes two years to measure the impact of pruning after it is completed; the impact from project pruning should be evident in the 2013 harvest.

Activity	Location	Number of participants					
		Total	Male	Female	Youth	Other	AWM
Olive Pruning	Laayat	**23**	23	-	8	-	2
	Oulad Yaacoub	**14**	14	-	5	-	2
	Aghbal	**18**	18	-	5	-	2
Total		**55**	55	-	18	0	6

The AWM project also supported a training for 28 youth in the pruning of olive trees (see section F.2).

C.4. Improved Date Production

Orchard Management and Irrigation. In order to support farmers in optimizing date production, this training covered irrigation and water requirements of the date palm, pollination, and the harvesting, drying, and storage of dates. The training included both a theoretical training and field-based practical components. Farmers were guided by the AWM team in testing new techniques in their fields.

Activity	Number of participants					
	Total	Men	Women	Youth	Other	AWM
Date Orchard Management	**92**	92	-	-	-	3
Total	**92**	92	-	-	-	3

Pollination of Palm Trees and Pollen Conservation. In a changing climate, Figuig farmers have observed that natural pollination of their palm trees is often inconsistent and results in low production. Farmers requested a training specifically on pollination and conservation techniques. Farmers learned to improve productivity through artificial pollination (with sessions specifically focused on adjusting timing to environmental conditions) and pollen storage. The two-day session included one day of theoretical trainings and a second day of application in the field. Forty-eight farmers attended these sessions, and shared information they learned with others in their communities.

Activity	Location	Number of participants					
		Total	Male	Female	Youth	Other	AWM
Date palm pollination	Figuig Nursery	**48**	48	-	6	-	3
Total		**48**	48	-	6	-	3

Dates Harvest and Post Harvest. The AWM project designed this training and technical assistance to raise the awareness of farmers in best practices for harvest and the preservation of date quality. The training covered topics including the harvesting, drying, and storage of dates.

Activity	Number of participants					
	Total	Male	Female	Youth	Other	AWM
Figuig Training	**46**	35	9	-	-	3
Total	**46**	46	9	-	-	3

C.5. Improved Vegetable Production

The AWM project provided market-oriented production trainings to support farmers in producing more highly-valued and demanded products. Trainings used experimental trial plots to provide practical experience to farmers, introducing new crops such as green beans, tomatoes, and cauliflower. Specialists from INRA/MAAK organized a participatory research training in the field with members of the community from the villages of Tencherfi and Laayat.

Activity	Number of Participants					
	Total	Male	Women	Youth	Other	AWM
Gafait	**3**	3	-	-	-	1
Aghbal	**3**	3	-	-	-	1
Od Yahia	**2**	2	-	-	-	1
Tencherfi	**2**	2	-	-	-	
Zkara	**2**	2	-	-	-	
Gafait	**71**	71	-	14	-	1
Laayat	**21**	21	-	5	-	1
Figuig	**19**	19	-	17	-	
Laayat bean /pea production	**18**	15	-	3	3	2
Gafait	**24**	24	-	4	-	2
Aghbal	**6**	6	-		-	2
Oulad yahia	**17**	17	-	2	-	2
Laayat	**9**	9	-	-	-	2
H Fougani	**10**	10	-	-	-	2
Zenaga	**11**	11	-	-	-	2
Tisserfine	**7**	7	-	-	-	2
Berkoukesse	**15**	15	-	-	-	
Tencherfi	**29**	21	4	3	4	
Oulad Yahia	**13**	13	-	3	-	
Mestferki	**11**	11	-	-	-	
Total	**293**	**282**	**4**	**51**	**7**	**21**

D. Capacity Building – Value Chain Development

D.1. Facilitated Value Chain Roundtable

The project team brought together potential stakeholders – producers, distributers, and representatives of government agencies –in a roundtable to discuss activities as they relate to agricultural value chains. AWM and its local institutional partners organized the roundtable, held on March 15, 2012, which focused on olive, date, and pea value chains. The objective of the roundtable was to reflect on how the different stakeholders could work together to contribute to the development of these value chains. The roundtable involved the mobilization and coordination of AWM partners in the region. Producers are discussing forming a network to formalize support for value chain development, an activity with the potential to improve livelihoods in the region.

Activity	Number of participants					
	Total	Male	Female	Youth	Other	AWM
Roundtable discussion (olives, dates, peas)	**65**	14	2	6	49	5

Total	**65**	14	2	6	49	5

Participants included:

- Center for Agricultural Research (INRA) (5 people)
- Member of ACFO (1 person)
- Representative from the Cooperative el Hassania Dates Figure (1 person)
- NEF representatives (3 people)
- Oujda University / Biology Department (2 people)
- Chamber of Agriculture (1 person)
- Chamber of Commerce (1 person)
- Chairman of the group of Economic Interest in Olive Oil (1 person)
- President of the association MAAK (1 person)
- Regional Centre for Investment (1 person)
- President of the AUEA Douz (1 person)

D.2. Supported Olive Value Chain Development

Conducted Meetings on Improved Olive and Olive Oil Processing. In order to build the capacity of individuals and associations in the Oriental Region, the AWM project organized meetings between the National Food Safety Office (ONSSA) and olive crushing units. These sessions focused on building the knowledge of olive oil extractors in proper methods for olive harvest, transport, storage, and crushing, as well as oil processing and storage. In particular, the training focused on promoting hygienic and sanitary practices. In parallel with the training session, mill processers were encouraged to modernize crushing structures to meet current regulations, improve quality, and promote marketing in internal and external markets.

Activity	Number of Participants					
	Total	Male	Women	Youth	Other	AWM
Laayat	**4**	3	-	-	1	2
Rislan	**2**	2	-	-	1*	2
Mestferki	**8**	8	-	2	1*	2
Irsan	**8**	8	-	-	1*	2
Total	**22**	21	-	2	**1***	2

Note: Other is representative from ONSSA (counted once)

Hosted Roundtable on Commercialization of Olive Oil. Twenty-two individuals participated in a roundtable in Oujda on the commercialization of table olives and olive oil. The objective of this roundtable was to educate producers and processors involved in the olive oil value chain on the regulations and best practices for the production, gathering, transportation, storage, and extraction of olives. This activity was organized in collaboration with the AWM project's partner DRAO and held on November 26, 2012.

D.3. Date Value Chain Development

Distributed Materials to Promote Increased Date Production. To support farmers in improving the quantity and quality of date production, the AWM project distributed biodegradable sacks to farmers to preserve and protect dates from insects, high heats, and heavy rains. The bags were sourced locally in Errachidia, and farmers know the location to purchase additional sacks. Farmers and their families were also shown how to make these sacks themselves.

Demonstration of use of biodegradable bag on date trees.

By improving the yield (quantity) of dates produced, farmers are able to increase sales and raise their revenues. More than 30 farmers benefited from the distribution of these sacks (20 per farmer), which increased their production of dates by up to 20%.

The AWM project also worked with partners to facilitate the distribution of five freezers to producers and sellers of dates. The availability of freezers to wholesale date farmers allows them to keep their product for a period of time without a loss in quality; farmers can postpone distribution and sale of their product in order to benefit from better market prices. Moreover, increased storage capacity allows producers to buy large quantities from small farmers. This action helped to develop local trade and improve income and living conditions, contributing to the objectives of the AWM project.

Women sorting dates in Figuig.

Provided Support to Women Date Producers. In coordination with ACAF, the AWM project worked with 49 women in Figuig to raise awareness on date production to help increase the revenues of women.

Women learned about date sorting methods and were provided with information on how to sell dates profitably. This helped women improve the commercialization of their dates.

Activity	Number of Participants					
	Total	Men	Women	Youth	Other	AWM
Awareness session on date production (women)	**49**	-	49	-	-	8
Total	**49**	-	49	-	-	8

Hosted Date Value Chain Workshop

This workshop brought together a variety of actors for an important discussion on how to broadly promote improved date production and sales. Conducted on May 6, 2012 in Figuig, the workshop included the participation of 69 people—40 date producers, 6 intermediaries from Oujda and Figuig, and other interested parties. As a result of this workshop, several producers decided to participate in the International Date Exhibition in Erfoud.

Activity	Number of Participants					
	Total	Men	Women	Youth	Other	AWM
Date Value Chain Workshop	**69**	69	-	-	-	-
Total	**69**	69	-	-	-	-

Project Presence at International Date Exhibition in Erfoud

Eleven farmers and members of the Water User Association, two women from the Women's Cooperative in Figuig, and one AWM team member participated in the International Date Exhibition in Erfoud in 2013. The exhibition provided an important venue for meetings and exchanges between those in the date sector, allowing farmers to share and learn about techniques and materials for the production and promotion of dates. Further, the exhibition also provided an important opportunity to learn about government support available through the *Plan Maroc Vert* and to meet potential clients.

Activity	Number of Participants					
	Total	Male	Women	Youth	Other	AWM
International Date Exhibition	13	11	2			1
Total	**13**	**11**	**2**	**-**	**-**	**1**

D.4. Vegetable Value Chain Development

The AWM project worked with partner communities to introduce more highly valued and highly demanded vegetables for production, including tomatoes, cauliflower, and beans. The project team worked with nearly 40 participants to establish trial plots (in Figuig, Oulad Yahya, Aghbal, Laayat, Tencherfi, and Gafait). The project team provided trainings on these new crops and improved varieties, and conducted monitoring visits to demonstrate the difference between seed types.

In 2013, the project brought an aggregator together with farmers in Tencherfi to purchase peas. This synergy helped farmers ensure that their produce was sold at a higher price and helped to increase their incomes.

D.5. Provided Training and Support for Cooperatives

Support for Agricultural Cooperatives in Figuig. The AWM project coordinated with the Office for Development of Cooperation (ODEC) in Figuig to raise awareness about the roles and benefits of agricultural cooperatives and provided guidance on "how-to" create them. As a result of this activity, two agricultural cooperatives were created in Figuig. These cooperatives have promoted the commercialization of dates in the region.

Trainings were provided by ODEC on December 7 and December 12-14, 2011. Training sessions discussed legislation governing cooperatives and the composition of cooperatives. A session on procedures for creating a cooperative was held at the Culture House of Figuig in the presence of female farmers.

In Telouate, a financial management training was held for the agricultural cooperative during the project's tenth quarter.

Activity									
	Total	Men	Women	Youth	DRAO	CU	Authorities	Other	AWM
Training and support for cooperatives	**100**	8	92	-	-	-	-	-	3
Telouate Financial Management	**32**	32	-	15	-	-	-	-	3
Total	**132**	40	92	15	-	-	-	-	3

Support for Women's Cooperatives. To encourage the participation of women in agricultural development, the AWM project conducted a number of activities to support the formation of women's cooperatives. Cooperatives provide women with the opportunity to mobilize around economic projects. The members of cooperatives can share profits and can more easily access grants (INDH, etc.).

In Aghbal, an initial workshop on creating a cooperative was led by the Office of Development Cooperation (ODCO), with the participation of representatives from ORMVAM, a representative from the artisanal delegation, the president of the Rural Commune, and the president of the Association Union of Aghbal. An administrative and financial management training was held, with the objective of ensuring the sustainability of the cooperative and proper administrative and financial systems. In April 2013, an information and training day was held with the Aghbal Women's Cooperative, rural commune, ODCO, and the social affairs division. During this session, AMAL presented a business plan drafted for the cooperative. The cooperative is seeking financing with its business plan through the Chamber of Commerce and other potential funders. The AWM project team facilitated several meetings between the cooperative and INDH.

In Laayat, a workshop on creating a cooperative was held during the project's tenth quarter.

Activity	Number of Participants					
	Total	Male	Women	Youth	Other	AWM
AMAL Aghbal Cooperative Creation	**25**	-	20	5	5	4
AMAL Aghbal Admin & Finance Training	**13**	-	13	10	-	2
Aghbal Information Day	**20**		14	5	6	9
Laayat Cooperative Creation	**30**		30	24		6
Total	**88**	-	77	44	8	21

Note: Other includes a representative from ODCO, a representative from the Association Union of Aghbal, a representative from the artisanal delegation, and DRAO and Commune representatives.

Facilitated Women's Association Exchange Visit. AWM supported an exchange visit between members of the Aghbal Women's Association the Figuig Women's Cooperative for Solidarity and Development. While there the women learned from the Figuig experience in producing and marketing couscous and other value-added agricultural products. The visit took place from November 22-24, 2012, with the participation of 13 women from Aghbal and 13 women from Zenaga Figuig. The visit helped the Aghbal Women's Association plan its application for a microproject, and the women expressed their gratefulness for the opportunity to participate in this valuable activity.

Members of the Women's Cooperative in Figuig demonstrate their knowledge of couscous preparation to visiting women from Aghbal.

Activity	Number of Participants					
	Total	Male	Women	Youth	Other	AWM
Aghbal	13	-	13	9	-	1
Total	**13**	**-**	**13**	**9**	**-**	**1**

E. Implemented 21 Microprojects

The AWM project supported the implementation of 21 microprojects to improve agricultural water management in the Oriental Region. The microprojects allowed community members to address their needs through activities that built on learnings acquired in trainings and to fulfill elements of their Agricultural Water Action Plans. This was the first effort of its kind to require partners to contribute to the financing of improvement projects in the region (a 25% commitment), which built ownership in the success and maintenance of projects.

Through the microprojects, benefits were realized across communities, including optimized agricultural water usage, increased capacity, and improved livelihoods. Community members were encouraged by these and other impacts, and as a result are motivated to continue and further efforts to improve agricultural water management and livelihoods.

E.1. Development Process

To make the microproject process user-friendly and accessible for participants, the project team created a "Microproject Manual" to describe the funding mechanism. The manual was shared with project partners and beneficiaries to provide them with instruction on how to access funds. AWM field coordinators and partners met with men and women in the targeted sites to share information from the manual (to ensure that even those who could not read the manual would understand the process). The field coordinators encouraged community members (particularly women and youth) to prepare applications for microproject grants. The Project Committee reviewed applications and selected viable projects for funding. The environmental impact of each proposal was considered to ensure no negative impacts. At every step, the project team supported partners in the implementation of microprojects, providing additional technical assistance as necessary.

E.2. Microproject Locations and Results

MP 1-01: Oulad Yahya. The participatory diagnostic in Oulad Yahya highlighted the challenges facing users of the irrigation system. Sections of the earthen canal had fallen into disrepair, causing significant losses in water. The Water User Association in Oulad Yahya undertook work to better control water resources in the perimeter, reduce water loss, and improve the level of efficiency. Activities undertaken for the development and rehabilitation of the water network included:

Olive trees in Oulad Yahya can now be irrigated throughout the year because of improved water flow.

- Rehabilitation of 230m of the irrigation canal
- Reconstruction of 400m of irrigation canal[4]

As a result of the project, the level of efficiency in the irrigation system has reached 40%. The water flow has increased by 15%, allowing the amount of irrigated land to be increased by 15%.

Community members work on the rehabilitation of the irrigation canal in Oulad Yahya.

MP 1-02: Oulad Yaacoub. The perimeter of Oulad Yaacoub benefits from groundwater coming from four main springs. The participatory diagnostic of the perimeter helped the Water User Association to understand the difficulties faced by water users in the perimeter. Based on this diagnostic, it was decided that agricultural water usage in the community could be most improved through the rehabilitation of irrigation canals and two basins for water

Renovated canals in Oulad Yaacoub provide more water, allowing farmers to plant fruits and vegetables with high market value.

[4] *Reconstruction* refers to cases where an existing earthen channel that has been destroyed is built (using cement). *Rehabilitation* refers to cases where a damaged section of canal (already lined in cement) is repaired.

accumulation, as well as improved systems to protect and repartition irrigation water. Two water storage basins were rehabilitated (one 28 m^3 and one 37 m^3), along with 100 meters of cemented irrigation channel. This microproject has had a positive impact on water management in the perimeter, including:

- The recovery of 100% of water losses that had resulted from seepages in earthen basins.
- Improved flow of water by 10%, as well as correlating reductions in the amount of time required for transporting water and irrigation.

President of the Water User Association with a water basin targeted by the Oulad Yaacoub Microproject.

- Mitigation of conflicts and disputes that had existed between farmers around the water tower and respect for irrigation time.
- Improved crop yields as water needs of plants are better met, and proper fertilization techniques learned in trainings are used.

MP 1-03: Laayat. Water in Laayat comes primarily from the perennial spring "Sidi Yaacoub." The spring is exposed to flood waters from forests upstream. This flooding results in siltation and the deterioration of the spring and irrigation canals – causing farmers to lose water and resulting in extra work for farmers in accessing water. The participatory diagnostic in Laayat highlighted the need to (1) undertake activities to improve the spring; (2) rehabilitate irrigation canals; and (3) rehabilitate 3 water storage basins. The water storage basins were previously made of earth, and were unable to store water.

The microproject in Laayat rehabilitated three water storage basins to stop water loss

Water flows from the spring in Laayat.

resulting from cracks and general deterioration of the basins. At the same time, activities were undertaken to protect the spring (Ain Saboun) and the main irrigation channel connecting the spring to the irrigated area against the floodwaters of the watershed. This work is the result of a consultation process between farmers in Laayat to conserve its spring water -- the natural resource that is the needed for irrigation, the population's water supply, and the agricultural source of income for residents.

As a result of the microproject, the following positive impacts have been noted:

- Improved irrigation water flow by 10%.
- Reduction in water storage basin water loss by up to 100%.

The microproject has had extremely positive results for farmers in the area, who have been able to see increases in revenue through the expanding their crops and introducing new crops (including beans and cauliflower) – with a yield of 35 Q/ha with a revenue of 4000MAD/ha (~$475/ha). Further, farmers have converted their gravity irrigation system to a localized drip irrigation system, which is three times more efficient than traditional methods.

MP 1-04: Zenaga. The perimeter of Zenaga is characterized by a lack of water and by an inefficient irrigation system that results in the loss of water. These factors have a negative effect on agricultural production; farmers contribute a significant amount of time to the process of irrigating their crops. To improve water flow and better use subterranean water, the Water User Association in Zenaga rehabilitated the underground irrigation canal (khettara) through cleaning and repairs to damaged sections of the canal.

The microproject has been successful and achieved significant results:

- The microproject brought the spring back to life – after having been abandoned for 7 years.
- Farmers have begun to farm land that had been abandoned due to a lack of water from the non-functional spring.
- Farmers have expressed their satisfaction with the microproject.
- The microproject and work of the AWM project has brought the community together – and allowed them to reach consensus on key issues to be addressed.

Azadine Abdel Salam points to the new crops he irrigates, at no cost, with water from renovated canals after 7 years of purchasing water from other farmers.

MP 1-05: Oudaghir. The AWUA in Oudaghir proposed the installation of two submersible pumps to more efficiently bring water to the level of irrigation canals and decrease costs.

Improvements realized with the new, efficient pumping system include:

- An increase in the pumping rate of 33% (18 to 24 L / s).
- A decrease in electricity consumption by 25% (comparison of electricity bills in November 2011 and 2012).
- One producer has increased his production area from 1375 to 2175m2 (58%).
- Producers have increased their capacity in agricultural production and project management, from the analysis of local challenges, to identifying strategies and implementing solutions.

Khalil Hassan stands with the new pump installed in Oudaghir.

MP 1-06: Hamam Fougani. Through a participatory diagnostic, the community of Hamam Fougani noted that the main irrigation challenges resulted from the age of the irrigation canal – which suffers from leaks. To address this problem, the Water User Association rehabilitated a damaged section of canal (300m).

As a result of the completed microproject:

- The quality of the irrigation canal has been greatly improved as a result of the rehabilitation work.
- The increase in water flow is estimated at 22%. This means that farmers have gained an additional 80mn/6 hours of irrigation time from the canal.
- The improvements have decreased the amount of effort that farmers have to expend for irrigation.
- Some farmers increased their irrigated land from .30ha to .34ha (9%).
- Through the AWM project's intervention, farmers have increased their capacity in agricultural production and project management.

MP 1-08: Telouat. Four Olivum machines were procured for the Telouat microproject. Pellenc, the company selected for the procurement of these items, trained Ain Telouat Water User Association members on how the machines work and proper care.

Farmers used the machines during the last harvest and already estimate an increase in revenue from between 1500MAD-1800MAD (~$180-$215) per hectare. Further, farmers

have noted how the machines do not damage their trees – unlike other harvesting practices used in the past.

MP 1-10: Tencherfi. To reduce time spent on irrigation, reduce operating costs, and avoid successive breakdowns that affected irrigation, the Tencherfi AWUA acquired and installed a solar (3.5L/s and 12 m HMT) and electric pumping system.

Community members in Tencherfi construct an enclosure for the solar panels installed as part of the microproject.

To ensure the sustainability of the microproject, the solar pump company held a training for two farmers on the care and maintenance of the system. The AWUA also came together to plan and implement the construction of an enclosure for the solar panels – an important activity that was not originally planned, but that will promote the sustainability of this intervention.

As a result of the microproject, the AWUA has noted a savings of 1800MAD (~$215) per month in pump fuel.

MP 1-12: Mestferki. To increase efficiency and reduce water loss by infiltration, the participatory diagnostic in Mestferki demonstrated that the most important actions needed by the community were to (1) rehabilitate 12 linear meters of the water intake system; (2) rehabilitate 50 linear meters of the irrigation canal; (3) rehabilitate a 12 linear meters of a tile covered canal; (4) reconstruct 300 meters of the channel; and (5) rehabilitate the water accumulation tank. The microproject in Mestferki rehabilitated a water accumulation tank, cemented 300m of an irrigation channel, and reconstructied the water intake system. The microproject has resulted in:

A farmer in Mestferki prepares reinforcements for the irrigation canal under rehabilitation through the Mestferki Microproject.

- Increasing in the area effectively irrigated by 10%.
- Improving the flow of diverted water by 15%.
- A 30% reduction in time spent on irrigation.

All these factors will contribute to improving yields, which will increase income and improve living conditions in the community.

MP 2-01: Berkoukesse. Irrigation in Berkoukesse is achieved through pumping groundwater. Before AWM, water users faced significant energy costs and often experienced failures in the irrigation network. To address these issues, the AWUA in Berkoukesse came together to replace a 70m section of degraded canal and accessories. The rehabilitation of the channel has resulted in:

- A reduction in the amount of time the pump station operates (saving energy).
- Recovery of water lost to leaks in old damaged pipes, estimated at 5% or 1.25L/s.
- Farmers gained an estimated 15% of their time, which was formerly spent on irrigation and can now be used for other farming tasks.

Water flows out of the underground water canal towards a date palm farm.

MP 2-02: Lamaiz. The perimeter of Lamaiz is characterized by the scarcity of water resources and an irrigation system that is ineffective and results in significant water losses. All of these factors negatively affect agricultural production and require significant time by farmers to irrigate crops. To improve water flow and increase the benefit derived from groundwater, the AWUA rehabilitated the underground irrigation canal (khattara) by (1) cleaning the canal and (2) rehabilitating 50m of degraded sections.

MP 2-03: Hamam Tahtani. To maximize use of scarce water available in the area, the AWUA utilized its limited financial capacity to undertake improvements in the surface irrigation canals; resources were not available to rehabilitate subterranean canals. AWM worked with the AWUA to rehabilitate underground irrigation channels. The microproject cleaned 800m of khettara and rehabilitated 50m of damaged canal sections.

As a result of the microproject, Hamam Tahtani has experienced:

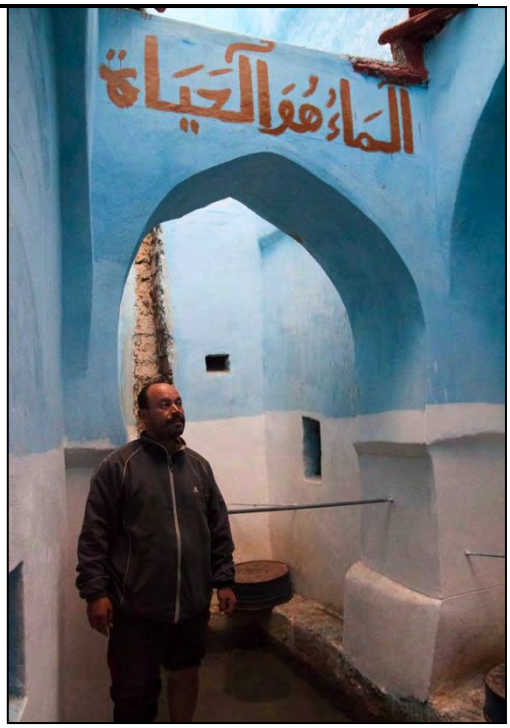
- An improvement in the efficiency of the irrigation network by recovering 10% of water.
- Improving the amount (5%) and speed of water flowing.
- Saving farmer time in waiting for irrigation water.
- Promoting the sustainability of infrastructure that is essential for farmer production and revenues.

MP 2-04: Oulad Slimane. Given its location in the oasis of Figuig, the perimeter of Oulad Slimane faces similar challenges to other areas in the oasis that use khettara to access groundwater (caving walls, waste deposits). In Oulad Slimane, the Water User Association cleaned 800 m of khettara and rehabilitated 60 m of degraded canal.

These activities resulted in:

- Improving the amount (5%) and speed of water flowing.
- Saving farmers time in waiting for irrigation water.
- Reduction in infiltration losses by 30%.

Through this collective undertaking, the AWUA gained the support of farmers in the perimeter who actively contributed in carrying out this work. The project helped build the credibility of the AWUA among farmers.



Mbarchi Mohammad stands at the newly renovated spring below the words, "water is life."

MP 2-05: Laabidat. Due to the buildup of significant sedimentary deposits along the khettara, resulting from materials carried in the water and the collapse of walls, the AWUA in Laabidat prioritized the cleaning (1250m) of the canal and rehabilitating the canal basin water storage (1000 m^3 capacity). While the perimeter of Laabidat has suffered from water scarcity, inefficient irrigation systems (including significant water loss), and a lack of improved cultivation techniques, the AWM project activities and the microproject have had significant results:

- Improved water flow (5%) and velocity.
- Saving farmers time in waiting for irrigation water (one hour).
- Reduction in infiltration losses by 30%.

A renovated canal in Laabidat, free of cracks, allow farmers to irrigate more efficiently without any water loss.

MP 2-06: Women's Cooperative in Zenaga. The Women's Solidarity Cooperative in Zenaga works to improve the social and economic position of women and their families. The Cooperative transforms agricultural materials to produce such items as couscous, table olives, and jams, and sells these at markets to benefit members. Previously, the Cooperative had to send wheat and barley to a distant mill to be ground to a size suitable for making couscous – incurring significant milling and transportation costs. To increase the quality of processed products, reduce processing costs, and increase the efficiency of their business, the Cooperative recognized the importance of processing tools such as: a cereal mill, couscous preparation material, a vacuum device, and cold storage.

Members of the Zenaga Women's Cooperative prepare couscous.

They were able to purchase this equipment with AWM support. Their new materials enable the members to perform their tasks in the best conditions and thus ensure better productivity. The microproject strengthens the capacity of women in the development and commercialization of agricultural products

In parallel, the cooperative purchased a motorcycle (as cost share) to ensure the distribution of products prepared to Figuig and weekly markets in the area. As a result of the project, the cooperative has already increased their income by 15% over last year (800 MAD in 2012 to 920 MAD in 2013).

MP 2-07: Association of Women Aghbal. The micro-project implemented by the Amal Aghbal Women's Association, which was newly created through the AWM project, has allowed members of the associations to conduct their activities in better conditions, improve their productivity, and contribute to increasing the revenue of their families.

The Association acquired accessories for the preparation of couscous, such as pots. To strengthen women's skills, a training plan was drawn up with the members of association on administration, financial management, and marketing. This plan was executed by the AWM team, in partnership with the National Cooperative Office.

MP 2-08: Irsan. The Irsan Cooperative produces olive oil. The Cooperative developed an olive farm to promote good production techniques throughout the value chain (farming, harvest, and pressing). From this perspective, the cooperative noted the importance of adopting modern olive-harvesting practices. Modern picking equipment is known for its efficiency, profitability, and hygienic quality; its ability to maintain product quality; its reduction in harvest time; and its reduction in damage to the trees.

Harvesting equipment was delivered during the harvesting season to the Irsan Cooperative (AWM funds financed the purchased of 3 harvesting machines; 1 was purchased as a cost-

share). The Cooperative manages the use of this equipment. Four youth were trained on the use and maintenance of these machines. They will provide services to community members for a fee (2MAD/kg). The microproject has been fully implemented with the following impacts:

- Reduction in length of harvest time and labor required.
- Savings in the cost of harvesting (0.8Dh/kg)
- Preserves the olive tree and the quality of olives.

MP 2-09: Gafait. The perimeter of Gafait is characterized by the scarcity of water resources, which influences agricultural production and irrigation time. Using a pump, irrigation water is pumped from wells with a flow rate of 3.5L/s. Before AWM intervention, the old pump often broke down, requiring repair costs and emitting smoke that polluted the surrounding air. Thus, the Water User Association identified the need to install a solar pump for pumping, reducing costs associated with diesel and improving the quality of air around the station.

To improve the irrigation system, the AWUA in Gafait proposed (1) the acquisition of a solar pumping system (3.5L / S and 12m HMT), (2) the construction of a storage tank and (3) the construction of a pumping station. All three have now been completed with AWM support.

The beneficiaries are very satisfied with the realization of this microproject, which contributes to a reduction in irrigation time, reduced operating costs, and will reduce the ongoing maintenance cost of existing equipment to avoid successive failures that hamper the continuity of irrigation.

MP 2-10: Laayat. This microproject in Laayat focused on improving the hygienic and sanitary nature of olive oil extraction in the mill in order to improve the quality and add value to the final product. In parallel, the microproject also helps to collect waste to prevent the contamination of the environment, thereby conserving natural resources. This microproject consisted of (1) the rehabilitation of sedimentation and separation basins to separate oil from water, along with the replacement of fittings around the basin and in the mill, and the (2) reconstruction and rehabilitation of basins for the collection residue, preventing this from directly entering the environment.

The microproject improves the environment surrounding the mill and conserves natural resources. The rehabilitation work and reconstruction of the basin have been fully completed.

MP 2-13: Tisserfine Individual. This microproject, implemented by an individual, introduced new technology through the use of a solar pumping station. This technique was introduced on an experimental plot to enable farmers in the area to view the results of this system.

The impacts observed by the recipient include the following:

- Improved irrigation.

- An average cost recovery of 3000MAD/month (~$355/month) on average as a result of savings in operating costs (fuel and maintenance).
- The system has not had any problems or fallen into disrepair—and therefore the crop has not been put at risk.
- The farmer expects to increase production by approximately 10%.

MP 2-14: Oulad Yahya Individual. This microproject, implemented by an individual, introduced new technology through the use of a solar pumping station. This technique was introduced on an experimental plot to enable farmers in the area to view the results of this system.

The impacts observed by the recipient include the following:

- Improved irrigation.
- An average cost recovery of 4500Dh/month (~$533/month) on average as a result of savings in operating costs (fuel and maintenance).
- The system has not had any problems or fallen into disrepair—and therefore the crop has not been put at risk.
- The farmer expects to increase production by approximately 10%.

OVERVIEW OF MICROPROJECTS

#	Site	Description	AWM, MAD	Cost Share, MAD	Total, MAD	Proposal Submitted	Proposal Approved (USAID)	Status	Expected Impact
1.01	Oulad Yahya	Canal rehabilitation (230m) and reconstruction (400m)	105 083 (~$12,425)	35 027 (~$4,140)	140 110 (~$16,565)	03/06/2012	19/07/2012	Completed	March 2013
1.02	Oulad Yaacoub	Canal rehabilitation (100m) and 2 storage basin construction	144,750 (~$17,155)	48,250 (~$5,705)	193,000 (~$22,820)	6/3/2012 (revised 8/10/2012)	04/09/2012	Completed	January 2014
1.03	Laayat	Canal rehabilitation	109,170 (~$12,908)	36,390 (~$4,302)	145,560 (~$17,210)	03/06/2012	24/09/2012	Completed	2012-2014
1.04	Zenaga	Underground canal rehabilitation (50m)	108,690 (~$12,850)	36,230 (~$4,280)	144,920 (~$17,130)	01/06/2012	19/07/2012	Completed	March 2013
1.05	Oudaghir	Submersible pumps (2) installation	75,000 (~$8,870)	25,000 (~$2,955)	100,000 (~$11,820)	30/05/2012	04/06/2012	Completed	December 2012
1.06	Hamam Fougani	Canal rehabilitation (300m)- wall removed	40,688 (~$4,811)	13,563 (~$1,604)	54,250 (~$6,415)	8/7/2012 (Revised)	04/09/2012	Completed	December 2013
1.07	Figuig GIE	Pollination equipment purchased	131,220 (~$15,515)	43,740 (~$5,170)	174,960 (~$6,415)	16/06/2012	19/07/2012	Cancelled	Cancelled
1.08	Telouat	4 Olivum machines for olive harvesting	79,500 (~$9,400)	26,500 (~$3,130)	106,000 (~$12,530)	01/06/2012	04/06/2012	Completed	January 2013
1.10	Tencherfi	Solar & electric pump	109,458 (~$12,940)	27,366 (~$3,235)	136,824 (~$16,170)	06/08/2012	06/09/2012	Completed	June 2013
1.12	Mestferki	Canal and 2 water basins rehabilitation	107,690 (~$12,730)	36,150 (~$4,275)	143,840 (~$17,005)	07/08/2012	06/09/2012	Completed	December 2013
2.1	Berkoukese	Rehabilitation of water piping and connection	84,375 (~$9,980)	28,125 (~$3,330)	112,500 (~$13,310)	11/12/2012	21/12/2012	Completed	December 2013

2.2	Lmaaiz	Rehabilitation of underground canal	101,800 (~$12,035)	34,200 (~$4,045)	136,000 (~$16,080)	28/11/2012	30/11/2012	Completed	December 2013
#	**Site**	**Description**	**AWM, MAD**	**Cost Share, MAD**	**Total, MAD**	**Proposal Submitted**	**Proposal Approved (USAID)**	**Status**	**Expected Impact**
2.3	Hamam Tahtani	Rehabilitation of underground canal	111,000 (~$13,125)	37,000 (~$4,375)	148,000 (~$17,500)	28/11/2012	12/12/2012	Completed	December 2013
2.4	Oulad Sliman	Rehabilitation of underground canal	110,250 (~$13,035)	36,750 (~$4,345)	147,000 (~$17,380)	4/12/2012	6/12/2012	Completed	December 2013
2.5	Laabidad	Rehabilitation of underground canal and water basin	112,500 (~$13,300)	37,500 (~$4,435)	150,000 (~$17,735)	28/11/2012	30/11/2012	Completed	December 2013
2.6	Zenaga	Purchase of food conservation tools	96,150 (~$11,370)	32,050 (~$3,790)	128,200 (~$15,160)	10/12/2012	14/12/2012	Completed	June 2013
2.7	Aghbal	Purchase of couscous production equipment	6,548 (~$775)	2,183 ($260)	8,730 ($1,035)	13/12/2012	21/1/2013	Completed	July 2013
2.8	IRSAN	4 Olivum tools and olive-oil mill rehabilitation	141,000 (~$16,670)	47,000 (~$5,560)	188,000 (~$22,230)	19/11/2012	28/11/2012	Completed	January 2013
2.9	Gafait	Solar pump installation and basin and pumping station construction	150,000 (~$17,735)	90,000 (~$10,640)	240,000 (~$28,375)	10/12/2012	14/12/2012	Completed	
2.10	Laayat	Olive Oil Mill rehabilitation	20 000 (~$2,365)	20 000 (~$2,365)	40 000 (~$4,730)	19/11/2012	28/11/2012	Completed	January 2013
2.13	Tisserfine	Individual – Solar Pump	62,520 (~$7,390)	62,520 (~$7,390)	125,040 (~$14,780)	16/12/2012	23/1/2013	Completed	December 2013
2.14	Oulad Yahya	Individual – Solar Sump	44,280 (~$5,235)	44,280 (~$5,235)	88,560 (~$10,470)	16/12/2012	23/1/2013	Completed	December 2013

MICROPROJECT - INDICATORS							
				TARGETS – EXPECTED IMPACTS			
#	Site	Association	Description	2. Number of ha under improved management	3. Number of people with economic benefits	4. % of Increased Revenues	5. Number of farmers adopting new techniques
1.01	Oulad Yahya	Oulad Yahya	Canal rehabilitation (230m) and reconstruction (400m)	50	138	11.50%	23
1.02	Oulad Yaacoub	Oulad Yaacoub	Canal rehabilitation (100m) and 2 storage basin construction	50	370	11.50%	45
1.03	Laayat	ElfathBelkasmia	Canal rehabilitation	80	650	11.50%	78
1.04	Zenaga	Almalyass	Underground canal rehabilitation (50m)	230	1560	11.50%	520
1.05	Oudaghir	Ajdir	Submersible pumps (2) installation	48	600	11.50%	110
1.06	Hamam Fougani	Iflan	Canal rehabilitation (300m)- wall removed	10	60	11.50%	12
1.07	Figuig GIE	GIE Figuig	Pollination equipment purchase	555	800	40%	150
1.08	Telouat	Ain Telouat	4 Olivum machines for olive harvesting	90	548	11.50%	50
1.10	Tencherfi	Douz	Solar and electricpump	45	185	11.50%	51
1.12	Mestferki	Ighzer	Canal and 2 water basins rehabilitation	95	890	11.50%	93

2.1	Berkoukese	Amal Alwaha	Rehabiliation of water piping and connection	50	450	11.50%	75
2.2	Lmaaiz	Al Bassatin	Rehabilitation of underground canal	80	1000	11.50%	60
2.3	Hamam Tahtani	Hamam Tahtani	Rehabilitation of underground canal	30	300	11.50%	100
2.4	Oulad Sliman	Oulad Sliman	Rehabilitation of underground canal	85	1000	11.50%	220
2.5	Laabidad	Laabidad	Rehabilitation of underground canal and water basin	32	340	11.50%	100
2.6	Zenaga	Cooperative de Solidarite	Purchase of food conservation tools	-	-	48%	-
2.7	Aghbal	Amal Aghbal	Purchase of couscous production equipment	-	-	70%	-
2.8	IRSAN	Irsan	4 Olivum tools and olive-oil mill rehabilitation	40	91	11.50%	13
2.9	Gafait	Gafait	Solar pump installation and basin and pumping station construction	20	80	11.50%	10
2.10	Laayat	Laayat	Olive Oil Mill rehabilitation	80	350	11.50%	
2.13	Tisserfine	Tisserfine Individuel	Purchase of Solar Pump	10	35	11.50%	35
2.14	Oulad Yahya	Oulad Yahya Individuel	Purchase of Solar Pump	4, 5	15	49%	15

E.3. Environmental Mitigation

The AWM project sought to mitigate the potential for any adverse environmental impacts in the implementation of its work, particularly microprojects. Although the microprojects all had a low risk of environmental impact, the project team followed environmental mitigation plans and continuously monitored environmental impacts.

The project team followed mitigation measures as described in the IEE. Any waste generated during implementation of projects was properly disposed. Only local labor was employed, and environmental mitigation measures were discussed with those implementing microprojects. The following chart describes the environmental mitigation actions undertaken by the project team in the implementation of microprojects:

#	Microproject	Description	Environmental Mitigation Actions Planned	Environmental Mitigation Actions Implemented	Environmental Impact of Project
1.01	Oulad Yahya	Canal rehabilitation (230m) and reconstruction (400m)	*Low risk project.* • Rehabilitation of existing canal – no additional land/ecosystems affected. No new drainage patterns. • All construction waste removed properly from site. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
1.02	Oulad Yaacoub	Canal rehabilitation (100m) and 2 storage basin construction	*Low risk project.* • Rehabilitation of existing canal and basins – no additional land/ecosystems affected. No new drainage patterns • All construction waste removed properly from site. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
1.03	Laayat	Canal rehabilitation	*Low risk project.* • Rehabilitation of existing canal – no additional land/ecosystems affected. No new drainage patterns. • All construction waste removed properly from site. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
1.04	Zenaga	Underground canal rehabilitation (50m)	*Low risk project.* • Rehabilitation of existing underground canal – no additional land/ecosystems affected. No new drainage patterns. • All construction waste removed properly from site. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
1.05	Oudaghir	Submersible pumps (2) installation	*Low risk project.* • Replacement of pumps. No additional land/ecosystems affected. No new drainage patterns. • All construction waste removed properly from site. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted

1.06	Hamam Fougani	Canal rehabilitation (300m)	*Low risk project.* • Rehabilitation of existing canal – no additional land/ecosystems affected. No new drainage patterns. • All construction waste removed properly from site. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
1.07	Figuig GIE	Pollination equipment purchase	*Low risk project.* • New equipment has no expected negative impact on environment. • Any packaging and waste to be removed properly from site. • Technical training and support provided to AWUA in use and maintenance of equipment.	Cancelled	Cancelled
1.08	Telouat	4 Olivum machines for olive harvesting	*Low risk project.* • New equipment has no expected negative impact on environment. • Any packaging and waste to be removed properly from site. • Technical training and support provided to AWUA in use and maintenance of equipment.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
1.10	Tencherfi	Solar and electricpump	*Low risk project.* • New equipment has no expected negative impact on environment. • No additional land/ecosystems affected. No new drainage patterns. • Any packaging and waste to be removed properly from site. • Technical training and support provided to AWUA in use and maintenance of equipment. • Pumping rate is below spring recharge rate.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
1.12	Mestferki	Canal and 2 water basins rehabilitation	*Low risk project.* • Rehabilitation of existing canal and basins – no additional land/ecosystems affected. No new drainage patterns • All construction waste removed properly from site. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
2.1	Berkoukese	Rehabiliation of water piping and connection	*Low risk project.* • Rehabilitation of existing piping– no additional land/ecosystems affected. No new drainage patterns • All construction waste removed properly from site. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted

2.2	Lmaaiz	Rehabilitation of underground canal	*Low risk project.* • Rehabilitation of existing underground canal – no additional land/ecosystems affected. No new drainage patterns. • All construction waste removed properly from site. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
2.3	Hamam Tahtani	Rehabilitation of underground canal	*Low risk project.* • Rehabilitation of existing underground canal – no additional land/ecosystems affected. No new drainage patterns. • All construction waste removed properly from site. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
2.4	Oulad Sliman	Rehabilitation of underground canal	*Low risk project.* • Rehabilitation of existing underground canal – no additional land/ecosystems affected. No new drainage patterns. • All construction waste removed properly from site. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
2.5	Laabidad	Rehabilitation of underground canal and water basin	*Low risk project.* • Rehabilitation of existing underground canal and basin– no additional land/ecosystems affected. No new drainage patterns. • All construction waste removed properly from site. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
2.6	Zenaga	Purchase of food conservation tools	*Low risk project.* • Technical training and support provided in use and maintenance of equipment.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
2.7	Aghbal	Purchase of couscous production equipment	*Low risk project.* • Technical training and support provided in use and maintenance of equipment.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
2.8	IRSAN	4 Olivum tools and olive-oil mill rehabilitation	*Low risk project.* • Technical training and support provided in use and maintenance of equipment. • All construction waste removed properly from site. Materials will not contaminate groundwater. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted Project has stopped seepage of olive mill waste into environment.

2.9	Gafait	Solar pump installation and basin and pumping station construction	*Low risk project.* • New equipment has no expected negative impact on environment. • No additional land/ecosystems affected. No new drainage patterns. • Any packaging and waste to be removed properly from site. • Technical training and support provided to AWUA in use and maintenance of equipment. • Pumping rate is below spring recharge rate.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
2.10	Laayat	Olive Oil Mill rehabilitation	*Low risk project.* • Technical training and support provided in use and maintenance of equipment. • All construction waste removed properly from site. Materials will not contaminate groundwater. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
2.13	Tisserfine	Solar Pump	*Low risk project.* • Technical training and support provided in use and maintenance of equipment. • All construction waste removed properly from site. Materials will not contaminate groundwater. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted
2.14	Oulad Yahya Individuel	Solar pump	*Low risk project.* • Technical training and support provided in use and maintenance of equipment. • All construction waste removed properly from site. Materials will not contaminate groundwater. • Only local labor employed.	All mitigation actions implemented as planned.	Project Completed – No Negative Environmental Impact Noted

F. Cross-Cutting Themes

F.1. Engagement of Women

The AWM project successfully engaged women in several areas, despite significant systemic challenges-including customs, women's indifference to the project in some sites, and the lack of women's involvement in the management of agricultural water. The involvement of women in targeted areas has now increased as a direct result of the AWM team's efforts to mobilize, build awareness, conduct trainings, and promote microprojects for concrete action among women's groups. The positive results of the AWM project in the involvement of women include the following:

- **Two microprojects designed and implemented** by two women's organizations (Zenaga Women's Cooperative and AMAL Aghbal Women's Association).
- The **creation of the Aghbal Women's Cooperative** for the transformation of agricultural food products. The principle activity of the cooperative is value-added food processing activities (e.g., couscous). The cooperative began with 13 women; after 2 were unable to remain in the cooperative (due to family reasons); there are now 11 members.
- The Aghbal Women's Cooperative developed a **business plan** to promote the commercialization of products produced by women.
- 13 members from the Aghbal Women's Cooperative undertook an **exchange visit** to Figuig in November 2012 to learn from the experience of the Zenaga Women's Cooperative about producing and marketing couscous and other value-added agricultural products. The visit helped the cooperative plan its application for a microproject, and strengthen its mission and operations.
- The organization of women in Laayat into a **women's association** – representing an important step for women in their participation in their community's development. The association has developed an action plan - a significant step in women's organizational capacity in community development in Laayat.
- **50 women** (members of the cooperative in Aghbal, members of the association in Laayat, and representatives from the Office for Developing Cooperation [ODCO], INDH, and the Rural Commune) participated in workshops and were provided with support to strengthen the management structures of women's organizations. The AWM project coordinated these workshops, providing the connection between the cooperative and ODCO. The trainings used materials developed by ODCO on financial and administrative management. These meetings also provided an opportunity to develop the synergies between women and social institutions.

F.2. Engagement of Youth

Youth are leaving rural areas in the Oriental Region because they see no future in local agriculture. Accordingly, the AWM project focused on developing activities that provide

youth with skills, economic opportunities, and earning potential. The project team worked to involve youth in the project—inviting them to take part in all mobilization, training, and support activities. Youth participation in project activities became more significant as the project progressed, an important outcome that supports the next generation of farmers. The activities and results of the AWM project involvement of youth include the following:

Conducted Youth Training in Pruning Techniques. The AWM project held a training session for youth in pruning techniques, focused on helping participating youth to learn a business trade. The training touched upon the theoretical (1 day) and practical aspects (4 days) of pruning olive trees. Youth with a knowledge of pruning—demonstrated through a certificate from the AWM project—can work with farmers to provide this expertise, offering seasonal employment opportunities to youth. The training was highly successful in terms of participation and in the number of farmers who offered their orchards for the practical training.

Activity	Number of Participants								
	Total	Male	Women	Youth	DRAO	CU	Authorities	Other	AWM
1.18 Gafait	6	6	-	6	-	-	-	-	2
1.18 Laayat	4	4	-	4	-	-	-	-	2
1.18 Tencherfi	5	5	-	5	-	-	-	-	2
1.18 Mestferki	10	10	-	9	-	-	-	-	2
1.18 Irsan	4	4	-	4	-	-	-	-	2
Total	29	29	--	28	-	-	-	--	2

Seven youth in Telouate who participated in the training course offered by Lakarma (in the province of Taourirt) established a cooperative to deliver services to farmers. These youth will provide pruning services for olive trees.

In Mestferki, the AWUA received a donation of equipment from the Provinical Agricultural Authority to fund youth in offering their services to farmers in the region.

Conducted Youth Training in Drip Irrigation. 31 youth participated in drip irrigation trainings held in Tencherfi and Figuig, with the assistance of local irrigation businesses. The training covered the design, installation, and maintenance of drip irrigation systems. This activity was designed to provide youth with a new skill set and employment, as well as to address an important area of need in the region.

An Oujda-based business (SOFETRE) committed to providing working capital in the form of an advance of drip irrigation parts and basic training in drip irrigation installation; training was conducted by Bounou Boubakar and the business owner (El Mesri Abdelkader). Trainings covered both basic business management and drip irrigation installation/repair; the vendor will continue to provide technical training for GIE members, who will act as commercial agents until they accumulate their own working capital.

Activity	Number of Participants					
	Total	Male	Women	Youth	Other	AWM
Tencherfi (June 23-24, 2012)	**15**			15	2*	2
Figuig (June 25-26, 2012)	**16**			16	2*	2
Total	**31**	**0**	**0**	**31**	**4**	**4**

*Representatives from the two drip irrigation businesses (not counted in indicator total).

In 2013, the project team mobilized 24 youth in Figuig participated in a 5-week training through the Zraib Center. The training is being followed by a 6-month internship. The training covered drip irrigation, maintenance, and repair. The purpose of the training was to create a structure for local farmers in Figuig, a service delivery cooperative managed by youth.

Activity	Number of Participants					
	Total	Male	Women	Youth	Other	AWM
Zraib training	**24**	24		24		-

IV. ANALYSIS

A. Overall Project Model

The AWM project strengthened the capacity of Water User Associations and community members to promote water management and agricultural development in their communities. The project built the capacity of these organizations to identify challenges together, and develop sustainable solutions to improve agricultural water management and market-oriented agricultural production.

The AWM project made significant progress with this model. The approach also had impacts beyond the project, as communities came together for other joint activities. For example, in Aghbal, women used to all work in their individual houses. By coming together to develop their microproject through the AWM project, the women all now work together in a central location. This has fostered a sense of solidarity, cooperation, and initiative among the women in Aghbal

While the project's approach had important benefits, it did take considerable time and effort to introduce. The participatory, community-based approach was new to many of the communities, and individuals were hesitant to participate initially. Although mobilizing communities to participate in workshops, trainings, and other events was challenging and time-consuming, the results were encouraging. The foundation established through these activities has already begun to promote greater community participation and mobilized action that demonstrate the sustainability of the approach.

The project also worked closely with local partners (AMAL and ACAF). These partners helped to facilitate connections with the community and local authorities, contributing to the achievement of project goals. The project also helped to strengthen the capacity of these organizations to manage projects, use participatory approaches, communicate impact through reports, and strengthen financial and administrative practices. Partners have increased skills to promote their own sustainability, and to promote the continued impact of the AWM project.

B. Building Relationships with Communities

Building strong relationships with the targeted communities is essential for developing the confidence and trust necessary to work in a participatory manner. Many communities in the regions targeted by AWM showed a distrust of outside organizations due to poor

experiences in the past. The process of building this confidence took the sustained effort of the project team, meeting frequently with communities and slowly beginning to engage members in participatory activities. NEF and its partners worked together to mobilize communities, build trust, and move forward with project activities through this participatory approach.

Participatory diagnostics were an important tool used to engage with target communities over a sustained amount of time. The project team helped to collect information for inclusion in monographs. The participatory approach used for this activity proved new to agriculturalists and beneficiaries. The approach encouraged the participation of community members in the diagnostic. With some hesitation, often due to a lack of knowledge of distrust in institutional structures resulting from past interventions, community members began to participate in these activities. The participatory diagnostic, therefore, not only allowed the project team to gather important baseline data about the targeted communities, but it also provided an opportunity for team members to work closely with AWUAs and other beneficiaries. This permitted the project team to begin to forge relationships and build the confidence necessary for successful implementation of the project. Communities also used information gathered in the monographs as they prepared and finalized their AWAPs.

C. Engaging Authorities

The AWM project team placed an emphasis on engaging local and regional authorities, developing partnerships to further the impact of the project in the targeted areas. Local authorities and departments participated in the project kick-off workshops, a number of project activities, and were engaged throughout the project.

The project team noted, however, the importance of managing the expectations of local authorities, while simultaneously building their awareness of the importance of AWM's approach. Local authorities in attendance at meetings often expressed their interest in large-scale physical water interventions—actions far exceeding even the total budget of the AWM project. The AWM project team demonstrated the value of the project's approach in improving livelihoods and environmental sustainability through participatory watershed management and water-efficient, market-oriented agricultural development.

Training in water needs - Aghbal.

The AWM project team also brought together representatives from local authorities to discuss key project issues. The project organized the first workshop

ever to bring together agencies, departments, and others involved in watershed management in one room to discuss management issues. The meeting allowed participating organizations to share plans for watershed management, contributing to improved coordination and management of these areas. This meeting was a significant event that contributed to the overall objective of the project.

D. Trainings

The AWM project designed training modules based on the expressed and noted needs of community members, partners, and AWUAs. The AWM team worked to determine the actual knowledge level of the groups, and planned training modules that expanded and deepened their understanding of participatory watershed management techniques. Beneficiaries felt that programs to improve irrigation systems and crop yields had been weak or absent in the targeted regions prior to the project. Farmers cited a need for stronger support and greater knowledge in cultivation techniques, the use of fertilizers, pruning techniques, and crop planning. Most AWUAs had received previous trainings in water management. The AWM team worked to ensure that information about agricultural water management was disseminated more broadly among farmers in the targeted communities.

Given the consistency of needs and interests cited by targeted farmers, the AWM project team planned an initial technical training on improved cultivation techniques to gauge the interest and reaction of beneficiaries. The reaction to this initial training was positive. Farmers were interested in the topic selected (methods for crop fertilization) and encouraged more trainings on related subjects.

The AWM project team realized that promoting more efficient agricultural water use requires building the knowledge of farmers in general and improved farming techniques. By encouraging better cultivation, these trainings helped to increase production without straining limited water resources. The trainings helped farmers to find a balance between crops harvested and water used.

Modules on water needs and cultivation techniques were taught at the project sites to ensure the participation of a large number of farmers; the training touched both practical and theoretical approaches. Participants were satisfied with the trainings (90% satisfied or very satisfied).

E. Microprojects

The implementation of microprojects had a positive impact in terms of improving the volume of water received by farmers on their plots, promoting time savings in farmer labor, and further mobilizing the participation of farmers. This increased amount of water provided an opportunity for farmers to intensify and diversify crops, leading to increases in yield and income—key project indicators. Actions undertaken through the project also helped to further mobilize communities for participation and provided an example for positive improvements in agricultural water management.

The project also introduced new solar pumping technology on certain perimeters through individual microprojects. These microprojects helped to build awareness and provide

opportunities for farmers in the area to view the equipment and tangible results. Farmers saw increases in the flow of water through the use of these systems, as well as a reduction in fuel costs (resulting in a reduction in overall operation costs). Through testimonies collected via farmers, increases in water rates have reached 33%, time saving in irrigation have reached 40%, farmers have extended their cultivation area by up to 58%, and energy costs have been reduced by 100%. These individual microprojects provided an important test site for farmers in the surrounding area to learn about new technologies.

The AWM team worked with women in targeted communities to mobilize them for participation in microprojects. Two women's organizations planned, developed, and implemented microprojects. In Aghbal, the impact of the AWM project's work is particularly important. Women are now organized in a cooperative and work together out of one location. Further, the women have developed connections with the Artisanal Minister and the Agriculture Department.

F. Market-Oriented Agricultural Development/Value Chains

The AWM project engaged with organizations and institutions working in the Oriental Region to determine available information on agricultural value chains. The project team met with MEC representatives, and gathered available reports and studies on value chains.

Value chains were not considered in previous plans of the Department of Agriculture; the Plan Maroc Vert recently made value chains an objective for all regions. The project team realized that the analysis of agricultural value chains is a relatively new domain in the Oriental Region, and required a deeper effort to identify areas providing an opportunity for market-oriented development. The project team also noted that farmers require training sessions in communication techniques and marketing to respond to changing markets.

The project team held roundtables and discussions between farmers, sellers, and local agencies to discuss value chains. These meetings improved coordination, and encouraged the sharing of information.

The project team introduced new crops higher values and provided support to farmers in market-oriented agricultural development.

G. Youth and Women

The mobilization of women and youth for participation in the project proved to be challenging. Despite these challenges, the project was able to have a significant impact on youth and women – particularly in certain targeted communities.

Women are not typically considered in decision-making regarding agricultural operations. Where women's organizations did exist in targeted villages, their work–generally focused on the raising of goats, rabbits, chickens, or sewing activities—is considered to have no direct link to agricultural water usage. By working through female field agents, the AWM team was able to engage with/form women's cooperatives in several of the sites – such as Laayat, Aghbal, and Zenaga. Women in these communities were more organized and interested in participation. These associations and cooperatives have had an important impact on

developing women's capacity to contribute to agricultural activities and increase their incomes.

The AWM team was also successful in forming several partnerships to benefit youth. Because of the lack of activities for youth in farming communities, many youth leave their villages to seek employment in cities. To address this challenge, the project team worked with partners to develop opportunities for youth. For example, the project team worked to train youth in pruning olive trees so that they could provide these services (for a fee) to others in the community. By providing opportunities for youth, the project sought engage youth in activities that promote improved management of agricultural water and market-oriented agricultural development.

H. Sustainability

The AWM project approach was designed envisaging the sustainability of actions. This approach focused on mobilizing communities, training (providing the information and skills necessary), and catalyzing action.

Mobilization. The project worked with local partners and sought to engage local authorities and institutions in the implementation of the project. The project team also worked in a participatory fashion with all community members. Community members (men, women, and youth) were engaged in the collection of information for monographs, the completion of community maps, and the negotiation of Agricultural Water Action Plans. These plans (and included tools, such as maps) provide lasting documents that AWUAs and communities can use to plan and implement improvements. The project facilitated improved relationships between AWUAs, community members, and authorities to support actions.

Training. The AWM project provided targeted trainings – often in the field – to provide community members with the information and skills to adopt new techniques and management practices.

Action. Mobilization and training activities were put into action through microprojects. AWUAs came together to plan and implement projects (based on AWAPs) to benefit agricultural water use and market-oriented value chain production.

The project's approach has demonstrated lasting impacts. The Women's Cooperative in Aghbal has the necessary tools to undertake its work, and is connected with institutions and authorities that can provide support for future developments. AWUAs have provided their action plans to authorities, and one site has already been selected for support in implementing improvements. Communities are in greater dialogue about agricultural water management, and community members are aware of where to go to access support. Microproject results have already shown to be impressive.

I. Project Impact

The AWM project had significant and important impacts on agricultural production and farmer incomes in the Oriental Region in the short term. The project expects substantial impact to be seen in the future, with systems for participatory water management,

strengthened community institutions, market-oriented agricultural development, and improved irrigation techniques and systems benefiting farmers for years to come.

At the end of the project, the AWM team conducted surveys with project beneficiaries in each of the project sites. Field teams and partners spoke with 5-6 random beneficiaries in each site to gather information about project impact (103 surveys total). The results showed that:

- 92% of those surveyed had improved irrigation techniques on their land.
- 91% of those surveyed had cultivated more land as a result of the project (primarily as a result of improved irrigation systems and techniques). Those surveyed cited increases in the amount of land cultivated ranging from 15% and 60% (average of 36%).
- 98% of those surveyed were able to increase their amount of agricultural production.
- 98% of those surveyed also said they had been able to increase their income as a result of their participation in the project. Participants cited income increases between 250Dh-6000Dh per month.
- 87% of the individuals surveyed stated that they had shared their learnings from project trainings. These individuals alone stated that they had shared learnings with an additional 1554 individuals in their communities
- All participants were very satisfied with the trainings that they received.

ACCELERATED WORK PLAN UPDATE – MAY 2012 - MAY 28, 2013

#	Description	PLANNED IMPLEMENTATION						STATUS
		Jan - Mar 2012	Apr-Jun 2012	Jul-Sep 2012	Oct-Dec 2012	Jan-Mar 2013	Apr – May 2013	
	1. TRAINING							
	a. Water Management							
1-1	Watershed Management (men)		◆					12 sessions held in June 2012 for each new community; 201 participants
1-2	TOT for female project staff		◆					Held on June 14; 15 women participated
1-3	Watershed Management (women)		◆	◆				One session held in 12 villages; two sessions held in 4 project sites to include more women
1-4	Efficient Water Management		◆					First cycle has been completed in all 2012 project sites (441 participants). An additional training was held in Berkoukesse at the request of the AWUA. A training on solar pumps was held for 27 farmers in several sites during Q9.
1-5	Conflict & Consensus Management	◆						Two-day training session was completed in March for members of the Figuig Water User Federation; 48 participants; the training touched on basic techniques of conflict management and consensus building for water management.
1-6	Water Payment Systems	◆						Training and field visit was completed in March. 15 people from the Figuig Water User Federation participated in an exchange visit to Berkane, where they learned about implementing water payment systems. They used this information to establish a water user fee for the Sfissef dam in Figuig.
	b. Agricultural Production							
1-7	Soil Fertility Management (general)		◆					Training completed in 12 villages (363 participants); follow-on training will be organized

								based on analysis of soil fertility.
1-8	Olives I: Pruning & Tree Care 1	◆						Training in pruning and tree care for 3 relevant communities from Phase 1 (2011) was completed in March 2012. 66 people participated. A set of tools was provided to the AUEA for use by members.
1-9	Olives I: Pruning & Tree Care 2					◆	◆	Youth-focused pruning training held for 291 participants in Q9. Follow-up support in Q10.
1-10	Olives II: Orchard Management		◆					Training completed in 11 villages (142 participants).
1-11	Olives III: Harvest & Post-harvest				◆			Training held during Q8 for 109 men in targeted communities.
1-12	Harvest & Post-harvest for women				◆			Training in November and December.
1-13	Date Palm I: Pollination	◆						Training was conducted in March 2012; 48 people participated.
1-14	Date II: Orchard Management & Irrigation		◆					Three sessions held in Figuig with 92 participants from 10 project sites.
1-15	Date Palm III: Pre-harvest, harvest				◆			Training held in Q8 with 46 farmers in Figuig.
1-16	Youth Arboriculture Training				◆			Training held in Q8 with participation of 24 youth.
1-17	Pea Production (water)		◆					3 sessions held in Tencherfi and Laayat with 16 farmers.
1-18	Vegetable [Market] Production		◆	◆				Farmers in Gafait, Laayatm and Tencherfi trained and monitored through the production cycle. (58 participants) Follow up training held in Q9.
1-19	- Women: Harvest & Post-harvest Handling				◆			Training held during Q8 for 49 women in targeted communities and for 22 women in Q9.
	2. CAPACITY BUILDING							
	a. Improved NRM							
2-1	Participatory Watershed Mapping		◆	◆				Watershed mapping exercises have been completed in 12 communities (201 participants).

2-2	- TOT for female staff		◆					Completed in May; 11 female field agents from NEF, ACAF, AMAL, and 2 women leaders from partner communities participated.
2-3	- Women: Mapping		◆	◆				Watershed mapping exercises were completed with women in 8 communities
2-4	Agricultural Water Action Plans		◆	◆				Completed in 12 new communities.
2-5	Soil Analysis			◆				Collection of soil samples completed in 20 communities (2 samples per site).
	b. Value Chain Development							
2-6	Youth GIE - Drip Irrigation		◆					Training took place June 23-24 (Tencherfi) and June 25-26 (Figuig) with 31 participants.
	VC Workshop: Producer-Aggregator-Distributor							
2-7	- Dates		◆		◆			The workshop was conducted on May 6, 2012 in Figuig. 69 people participated, including 40 date producers and 6 intermediaries from Oujda and Figuig.
2-8	- Olives				◆			Workshop held in November 2012 with participation of 22 individuals.
2-9	- Peas		◆					Initial workshop took place in June.
2-10	Olive Mill Management				◆			Workshop took place in Laayat, Mestferki, Tencherfi, Gafait and Irsan ; more trainings in Q9.
	Project Closing Workshop						◆	Project closing workshop held in May 2013; 78 participants

V. CHALLENGES AND CONSTRAINTS

A. Mobilization of Participants

The project team focused considerable efforts on mobilizing farmers in targeted communities throughout the project. Mobilization was challenging in all sites, but particularly difficult in certain areas in spite of the project team's best efforts (for example, Tinissan, Tisserfine, and Zkara). The project team observed that some communities had less interest in participation in development projects. Some communities were suspicious of external projects.

The AWM project demonstrated that mobilizing community members for a participatory project takes time and sustained efforts. In spite of delays in the project due to mobilization activities, the project was able to accelerate later activities to still achieve the planned project impact.

B. Mobilizing Women and Youth

The AWM project placed an important emphasis on including women and youth in the project as a vector for development.

The context for women's involvement in the project was challenging in the targeted region. The AWM project was very successful in engaging women in three sites (Aghbal, Zenaga, and Laayat). However, despite continued efforts, the project team continued to find it difficult to mobilize women in other project sites. Female field agents were able to help the project team engage with women, but still faced challenges in sites where women were not already organized in some way.

The project team also faced challenges in engaging youth. Often, youth have already left villages due to the lack of economic possibilities. The AWM project team sought ways to engage youth by offering practical skills to improve their economic potential. The team was able to organize several important trainings in olive tree pruning and drip irrigation, providing opportunities for youth in the region.

C. Project Partners

The AWM project experienced delays and challenges as a result of non-performance by an initial project partner. After numerous meetings and attempts, the first subcontract agreement was terminated—and the project team added AMAL as a project partner.

The project benefited from the involvement of partners in the planning, implementation, and monitoring of project activities. NEF worked closely with partners ACAF and AMAL in all of these aspects—working as a team in the implementation of the AWM project. This model was not without its challenges in coordination and communication. However, overall, the contributions and involvement of partners benefited the project and will promote the sustainability of its impact.

D. Mobilization of Contributions

The project team was successful in mobilizing contributions of at least 25% for all microprojects. However, mobilizing contributions from partners requires significant time for meetings with participants. Many project partners were not accustomed to this model, and the project team spent considerable time explaining the benefits and importance of investing in their projects. While this approach takes significant time upfront, it is expected that the increased engagement and investment of partners will promote the maintenance of microprojects.

E. Measuring Impact

The project team also notes challenges with measuring and presenting the impact of the project.

First, as to the project impacts on agricultural production, many results take time to realize. The impact of many microprojects will be noted on agricultural production in the coming months—and years. Further, agricultural production varies from year to year. For example, olive production typically has one good year followed by one poor year. As a result, these changes can be difficult to measure.

Secondly, the project team found that many farmers in the region were not comfortable with sharing information about their incomes. Improving livelihoods (demonstrated through increased incomes) was a key goal of the project. In order to measure this change, the project team had to determine a proxy method of calculating improved livelihoods—through surveys of farmer incomes from specific crops. By calculating the changes farmers have seen in income from crop production over each year, the project team was able to find a way to measure changes in incomes (from both increased quantity and quality of production encouraged through project activities, as well as reduced costs). Still, some changes will not be noted until after the end of the next harvest cycles.

Finally, the project team calculated the number of hectares under improved technologies or management practices based on the signing and implementation of Agricultural Water Action Plans. It was envisaged that these plans would cover site perimeters and the broader sub basin. The number of hectares in project sites covered directly by these plans totaled 2855 hectares. The project improved management in the broader sub-basin, which includes 134,251 hectares. Examples of improved management have been demonstrated through the successful implementation of microprojects, improved and more inclusive planning by AWUAs, and the use of AWAPs.

VI. PROJECT INDICATORS

A. Chart: Summary of Project Indicators, Targets and Impact

#	Indicator	Project Target	Project Actual (December 2010 - May 28, 2013)	Year 1 Actual (January 1, 2011 - December 31, 2011	Year 2 Actual (January 1, 2012 - December 31, 2012)	Year 3 Actual (January 1, 2013 - May 28, 2013)
1	Number of people receiving USG-supported training in watershed management.	2500	**4886**	1180	3536	24
2	Number of hectares under improved natural resource management as a result of USG assistance.	5000	**2855 (134,251 ha in subbasin)**	563	2292	0
3	Number of people with increased economic benefits derived from sustainable natural resource management and conservation as a result of USG assistance.	2000	**9022**	610	1223	7189
4	Average percentage increase in income among project participants (%).	10	**15%**	1	17.8	15%
5	Number of farmers who adopt new technologies or management practices.	2000	**2282**	77	499	1706
6	Percentage of project participants reporting high levels of satisfaction with trainings.	85	**90**	90	90	90
7	Number of policies, laws, agreements and regulations promoting sustainable natural resource management and conservation that are implemented as a result of USG assistance.	15	**22**	6	16	0

B. Result 1: Rural Communities have improved knowledge of watershed dynamics and capacity to take collective and individual action to improve watershed management.

1. Number of people receiving training in watershed management

Indicator	Project Target	Cumulative Total (December 2010 – May 28, 2013)	Current Quarter (April 1, 2013 – May 28, 2013)		
			ACTUAL	WOMEN	YOUTH
Number of people receiving training in watershed management.	2500	4886	24	0	24

Activities during the period from April 1, 2013-May 28, 2013:

Activity	Number of Participants								
	Total	Male	Female	Youth	DRAO	CU	Authorities	Other	AWM
Closing workshop	78	42	5	5	5	1	3	**22**	8
Drip irrigation training	24	24	-	24	-	-	-	**-**	2
Information and training sessions for Aghbal	26	6	14	5 Femme	1	1	1	3 ODCO	9
Training day in Laayat	28	-	28	24					6
Training for Telouate Cooperative	17	17		15					3
Total	173	89	47	73	6	2	4	25	28
Total included in indicator (drip irrigation)	**24**	**24**	**-**	**24**	**-**	**-**	**-**	**-**	**2**

Only the drip irrigation training from the last quarter is included in the indicator total.

In addition to project trainings, 87% of individuals surveyed in an end of project evaluation stated that they had shared their learnings from project trainings. The random 103 individuals surveyed stated that they had shared learnings with an additional **1554 individuals** in their communities. While this has not been included in the indicator total, it is evident that information from project trainings was shared broadly in the targeted regions.

2. *Number of additional hectares under improved Natural Resource Management*

Indicator	Project Target	Cumulative Total (December 2010 – May 28, 2013)	Current Quarter (April 1, 2013 – May 28, 2013)				
			TOTAL	BERKANE	TAOURIRT	OUJDA/ JERRADA	FIGUIG
Number of additional hectares under improved technologies or management practices (hectares).	5000	2855 Direct (134,251 ha in sub basin)	-	-	-	-	-

The number of hectares under improved technologies or management practices included in the table above is based on the development and implementation of Agricultural Water Action Plans. The number of hectares for the first year project sites is 1,479 and the number of hectares for the second year project sites is 1,376. The project also improved management in the broader subbasin, which includes the following hectares:

2011 Sites

			Surface Area (hectares)	
Province	**DRAO**	**Perimeter**	**Perimeter**	Sub-basin
Berkane	ORMVAM	Aghbal	200	1019
	DPA Oujda	Od Yaacoub	50	1019
		Od Yahia	100	2175
Taourirt		Mestagmer	350	6682
		Telouat	90	9275
		Laayat	80	1553
Figuig	DPA Figuig	Bekoukesse	100	3500
		Oudaghir	99	
		Zenaga	330	
		Hammame Fougani	80	
Total			**1479**	**25223**

2012 Sites

			Surface Area (hectares)	
Province	**DRAO**	**Perimeter**	**Perimeter**	Sub-basin
Oujda Angad	DPA Oujda	Zkara Sidi Moussa	350	69700
		Tinissan	40	570
		Mestferki	40	3154
Taourirt	Taourirt	Irssan	35	69
		Tencherfi/ Douz	25	1990
Jerrada	DPA Oujda	Gafait	350	32800
Figuig	DPA (Oasis)	Laabidat	33	72
		Lamaiz	61	56
		ElHamman Tahtani	36	33
		Ouled sliman	76	85
	Extension	Tisserfine	150	217
		Laarja	180	**282**
Total			**1376**	**109028**
TOTAL YEAR 1 & 2			**2855**	**134,251**

NEF has specified this indicator at 2 levels: (a) the total hectares of the watersheds in which AWM has worked, and (b) the total hectares covered by all Associations that produced Water Management Action Plans.

C. Result 2: Community members earn higher incomes from improved agricultural practices and strengthened value chains.

3. Number of people with increased economic benefits derived from sustainable watershed management

Indicator	Project Target	Cumulative Total (December 2010 – May 28, 2013)	Current Quarter (January 1, 2013 – May 28, 2013)				
			TOTAL	BERKANE	TAOURIRT	FIGUIG	OUJDA/ JERRADA
Number of people with increased economic benefits derived from sustainable watershed management.	2000	9022	-	-	-	-	-

Targeted individuals saw increased economic benefits as a result of improved production (resulting from trainings, the introduction of new crops and techniques, and microprojects) as well as reduced costs (resulting from improved water management and microprojects).

4. Average percentage increase in income among project participants.

Indicator	Project Target	Cumulative Total (December 2010 - May 28, 2013)	Current Quarter (April 1, 2013 – May 28, 2013)
			ACTUAL (TOTAL)
Average percentage increase in income among project participants.	10	15%	15%

To calculate the average percentage increase in income among project participants, the project team surveyed a random selection of participants in each area about revenue from their crops. Income increases resulted from the introduction of new techniques, increased water supply, improved water use, and improved market channels. Based on information collected, income increases ranged from 20% for date producers in Figuig to 9% for olive producers in Berkane, Tarourit, Oujda, and Jerrada. On average, incomes increased by 15% from these major crops. Greater increases are expected to be realized following upcoming harvests.

Crop	Average Income Before	Average Income After	Percentage Change	Number of Producers Surveyed	Average Percentage Change
Dates	140000	168500	20%	200	40.7142
Olives	5630	6150	9%	178	16.4405
Peas	7025	7130	1%	20	0.2989
Cauliflower	47200	54000	14%	6	0.8644
Carrot	3200	3950	23%		
Turnip	1860	2300	24%		
Potato	10635	10800	2%		
Average Percentage Change					15%

D. Result 3: Farmers have greater capacity to manage agricultural water more efficiently

5. Number of farmers who have adopted new technologies or management practices, including drip irrigation or other water-efficient agricultural management practices.

Indicator	Project Target	Cumulative Total (December 2010 – May 28, 2013)	Current Quarter (April 1, 2013 – May 28, 2013)				
			TOTAL	BERKANE	OUJDA /JERRADA	TAOURIRT	FIGUIG
Number of farmers who have adopted new technologies or management practices.	2000	2282	-	-	-	-	-

The implementation of microprojects had a significant affect on the adoption of new technologies and management practices in targeted areas. New technologies included solar pumps, drip irrigation, and new harvesting equipment (vibrators for olives, etc.). Farmers also adopted new management techniques for their crops and agricultural water based on trainings and the implementation of microprojects.

6. Participant satisfaction with knowledge gained in trainings.

Indicator	Project Target	Cumulative Total (December 2010 – May 28, 2013)	Current Quarter (April 1, 2013 – May 28, 2013)
Participant satisfaction with knowledge gained in trainings.	85%	90%	90%

Participants were very satisfied with AWM project trainings.

7. *Number of policies, laws, agreements, and regulations promoting sustainable natural resource management and conservation that are implemented as a result of USG assistance*

Indicator	Project Target	Cumulative Total (December 2010 – May 28, 2013)	Current Quarter (April 1, 2013 – May 28, 2013)				
			TOTAL	BERKANE	TAOURIRT	FIGUIG	OUJDA/JERRADA
Number of policies, laws, agreements, and regulations promoting sustainable natural resource management and conservation that are implemented as a result of USG assistance.	15	22	0	0	0	0	0

The 10 Agricultural Water Action Plans developed in the first year of the project, and 12 during the second year lead to a total of 22 agreements throughout the duration of the project. The AWM project has also led to the adoption of policies and actions promoting sustainable resource management by Water User Associations; these are not counted in this indicator. For example:

- The WUA in Mestferki signed an agreement with the DPA for equipment to promote youth work in pruning (2013).
- The communities in Zenaga and Oudaghir created a new policy to prevent the use of water from the khettara for showers (2012).
- In Hamam Fougani, an agreement was reached to demolish a plant that polluted the irrigation channel.