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# **FURTHER ADVANCING THE BLUE REVOLUTION INITIATIVE (FABRI)**

**QUARTERLY PROGRESS REPORT NO. 7:  
MARCH 15, 2013 – JUNE 14, 2013**

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## **COLLABORATING ENTITIES**

### **Prime Contractor**

DAI

### **Current Subcontractors**

ECO Consult (Jordan)  
Malcolm Farley Associates (UK)  
Oregon State University  
Texas A&M University  
Training Resources Group, Inc.  
University of California at Davis  
University of Florida  
University of Nebraska  
Utah State University  
Valu Add Management Services

### **Resource Organizations**

Cardno EMG  
CDR Associates  
Environment and Development Group (Egypt)  
Environmental Law Institute  
Environmental Quality International (Egypt)  
Hydro-Yemen (Yemen)  
Orient Engineering (Jordan)  
Riverside Technology, inc. (RTi)  
SETS - Water and Environment (Lebanon)

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## **DISCLAIMER**

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



# CONTENTS

- ACRONYMS .....II**
- EXECUTIVE SUMMARY ..... IV**
- 1. INTRODUCTION ..... 6**
- 2. PROGRESS DURING THE QUARTER..... 7**
  - Result 1: Middle East and North Africa Network of Centers of Excellence Established and Operating .....8*
  - Result 2: Integrated Water Resources Management Programming Strengthened ..... 13*
  - Result 3: Access to Clean Water and Sanitation Improved in Target Countries..... 14*
  - Result 4: Research and Development Capacities in Irrigation, Groundwater Management, and Drought Risk Assessment and Mitigation Strengthened..... 14*
  - Result 5: Transboundary Water Cooperation Strengthened in Key River Basins ..... 18*
  - Result 6: Technical and Outreach Capacity of USAID Staff in Water and Sanitation Programming Enhanced..... 18*
- 3. PROJECT MANAGEMENT ..... 20**
- 4. ISSUES AND REMEDIES ..... 21**
- 5. STANDARDS AND DELIVERABLES SUBMITTED ..... 22**
- ANNEX 1: PROJECT DELIVERABLES SUBMITTED TO THE DEVELOPMENT EXPERIENCE CLEARINGHOUSE (DEC)..... 23**
- ANNEX 2: PERFORMANCE INDICATORS..... 25**

# ACRONYMS

ABRI	Advancing the Blue Revolution Initiative
ACWUA	Arab Countries Water Utilities Association
AFR	Africa
AfWA	African Water Association
AfYWP	Africa Young Water Professionals
AWW	Africa Water Week
AMCOW	African Ministers' Council on Water
APS	Annual Program Statement
AYWP	Africa Young Water Professionals
CDE	Camerounaise des Eaux
CKS	Communications and Knowledge Sharing
COP	Chief of Party
COR	Contracting Officer's Representative
CSR	Corporate Social Responsibility
DAI	Development Alternatives, Inc
DEC	Development Experience Clearinghouse
EPA	Environmental Protection Agency
ETIC	Euphrates-Tigris Initiative for Cooperation
FABRI	Further Advancing the Blue Revolution Initiative
GIS	Geographical Information System
GWOP	Global Water Operators Partnerships Alliance
GWRI	Grand Water Research Institute
IAV	Institute of Agronomy and Veterinary Science Hassan II
ICA	Independent Consultant Agreement
ICARDA	International Centers for Agricultural Research in Dry Areas
ICBA	International Center for Biosaline Agriculture
IDA	International Desalination Association
IMU	Interim Management Unit
INRGREF	National Institute for Research in Rural Engineering, Water and Forestry
IQC	Indefinite Quantity Contract
IWMI	International Water Management Institute
IWRM	Integrated Water Resources Management
JICA	Japan International Cooperation Agency
JUST	Jordan University of Science and Technology
MEDRC	Middle East Desalination Research Center
MENA NWC	Middle East and North Africa Network of Water Centers of Excellence
NASA	National Aeronautics and Space Administration
NCARE	National Center for Agricultural Research and Extension
NRW	Non-Revenue Water
NWRC	National Water Research Center
NWSC	National Water and Sewerage Corporation in Uganda
OMEF	Office of Middle East Programs
ONEP	National Office of Potable Water
ORSAM	Middle Eastern Center for Strategic Studies
OSU	Oregon State University
PEER	Partnerships for Enhanced Engagement in Research
PO	Purchase Order

PR&D	Policy, Research and Development
PWA	Palestinian Water Authority
QEERI	Qatar Environment and Energy Research Institute
QNFSP	Qatar National Food Security Program
R&D	Research and Development
RFA	Request for Applications
RSS	Royal Scientific Society
SDE	Senegalese des Eaux
SIWI	Stockholm International Water Institute
SQU	Sultan Qaboos University
STC	Scientific and Technical Council
SWSC	Swaziland Water Services Corporation
TFDD	Transboundary Freshwater Dispute Database
TOR	Terms of Reference
TRG	Training Resources Group, Inc.
USAID	United States Agency for International Development
USG	United States Government
USGS	United States Geological Survey
USU	Utah State University
WASH	Water, Sanitation, and Hygiene
WATSAN	Water and Sanitation
WESI	Water and Environmental Studies Center
WLI	Water Livelihood Initiative
WWW	World Water Week
YWP	Young Water Professionals

# EXECUTIVE SUMMARY

The Seventh Quarterly Progress Report provides an implementation update on the six key activity results which support improved management of water in the Middle East and Africa, project management updates, and any major issues faced and how they were resolved.

## Technical Program

**Result 1: Middle East and North Africa Network of Centers of Excellence Established and Operating.** During this quarter, the Founders Committee held its second meeting in Rabat, Morocco from June 11-12, 2013. FABRI also received five new proposals for the Policy, Research, and Development (PR&D) Grants Program during this quarter. FABRI has received a total of twelve proposals as of June 14, 2013. FABRI convened a meeting of the Water-Energy-Food Thematic Partnership in Doha, Qatar on 4-6 June 2013 to develop proposals for the PR&D Grants Program. FABRI is in the process of negotiating subcontracts for four research projects that are led by institutions outside the region, which would apply emerging technologies in the region. In May 2013, the MENA NWC released the Annual Program Statement (APS) for the Young Water Scientist Partnerships (YWSP) Small Grants Program.

**Result 2: Integrated Water Resources Management (IWRM) Programming Strengthened.** As of June 14, 2013, FABRI has received one new proposal on watershed and crop modeling, for a total of two proposals received relating to IWRM. FABRI is also following two proposals in progress related to IWRM.

**Result 3: Access to Clean Water and Sanitation Improved in Target Countries.** During this quarter, a water utility audit was conducted for the Société Nationale des Eaux du Benin (SONEB) in Cotonou, Benin. AfWA and FABRI also held a four-day Africa component planning meeting in London, UK from 13-16 June 2013. FABRI drafted the initial design questionnaire including branding, marketing, content, and layout of the AfWA website

**Result 4: Research and Development Capacities in Irrigation, Groundwater Management, and Drought Risk Assessment and Mitigation Strengthened.** As of June 14, 2013, FABRI received four new proposals relating to irrigation, groundwater management, and drought risk assessment and mitigation, and is following one more proposal in progress.

**Result 5: Transboundary Water Cooperation Strengthened in Key River Basins.** The Water Conflict Management Program at Oregon State University submitted a draft report on transboundary water cooperation worldwide, focusing on ten cases reveal how parties worked collaboratively to address international water disputes under a project umbrella. The report indicates the limits of the successful efforts and how they might be used to design a project under FABRI in the Tigris-Euphrates basin. The report will be completed in the next period.

**Result 6: Technical and Outreach Capacity of USAID Staff in Water and Sanitation Programming Enhanced.** FABRI will convene a side session at the September 2013 World Water Week in Stockholm. “Using Partnerships to Solve Middle East Water Challenges.” It will be lead by the Middle East and North Africa Network of Water Centers of Excellence (MENA NWC).



## **Project Management**

During the third quarter of year two, FABRI issued a purchase order (PO) to Malcolm Farley Associates, a task order to the University of Florida to cover Dr. Jeff Ullman's time, a modification to the subcontract with Utah State University to extend the subcontract for a second year, an 18-month institutional strengthening grant to the African Ministers' Council on Water (AMCOW), and an Independent Consultant Agreement (ICA) to Rita Klees for her participation as a proposal reviewer for the MENA NWC PR&D Grants program.

## **Issues and Remedies**

Three issues faced by project management during this quarter include: The Founders Committee decided that the age range for the Young Water Scientist Partnerships Small Grants program should be increased to ensure the participation of promising scientists. As a remedy, FABRI will issue a modification to the Annual Program Statement (APS) for the Young Water Scientists Partnerships Small Grants program to raise the age limit for applicants from 35 to 40 years of age. In order to keep the FABRI Africa Program moving forward, the four main players in the Africa program needed to come together to discuss next steps and implementation strategies. AfWA and FABRI held a four-day Africa component planning meeting in London, UK from 13-16 June 2013. The MENA NWC PR&D Grants Program has not received many grant proposals that covered the Water-Energy-Food Thematic Partnership. FABRI organized the MENA NWC Water-Energy-Food Thematic Partnership meeting in Doha, Qatar on 4-6 June 2013 to develop proposals for the PR&D Grants Program.

# 1. INTRODUCTION

Water plays a pivotal role in the political, economic and social lives of nations and people. Many countries, including those in the Middle East and Africa, are facing common water challenges- drought, inefficient agricultural water use, groundwater management, inadequate or poor quality water supply, weak or absent mechanisms for sharing transboundary water, etc. Such challenges can lead to conflict within communities and among countries, as well as have negative health, financial and social impacts on populations.

To help respond to these regional water challenges, FABRI is providing technical support to USAID's Middle East and Africa bureaus, fulfilling all requests at the highest technical standards. In this capacity, FABRI has launched and established a new regional water network called the Middle East and North Africa Network of Water Centers of Excellence (MENA NWC), strengthened integrated water resources management programming, improved the long-term viability of water and sanitation service providers, rationalized water allocations and use, encouraged collaboration among riparians in transboundary river basins, and raised USAID visibility in water and sanitation.

Partnerships form the foundation of all aspects of this initiative. FABRI develops partnerships—between and among the scientific community, governments, universities and research institutions, the private sector, and civil society—to achieve the project's goals and to ensure that the water sector in the Middle East and Africa is capable of sustaining, and building on those achievements after FABRI has closed. We are forging intellectual and financial partnerships among the water sector's major players to create an integrated process that spans the identification and design of new approaches and technologies to their production and adoption. Continued investments and advances in the water sector will improve economic output, agricultural returns, and public health and ease economic burdens and alleviate human suffering.

FABRI's core result is the launch of the Middle East and North Africa Network of Water Centers of Excellence (MENA NWC). This initiative is an outcome of President Obama's call to establish Centers of Excellence in the Muslim World during his June 2009 "New Beginnings" speech in Cairo. Secretary Clinton also mentioned the initiative during her World Water Day speeches in 2010 and 2011.

MENA NWC links technical and research institutions across the region, encouraging them to work together and with outside counterpart institutions on critical water challenges. The Network strives to foster partnerships that build and exchange regional science and technology capacity to improve water resources planning and management; and develop and disseminate policy tools and technical and management interventions that expand water supply, manage demand, and dramatically increase its efficient and productive use.

A network of cooperating institutions are facilitating collaborative activities, including competitive grants programs, capacity building, institutional twinings, exchanges, fellowships, communications, and knowledge management. The Network is the main vehicle for FABRI's goal to strengthen the water sector in the Middle East and North Africa.

Additionally, FABRI is supporting innovative WASH activities in Africa, focusing on providing institutional support to two regional associations to test and share successful approaches in non-revenue water and on setting national policies to enhance sanitation programs throughout Africa.

FABRI's seventh quarterly report outlines the program's achievements and plans to build regional capacity of various actors from the water sector in the Middle East and Africa.

## 2. PROGRESS DURING THE QUARTER

FABRI has six major objectives:

- **Result 1: Establish an operational Middle East and North Africa Network of Centers of Excellence (MENA NWC).** FABRI is supporting the creation of the MENA NWC by acting as the Interim Management Unit until a Secretariat is established. The initiative will establish MENA NWC organization, leadership, and finances, as well as manage collaborative, technical, and capacity-building activities via Policy, Research, and Development (PR&D) Grants. Through the MENA NWC, FABRI aims to integrate research and development capacity in the member Centers with the development and dissemination of applied technologies and practices for innovative approaches, systems, and technologies to address water issues important to the region. An important piece of this work is the development of a communications and knowledge sharing plan to support the sustainability of the Network.
- **Result 2: Strengthen Integrated Water Resources Management Programming.** FABRI is strengthening the legal and regulatory framework for IWRM and implementing methodologies to improve and promote the efficient use of water resources through the MENA NWC IWRM Thematic Partnership.
- **Result 3: Access to Clean Water and Sanitation Improved in Target African and Middle Eastern Countries.** FABRI is strengthening the performance of water and sanitation service providers by working with regional “platforms” and associations. The goal is to provide them with innovative and tangible support to improve financial, economic, and operating efficiency, including development of association Business Plans, Non-Revenue Water initiatives, capacity building, and communications and knowledge sharing programs.
- **Result 4: Strengthen Research and Development Capacities in Irrigation, Groundwater Management, and Drought Risk Assessment and Mitigation.** FABRI is working with one of the MENA NWC Thematic Partnerships to identify the most promising and regionally-relevant technologies and techniques for efficient, productive use of water in agriculture; engaging the leading experts in these technologies to transfer knowledge to MENA NWC institutions; and developing and presenting outreach activities in target countries to encourage government engagement and private sector partnerships around the most successful approaches.
- **Result 5: Strengthen Transboundary Water Cooperation in Key River Basins.** Through Oregon State University, FABRI is conducting an analysis of transboundary cooperation approaches and applying study findings to the Tigris-Euphrates basin. The results will be used to identify, design and implement one or two pilot projects. In addition, FABRI will be hiring a Senior Mekong Affairs Advisor based in Bangkok, Thailand who will begin work in August 2013.
- **Result 6: Enhance Technical and Outreach Capacity of USAID Staff in Water and Sanitation Programming.** FABRI will strengthen USAID staff capacity in this area by providing materials and insights based on our non-revenue water and sanitation programs in Africa.

The following section describes the progress that FABRI has made on each of these objectives during the quarter.

## **RESULT 1: MIDDLE EAST AND NORTH AFRICA NETWORK OF CENTERS OF EXCELLENCE ESTABLISHED AND OPERATING**

### **Requirement 1.1: Support Establishment of MENA NWC**

This activity is completed.

### **Requirement 1.2: Design a Trust Fund of Endowment to Help Ensure the Sustainability of the Network**

There were no Requirement 1.2 activities conducted during the third quarter of year two, as FABRI is waiting to complete the legal registration of the MENA NWC prior to establishing a trust fund.

### **Requirement 1.3: Support Operations of the MENA NWC Secretariat**

During the period, the FABRI COP continued to serve as Acting Director of the Network's Secretariat. He has been in regular and frequent communication with participating Centers. In addition, FABRI is proceeding with one key component of the Network: the five-year business plan. The business plan will set a course for the Network's financial sustainability by determining its anticipated expenditures and revenue stream. To that end, FABRI will recruit experts to assist in the plan's development.

#### **Planned Activities for the Fourth Quarter of Year Two:**

- Complete a first draft of the MENA NWC business plan with a team planning meeting scheduled for early June

### **Requirement 1.4: MENA NWC Founders Committee Established**

During this quarter, the Founders Committee held its second meeting in Rabat, Morocco from June 11-12, 2013. The Committee continued discussions on the Network's governance and financial structures, legal registration, and reviewed a draft 5-year Strategic Business Plan. The Interim Management Unit (IMU) made presentations on the Network's research programs and capacity development and knowledge exchange initiatives. Key agreements of the Founders Committee include:

- Agreed to register the Network in the United States
- Agreed to raise the age limit for applicants under the Young Water Scientist Partnerships Small Grants program from 35 to 40 years of age
- Agreed that the Founders Committee would submit the Business Plan to the Board of Directors as its contribution, recognizing that the Board can and should modify it to reflect circumstances at that time
- Agreed to general guidelines for the Board's composition
- Agreed that the IMU should not carry out a training needs assessment of Centers but instead design and conduct training activities for the Centers as soon as possible
- Approved designing and holding the first Network Congress in late 2014
- Agreed that the IMU should proceed with website/portal design

While in Rabat, the Founders Committee met with the Directors and staff of the International Institute for Water and Sanitation at the National Office of Electricity and Potable Water (ONEE) and Institute of

Agronomy and Veterinary Science Hassan II (IAV), two founding Centers of the MENA NWC. The Founders Committee meeting was graciously hosted on the campus of ONEE.

**Planned Activities for the Fourth Quarter of Year Two:**

- Convening the third Founders Committee meeting in Stockholm, Sweden during World Water Week in September 2013
- Preparation of a briefing book for committee members which will include updates on each of the research programs, a terms of reference for legal services, a revised 5-year business plan, criteria for Network membership, and updates on planned capacity development trainings and Network’s website design.

**Requirement 1.5: Technical, Demonstration Activities of the Network Launched**

*Accepted and Reviewed Proposals.* This quarter, FABRI received five new proposals for the Policy, Research, and Development (PR&D) Grants Program. FABRI has received a total of twelve proposals as of June 14, 2013.

Proposals relating to the Food-Energy-Water Nexus, Non-Conventional Water, and Water Supply and Sanitation Thematic Partnerships are summarized in the table below. Proposals relating to Integrated Water Resources Management are presented in Result 2, and proposals relating to Irrigation, Groundwater Management, and Drought Risk Assessment and Mitigation are presented in Result 4.

The PR&D Grants Selection Committee is chaired by Sarah Tully (USAID), and includes Jill Shaunfield Smail (Department of State), Peter Reiss (FABRI), and Kenneth Ludwa (FABRI). Committee members reviewed each proposal, prepared a written evaluation and scoring, and made an award/decline decision by consensus. The Committee decision is informed by external expert reviews. Each proposal’s award/decline status is summarized in the table below and the tables in Results 2 and 4. The Selection Committee recommended two proposals for provisional award.

*Tracked Research Proposal Development.* FABRI continued to track progress on the Policy, Research, and Development (PR&D) Grants Program. Proposals in progress are summarized in the table below and the tables in Results 2 and 4. As of June 14, 2013, at least eight teams were preparing new proposals.

**Proposals Relating to Water-Food-Energy Nexus, Water Supply and Sanitation, and Non-Conventional Water**

PROPOSAL TOPIC	PARTICIPATING CENTERS	EXTERNAL PARTNERS	STATUS
<b>Submitted Proposals</b>			
<i>Water-Food-Energy Nexus</i>			
Water, Energy, and Food Nexus: a Basis For Strategic Planning for Natural Resources Sustainability-Challenges for Application in the MENA Region	QEERI INRGREF UJ	Purdue	Resubmitted proposal in response to FABRI; in review
<i>Non-Conventional Water</i>			
Enhancing Cost Recovery in Wastewater, Greywater and Fecal Sludge Management through Safe Reuse	IWMI SQU JUST	UC Davis	Resubmitted proposal in response to

PROPOSAL TOPIC	PARTICIPATING CENTERS	EXTERNAL PARTNERS	STATUS
	An Najah		Selection Committee; in review
Use of Green Nanoparticles as a Biofouling-Resistant Agent in Reverse Osmosis Desalination	JUST ONEE	University of Rhode Island University of Toledo-Ohio Georgia Tech	Selection Committee invited resubmittal; in progress
<i>Water Supply and Sanitation</i>			
Expanding Access to Sanitation for Unsewered Communities in Middle East and North Africa Countries	ONEE RSS UJ IAV	R&D Maroc	Selection Committee recommended provisional award; in negotiation
<b>Proposals in Progress</b>			
<i>Water-Food-Energy Nexus</i>			
Energy Efficient and Environmentally Friendly Water Distribution Networks	UJ ONEE QEERI ACWUA		In progress
Developing a Road Map for Low-Carbon, Low-Cost Water Supply in the MENA Region	AGU IAV QEERI RSS UJ		In progress
Investigating and Modeling Optimum Pumping Technologies for Different Water Applications	RSS IAV UJ		In progress
<i>Non-Conventional Water</i>			
Solar Pumping and Desalination	UJ An Najah	USU	In progress
Assessment of Environmental and Health Hazards of Using Treated Wastewater for Agriculture	IAV INRGREF UJ	US Salinity Laboratory	In progress

**Convened a Meeting of the Water-Energy-Food Thematic Partnership.** The MENA NWC Water-Energy-Food Thematic Partnership met in Doha, Qatar on 4-6 June 2013 to develop proposals for the PR&D Grants Program. The meeting was attended by QEERI, UJ, RSS, IAV, and AGU. FABRI Grants Program Manager Kenneth Ludwa attended the meeting to provide facilitation and guidance. Engineer Miguel Rocha of the U.S. Bureau of Reclamation (USBR) also attended to provide technical support. The meeting was hosted by QEERI, which generously covered lodging for the meeting participants and provided meeting space. The group decided to develop two proposals: “Developing a Road Map for Low-Carbon, Low-Cost Water Supply in the MENA Region” and “Investigating and Modeling Optimum Pumping Technologies for Different Water Applications.”

**Unsolicited Proposals.** FABRI is negotiating subcontracts for four research projects that are led by institutions outside the region, which would apply emerging technologies in the region:

- **Combatting the Emerging Impacts of Harmful Algal Blooms on Desalination Plants: Bloom Detection, Forecasting, and Strategies for Impact Reduction.** The proposal is led by MEDRC, partnering with Woods Hole Oceanographic Institution (USA), the National Oceanic and Atmospheric Administration (USA), University of California Santa Cruz (USA), SQU (Oman), and the Regional Organization for the Protection of the Marine Environment (Kuwait). The objective of this project is to develop a forecast and early warning capability for harmful algal blooms (HABs) to support desalination plant operators, and manuals and action plans for HAB response. The project will develop satellite remote sensing indices for early warning of HABs, numerical modeling to predict transport of potential blooms to the area of desalination intakes, development of an approach to combine satellite data with the model, a demonstration of this integrated product, and development of methods and training to transfer the approaches and algorithms to the region. MEDRC submitted a draft proposal during the third quarter of year two, and FABRI is now in negotiation with MEDRC on the scope and budget. The anticipated budget is \$700,000.
- **The Global Yield Gap and Water Productivity Atlas for Jordan, Morocco, and Tunisia.** The University of Nebraska – Lincoln (UNL) is already conducting a global yield gap analysis to compare the optimal agricultural productivity in a country with the actual and explain the reasons for the gap. The Bill and Melinda Gates Foundation is financing the study in 12 countries in Sub-Saharan Africa and South Asia and the Daugherty Water for Food Institute at UNL is financing the study in two countries in South America. In the Middle East, the study will engage Centers in Morocco, Tunisia, and Jordan. Scientists from IAV, INRGREF, and NCARE will take part in this capacity building effort. During this quarter, FABRI continued to negotiate with UNL on the scope and budget. The estimated cost of the study is \$458,000.
- **Radar Probing of Groundwater in Hyper-Arid Environments: Understanding Aquifer Dynamics in High Discharge Areas.** As conceived by the California Institute of Technology in association with the Jet Propulsion Laboratory (JPL) in Pasadena, the study will map the ground deformation associated with water table depth variation over segments of the North African and coastal aquifers in Morocco and Oman where high discharge rates are observed. The study will map the depth of the water table and explore radar capability to monitor the water freshness from signal decay measurements in high discharge zones. The study uses technologies first developed for use on Mars. Network Centers include the Institute of Agronomy and Veterinary Science Hassan II in Morocco and Sultan Qaboos University in Oman. During this quarter, FABRI continued to negotiate with Caltech on the scope and budget. The requested budget is approximately \$733,000.
- **Developing and Applying Non-Revenue Water Reduction Decision Support Criteria and Tools.** The major objectives of the proposed research project, led by ACWUA, are to sustainably reduce the level of non-revenue water (NRW) – both real and apparent losses – in major cities in the MENA region and hence increase the efficiency of water resource use and reduce unnecessary operational costs. The project will start with an in-depth comparative study of NRW reduction strategies in the Middle East and North Africa, Europe, and North America. Study results will be used to identify a series of managerial, operational, technical and other measures to reduce the level of real and apparent water losses. ACWUA expects to submit the proposal during the fourth quarter of year two. During the period, the Director of Programs at ACWUA, Mustafa Nasereddin, and the Managing Director of ECO Consult, Ra'ed Daoud, joined the meeting in London with the AfWA Secretary General and FABRI to discuss the proposal. FABRI has budgeted \$275,000 for this research project.

***Young Water Scientist Partnership (YWSP) Small Grants Program.*** In May 2013, the MENA NWC released the Annual Program Statement (APS) for the Young Water Scientist Partnerships (YWSP) Small Grants Program. YWSP stimulates collaboration between the Centers' young water research scientists

small grant though project that aspire to make a concrete impact in the water sector. Research projects must address a policy, operational, technical, or managerial issue that is identified by stakeholders in government, business, NGOs, or civil society. They must also address one or more of MENA NWC's priority research areas: water use efficiency and productivity, groundwater, non-conventional water, water/energy/food nexus, and water supply and sanitation. The small grants program is open to full-time or part-time employees of MENA NWC Centers between the ages of 21 and 35. (Please note, a forthcoming modification will increase the age of eligibility to 40). Proposals must be submitted by two research scientists from two different Centers. A funding pool of US \$350,000 is available for small grants under this program. Research projects funded under this program may range in size from \$10,000 to \$50,000, with most projects anticipated at the lower range. Applicants are encouraged to seek funding/co-financing in cash and in-kind from external sources, such as MENA NWC Centers, utilities, governments, businesses, civil society organizations, and similar entities.

#### **Planned Activities for the Fourth Quarter of Year Two:**

- FABRI will receive proposals, convene the Selection Committee, evaluate proposals, advise Centers of award decisions, negotiate grant terms, and award grants.
- FABRI will continue to negotiate subcontracts with MEDRC, UNL, Caltech, and ACWUA for the unsolicited proposals.

#### **Requirement 1.6: Network Strengthening Through Private Sector Participation**

During this quarter, FABRI conducted several activities to support centers in identifying partnership opportunities with the private sector.

The Water, Energy and Environment Center at The University of Jordan hosted a workshop for MENA NWC Centers in Jordan on May 15 to present detailed findings of the MENA NWC report *Opportunities for MENA NWC: Business Partnerships in Jordan*. The workshop participants discussed ways to involve the private sector into the research proposals, highlighted areas where Centers need support in forming partnerships, and identified challenges and constraints that they face, such as lack of capacity and weak communication channels with private businesses. The business mapping activity was seen as a valuable tool that can facilitate linkages between researchers and businesses in Jordan and the region. The workshop was followed by number of meetings between member centers and water and energy related business in Jordan to explore opportunities for collaboration.

As part of the preparatory work for mapping business opportunities in Morocco, FABRI Private Sector Investment Specialist conducted an initial visit to Morocco from May 21-25. During this visit she participated in the International Water Exhibition in Casablanca where she met with several Moroccan and international firms working in the fields of sanitation, wastewater treatment and technology, and irrigation. Meetings were also held with the MENA NWC Centers in Morocco, IAV and ONEE-IEA , to outline the upcoming business mapping activity in Morocco. Both centers encouraged the activity and expressed their willingness to provide any needed assistance.

#### **Planned Activities for the Fourth Quarter of Year Two:**

- Conduct private sector mapping in Morocco.
- Continue to provide support to research centers by facilitating dialogue and communications with



private businesses.

## RESULT 2: INTEGRATED WATER RESOURCES MANAGEMENT PROGRAMMING STRENGTHENED

FABRI will implement Result 2, Integrated Water Resources Management (IWRM) Strengthening, through MENA NWC research projects. As described in the results for Requirement 1.5, FABRI received proposals and tracked research teams' proposal progress during this quarter. As of June 14, 2013, FABRI has received one new proposal on watershed and crop modeling, for a total of two proposals received relating to IWRM. FABRI is also following two proposals in progress related to IWRM (see table below).

### Proposals Relating to Integrated Water Resources Management

PROPOSAL TOPIC	PARTICIPATING CENTERS	EXTERNAL PARTNERS	STATUS
<b>Submitted Proposals</b>			
Mainstreaming of Watershed and Crop Modeling in the Decision Making Process to Improve Land and Water Productivity in Morocco and Tunisia	ICARDA IAV INRGREF	TAMU Eawag	Selection Committee declined proposal
Conjunctive Use of Treated Wastewater and Conventional Water Resources to Sustain Agricultural Production and Mitigate Environmental Pollution: Diagnosis and Optimization	SQU INRGREF UJ	University of Florida	In review
<b>Proposals In Progress</b>			
Adapting the latest METRIC and GIS Technologies to Improve Water Resources Management at Large Scale: Impact of Climate Variability and Policy Implications in Jordan, Morocco and Tunisia	IAV INRGREF NCARE	CNRST, Morocco	In progress
Assessment of Environmental and Health Hazards of Using Treated Wastewater for Agriculture	INRGREF IAV		In progress

### Planned Activities for Fourth Quarter of Year Two:

- FABRI expects research teams to submit the two IWRM-related proposals in progress. FABRI will convene the Selection Committee, evaluate proposals, advise Centers of award decisions, negotiate grant terms, and award grants.

## **RESULT 3: ACCESS TO CLEAN WATER AND SANITATION IMPROVED IN TARGET COUNTRIES**

### **Requirement 3.1: Water and Sanitation Service Provider Performance Strengthened**

*Non-Revenue Water Program.* During the third quarter of year two, a water utility audit was conducted for the Société Nationale des Eaux du Benin (SONEB) in Cotonou, Benin. AfWA and FABRI also held a four-day Africa component planning meeting in London, UK from 13-16 June 2013. The purpose of this meeting was to discuss and plan the next steps of the NRW program such as audits, a Task Force meeting, a synthesis report, performance improvement plans, and implementation. The following are the key agreements and next steps that emerged in the meeting:

#### NRW Audits

- All audit report sections should be standardized and reports should include more detailed recommendations
- Utilities will be given two weeks to comment on their report, if they do not, project will move forward

#### Task Force Meetings

- A Task Force meeting could be scheduled on 12-13 October prior to the IWA Development Congress and Exhibition in Nairobi 14-17 October 2013
- Meeting to cover agenda topics listed below
  - Completing audits
  - Feedback on audits
  - PIPs
  - Synthesis report process and participation
  - Private sector
  - MENA audit participation
  - ACWUA partnership
  - Knowledge exchange
  - IWA and other events
  - Review audit recommendations
  - MD meeting at AfWA Congress Donors
  - IWA speaker

#### Synthesis Reports

- Synthesis reports should identify findings and major development issues, infrastructure, knowledge exchange. It can be used as a conference paper, for fundraising, workshops, or a report to be made part of a series.
- Need to identify the "wall" that utilities are facing which prevents them from making improvements. What commonalities were found for the utilities?

#### Performance Improvement Plans

- While the PIPs should cover all problems, AfWA-FABRI would only get involved with short term actions (i.e. advising on capacity building, proposals to donors)
- All recommendations should be in priority order and time frame/duration (short 0-1 year, medium 0-2 years, long 25+ months)
- PIPs would cover a 3-5 year period
- Identify what utilities expect from FABRI through 2015

- All utilities with Task Force members should be able to do their own PIPs

#### NWR Toolkit

- The toolkit will be an online resource that will provide detailed instructions and include templates and software used in each of the program elements – audits, PIPs, implementation, etc.

#### AfYWP Small Grants Program

- Request monthly communication from the national chapters
- AfWA and FABRI to have second Planning Meeting at the December 2013 YWP meeting
- For the selection committee, need names of two USAID staff and East Africa chapters to nominate and provide CVs of two candidates for committee, then names will be forwarded to AfWA regional VP for approval, and final selection to be made by Sylvain and Peter. The YWP candidates selection will be regional and changed every six months

#### AfWA-ACWUA Partnership

- AfWA and ACWUA will draft an MOU for partnership to include joint research, funding opportunities, joint events, capacity building, knowledge exchange

#### Business Plan

- Need to incorporate the Executive Board's final comments
- Start date of the plan needs to be changed to 1 January 2014

#### Communications and Knowledge Exchange

- Need to have CKE Task Force meetings to finalize the strategy before the end of the year and second meeting at the AfWA Congress in February
- Identify better ways for communication between the utilities and AfWA
- CKE group should not dissolve after website launch, but rather serve as an advisory group on future AfWA CKE related issues
- Need to complete statement of work for website design company
- AfWA to have a technical journal, so need to form an editorial board

***AfWA Business Plan.*** Once the AfWA Executive Board's final changes are incorporated, the plan will be presented to the Board by the AfWA Secretary General at the next Scientific and Technical Council meeting in South Africa, in July or August, for final approval.

***Communications and Knowledge Exchange.*** During this period, FABRI drafted the initial design questionnaire including branding, marketing, content, and layout of the AfWA website. Once completed by AfWA, this will lead to the development of the statement of work and firm selection process. Additionally, AfWA is interested in the creation of online technical publications. The AfWA Secretary General will present some ideas at the next Scientific and Technical Council meeting in South Africa.

***African Young Water Professionals Small Grants Program (AfYWP).*** The AfYWP Small Grants program has been a catalyst for the formation of additional Young Water Professional chapters. Three additional national chapters formed in Cameroon, Senegal, and Tanzania. There were four active chapters (Kenya, Rwanda, South Africa, and Uganda), but another ten chapters are expected to form by the end of this year. The creation of more chapters will lead to a greater number of proposals, as chapter membership is one of the requirements for submission.

#### **Planned Activities for the Fourth Quarter of Year Two:**

- Conduct eight more NRW audits for utilities in Togo, Nigeria, Gabon, Zambia (2), Malawi, Cote d'Ivoire, and Guinea.
- Complete utility audit reports for all audits conducted during the previous two quarters.

**RESULT 4: RESEARCH AND DEVELOPMENT CAPACITIES IN IRRIGATION, GROUNDWATER MANAGEMENT, AND DROUGHT RISK ASSESSMENT AND MITIGATION STRENGTHENED**

**Requirement 4.1: Conduct Identification and Analysis of U.S., Regional, and International Water Programs Aimed at Promoting Efficient, Productive Use of Water in Agriculture in the MENA Region**

FABRI will implement Result 4 through MENA NWC research projects. As described in the results for Requirement 1.5, FABRI received proposals and tracked research teams’ proposal progress during the third quarter of year two. As of June 14, 2013, FABRI received four new proposals relating to irrigation, groundwater management, and drought risk assessment and mitigation, and is following one more proposal in progress (see table below).

**Proposals Relating to Irrigation, Groundwater Management, and Drought Risk Assessment and Mitigation**

PROPOSAL TOPIC	PARTICIPATING CENTERS	EXTERNAL PARTNERS	STATUS
<b>Submitted Proposals</b>			
Guidelines for Artificial Groundwater Recharge Using Flood Farming	UJ ICBA	UNL	FABRI declined
Efficient Treatment and Provision of High-Quality Reclaimed Effluents Suitable for Irrigation	Technion NCARE	Al Quds University, Ministry of Agriculture Extension Service (Israel)	Selection Committee recommended provisional award; in negotiation
Managed Aquifer Recharge Using Treated Wastewater	SQU UJ RSS	UNL JPL	In review
Application of Near-Real Time Soil Monitoring for Irrigated Agricultural Systems in MENA	ICBA INRGREF SQU NCARE		In review
Developing Partnerships and Innovative Technologies to Improve Water Use Efficiency at River Basin Scale in Jordan, Morocco and Tunisia	INRGREF NCARE IAV	UC Davis	In review
Sustainability of Groundwater Use in Tunisia and Jordan	ICARDA INRGREF NCARE	UC Davis	In review
<b>Proposals in Progress</b>			
Water Footprint Benchmarking Insight for Water Management Policy in MENA	UJ		In progress



#### **Planned Activities for Fourth Quarter of Year Two:**

- FABRI expects to receive several proposals focusing on irrigation, groundwater management, and drought risk assessment and mitigation. FABRI will convene the Selection Committee, evaluate proposals, advise Centers of award decisions, negotiate grant terms, and award grants.

### **RESULT 5: TRANSBOUNDARY WATER COOPERATION STRENGTHENED IN KEY RIVER BASINS**

#### **Requirement 5.1: Conduct Analysis of U.S. and Regional Transboundary Water Cooperation Programs, with a Focus on the Euphrates, Tigris, and Nile Basins**

Oregon State University's Program in Water Conflict Management and Cooperation led by Prof. Aaron Wolf submitted a third draft of an assessment of regional transboundary water cooperation programs. The Program houses the Transboundary Freshwater Dispute Database (TFDD), the largest collection of information on transboundary conflict and cooperation in the world.

#### **Planned Activities for Fourth Quarter of Year Two:**

- Finalize the final report from Oregon State University for submission to USAID and for widespread dissemination.

#### **Requirement 5.5: Launch Pilot Project in Key River Basin**

USAID has asked FABRI to provide a full-time expert to assist it with Mekong River Commission support. Klomjit Chandrapanya will serve as Senior Mekong Affairs Advisor. The Advisor will prepare a comprehensive long-term, external engagement strategy for RDMA to promote fair and effective governance of water, food, and energy in the GMS as it relates to development of hydropower on the Mekong River. She is also responsible for strategy execution and coordination, including developing a five-year Plan of Action to implement the RDMA's Mekong External Engagement Strategy that specifies key activities, required tasks, responsible actors, and due dates, and for communications and outreach. The proposed work begins on 5 August 2013.

#### **Planned Activities for Fourth Quarter of Year Two:**

- Complete all contracting requirements to bring on the employee.

### **RESULT 6: TECHNICAL AND OUTREACH CAPACITY OF USAID STAFF IN WATER AND SANITATION PROGRAMMING ENHANCED**

#### **Requirement 6.2: Increase USAID's Visibility and Outreach on Water Issues**

FABRI proposed a side session at the September 2013 World Water Week in Stockholm. The session was accepted by the Stockholm International Water Institute (SIWI) and it will be called "Using Partnerships to Solve Middle East Water Challenges." It will be lead by the Middle East and North Africa Network of Water Centers of Excellence (MENA NWC). The session will highlight the activities of a new, exciting water research entity that brings together 18 regional and international centers in the MENA region to solve longstanding water challenges.

**Planned Activities for Fourth Quarter of Year Two:**

- Conduct the side session at World Water Week in September 2013

### 3. PROJECT MANAGEMENT

The period of performance for the FABRI task order is September 15, 2011 through September 29, 2014.



During this period, FABRI issued a purchase order (PO) to Malcolm Farley Associates to cover Malcolm Farley's participation in the Africa Program Planning Meeting in London in June 2013. FABRI issued a task order to the University of Florida to cover Dr. Jeff Ullman's time working with the Middle East research centers. FABRI issued a modification to the subcontract with Utah State University to extend the subcontract for a second year. FABRI issued an 18-month institutional strengthening grant to the African Ministers' Council on Water (AMCOW). FABRI also issued an Independent Consultant Agreement (ICA) to Rita Klees for her participation as a proposal reviewer for the MENA NWC PR&D Grants program.

In the coming period, FABRI plans to hire Klomjit Chandrapanya as a full-time Senior Mekong Affairs Advisor based in Bangkok, Thailand. Her start date is currently scheduled for August 2013. FABRI is currently negotiating new subcontracts with the California Institute of Technology (Caltech), the University of Nebraska, the Middle East Desalination Research Center (MEDRC), and the Arab Countries Water Utilities Association (ACWUA) and FABRI hopes to issue several of these subcontracts during the next period. FABRI is planning to issue an Independent Consultant Agreement (ICA) to Sharaf Davlatov who will assist with research, preparation, and logistics for the International Conference on Water Cooperation in Dushanbe, Tajikistan in August 2013. FABRI also hopes to begin issuing grants under the MENA NWC PR&D Grants program during the next period. Finally, FABRI is planning to submit a budget realignment request to the Contracting Officer (CO) during the next period which will bring the total project budget up to \$ 20 million so that it is in line with the contract amount, and will request a one year no-cost extension through September 2015.



## 4. ISSUES AND REMEDIES

**Issue 1:** The Founders Committee decided that the age range for the Young Water Scientist Partnerships Small Grants program was too restrictive and might exclude promising young scientists from participating.

**Remedy:** FABRI is going to issue a modification to the Annual Program Statement (APS) for the Young Water Scientists Partnerships Small Grants program to raise the age limit for applicants from 35 to 40 years of age.

**Issue 2:** In order to keep the FABRI Africa Program moving forward, the four main players in the Africa program needed to come together to discuss next steps and implementation strategies.

**Remedy:** AfWA and FABRI held a four-day Africa component planning meeting in London, UK from 13-16 June 2013. The purpose of the meeting was to discuss and plan the next steps of the NRW program such as audits, a Task Force meeting, a synthesis report, performance improvement plans, and implementation.

**Issue 3:** The MENA NWC PR&D Grants Program was not receiving many grant proposals that covered the Water-Energy-Food Thematic Partnership.

**Remedy:** FABRI organized the MENA NWC Water-Energy-Food Thematic Partnership meeting in Doha, Qatar on 4-6 June 2013 to develop proposals for the PR&D Grants Program. The meeting was attended by QEERI, UJ, RSS, IAV, and AGU.

## 5. STANDARDS AND DELIVERABLES SUBMITTED

Requirement	Standard or Deliverable	Date of Submission to USAID
1.1	<ul style="list-style-type: none"> <li>Acceptance letter from Sultan Qaboos University and other Centers</li> </ul>	During first period
1.1	<ul style="list-style-type: none"> <li>Workshop to launch implementation of MENA NWC</li> </ul>	12/5-8/11
1.4	<ul style="list-style-type: none"> <li>List of candidates for Founders Committee prepared</li> </ul>	2/21/12
1.4	<ul style="list-style-type: none"> <li>CVs compiled for each candidate and shared with nominating committee</li> </ul>	2/21/12
2.1	<ul style="list-style-type: none"> <li>Plan for strengthening legal and regulatory framework for IWRM in target countries</li> </ul>	3/14/12
2.2	<ul style="list-style-type: none"> <li>Plan for evaluating and testing methodologies to promote efficient use of water resources</li> </ul>	3/14/12
3.1	<ul style="list-style-type: none"> <li>Draft plan for strengthening capacity and performance of water and sanitation providers in AFR and MENA target countries</li> </ul>	8/15/12
3.2	<ul style="list-style-type: none"> <li>Draft plan for improving operating environment for water and sanitation providers in AFR and MENA target countries</li> </ul>	In process
3.3	<ul style="list-style-type: none"> <li>Draft plan for improving financial sustainability of water and sanitation sector in AFR and MENA target countries submitted within nine (9) months after award</li> </ul>	In process
4.1	<ul style="list-style-type: none"> <li>Plan for conducting the identification and analysis provided within thirty 30 days after the award</li> </ul>	10/14/11
5.1	<ul style="list-style-type: none"> <li>Plan for conducting the analysis provided within 30 days after award</li> </ul>	10/19/11
5.1	<ul style="list-style-type: none"> <li>Assessment of transboundary water cooperation programs</li> </ul>	Delayed due to political turmoil
5.4	<ul style="list-style-type: none"> <li>Pilot project design for transboundary water activity</li> </ul>	Delayed due to political turmoil
Section F.2(b) Deliverables	<ul style="list-style-type: none"> <li>90 day work plan completed within 30 days of Task Order award</li> </ul>	10/14/11
	<ul style="list-style-type: none"> <li>First annual work plan completed and delivered within 60 days of task order award</li> </ul>	11/11/11
	<ul style="list-style-type: none"> <li>Performance Monitoring Plan</li> </ul>	3/15/12
	<ul style="list-style-type: none"> <li>FABRI Year One Annual Progress Report</li> </ul>	11/1/12
	<ul style="list-style-type: none"> <li>FABRI Year Two Work Plan</li> </ul>	11/1/12
	<ul style="list-style-type: none"> <li>Quarterly Progress Report No. One</li> </ul>	1/18/12
	<ul style="list-style-type: none"> <li>Quarterly Progress Report No. Two</li> </ul>	4/10/12
	<ul style="list-style-type: none"> <li>Quarterly Progress Report No. Three</li> </ul>	7/15/12
	<ul style="list-style-type: none"> <li>Quarterly Progress Report No. Four</li> </ul>	10/19/12
	<ul style="list-style-type: none"> <li>Quarterly Progress Report No. Five</li> </ul>	1/10/13
<ul style="list-style-type: none"> <li>Quarterly Progress Report No. Six</li> </ul>	4/8/13	

**ANNEX 1**  
**PROJECT DELIVERABLES SUBMITTED TO THE DEVELOPMENT**  
**EXPERIENCE CLEARINGHOUSE (DEC)**

<b>DELIVERABLE</b>	<b>DATE SUBMITTED</b>
Quarterly Progress Report No. One	12/11/12
Quarterly Progress Report No. Two	12/11/12
Quarterly Progress Report No. Three	12/11/12
Quarterly Progress Report No. Four	12/11/12
Quarterly Progress Report No. Five	3/12/13
Final Event Report - Nairobi Non-Revenue Water Conference	12/11/12
Final Event Report – FABRI/PEER Proposal Writing Workshop	12/11/12



## ANNEX 2 PERFORMANCE INDICATORS

Intermediate Result (IR)	Sub IR	Indicator	ME or AFR	Standard Indicator Number	2013 Target	Final Target	Actual (Cumulative) as of June 14, 2013
1. Regional Science and Technology Capacity in Water Management Increased through Establishment of MENA NWC	1.1 MENA NWC Governance Structure Established	1.1.1 MENA NWC legally registered	ME	NA	yes	yes	In process
		1.1.2 Number of essential governance structures established and operative (Founders Committee, Steering Committee, Board of Directors, Secretariat)	ME	NA	3	4	2: Founders Committee, Interim Management Unit
	1.2 MENA NWC Financially Sustainable	1.2.1 Business plan developed and approved	ME	NA	yes	yes	Business Plan developed and submitted to Founders Committee
		1.2.2 Financial support pledged from donors, private sector, and other sources	ME	NA	\$10M	\$25M	\$72,083 from Government of Oman
		1.2.3 Number of types of pledged donors (bilateral, multilateral, foundations, corporate, government, individual) demonstrates diversity of funding sources	ME	NA	3	4	2: Government Foundation
	1.3 MENA NWC Technical Program Addressing Critical Regional Water Issues	1.3.1 Number of technologies or management practices under research as a result of USG assistance	ME	4.5.2-39a	10	10	12: part of provisionally awarded or likely successful proposals
		1.3.2 Number of technologies or management practices under field testing as a result of USG assistance	ME	4.5.2-39b	8	10	0

Intermediate Result (IR)	Sub IR	Indicator	ME or AFR	Standard Indicator Number	2013 Target	Final Target	Actual (Cumulative) as of June 14, 2013
		1.3.3 Number of technologies or management practices made available for transfer as a result of USG assistance	ME	4.5.2-39c	0	4	0
		1.3.4 Number of government agencies, private sector firms, and/or civil society organizations partnering with Network Centers on research and development projects	ME	NA	20	20	25 engaged in submitted proposals
		1.3.5 Number of young and women researchers engaged in MENA NWC supported research activities	ME	NA	30	40	24 on proposed research teams
		1.3.6 Number of private enterprises, producers organizations, water users associations, women's groups, trade and business associations and community-based organizations that applied new technologies or management practices as a result of USG assistance	ME	4.5.2-42	0	12	0
		1.3.7 Number of visits to the MENA NWC website	ME	NA	10,000	25,000	USAID approved website procurement
		1.3.8 Number of fans on the MENA NWC Facebook Page	ME	NA	1,000	5,000	0

Intermediate Result (IR)	Sub IR	Indicator	ME or AFR	Standard Indicator Number	2013 Target	Final Target	Actual (Cumulative) as of June 14, 2013
	1.4 MENA NWC Strengthened through Private Sector Participation	1.4.1 Number of private sector partners participating in MENA NWC	ME	NA	12	15	3
2. Integrated Water Resource Management Programming Strengthened	2.1 IWRM Legal and Regulatory Frameworks Strengthened	2.1.1 Number of government agencies, utilities, and service providers involved in IWRM research activities	ME	NA	5	8	3
	2.2 IWRM Methodologies Implemented	2.2.1 Number of private enterprises, producers organizations, water users associations, women's groups, trade and business associations and community-based organizations (CBOs) that applied new technologies or management practices as a result of USG assistance	ME	4.5.2-42	2	6	0
3. Access to Clean Water and Sanitation Expanded in Target Countries	3.1 Water and Sanitation Service Provider Performance Strengthened	3.1.1 Number of water operator partnerships facilitated	AFR	NA	6	9	In process through NRW program
		3.1.2 Number of private sector sanitation service providers that have improved management practices as a result of USG assistance	AFR	4.6.2-9	6	9	NRW program underway with audit as Stage I
		3.1.3 Number of service providers implementing water loss programs with USG assistance	AFR	3.1.8.1-2	25	50	26

Intermediate Result (IR)	Sub IR	Indicator	ME or AFR	Standard Indicator Number	2013 Target	Final Target	Actual (Cumulative) as of June 14, 2013
		3.1.4 Number of private sector sanitation interventions started with USG assistance	AFR	NA	8	15	0
		3.1.5 Number of visits to African water associations' newly designed websites	AFR	NA	10,000	25,000	Redesign in process
		3.1.6 Number of fans of the Facebook pages of the African water associations	AFR	NA	1,000	5,000	0
	3.2 Water and Sanitation Service Operating Environment Improved	3.2.1 Number of governments developing national sanitation strategies	AFR	4.6.1-17	15	15	0
	3.3 Water and Sanitation Sector Financial Sustainability Improved	3.3.1 Number of governments developing plans to obtain outside financing for utility investments	AFR	NA	6	9	Stage 3 of NRW program
		3.3.2 Number of innovative solutions or mechanisms for mobilizing financing for non-revenue water and sanitation programs	AFR	NA	3	5	0
4. Research and Development Capacities in Irrigation, Groundwater Management, and Drought Risk Assessment and Mitigation Strengthened	4.1 Best Practices for Efficient, Productive Use of Water in Agriculture Identified.	4.1.1 Number of technologies or management practices under research as a result of USG assistance	ME	4.5.2-39a	10	10	12: part of provisionally awarded or likely successful proposals
		4.1.2 Number of technologies or management practices under field testing as a result of USG assistance	ME	4.5.2-39b	8	10	0



Intermediate Result (IR)	Sub IR	Indicator	ME or AFR	Standard Indicator Number	2013 Target	Final Target	Actual (Cumulative) as of June 14, 2013
		4.1.3 Number of technologies or management practices made available for transfer as a result of USG assistance	ME	4.5.2-39c	0	4	0
5. Transboundary Water Cooperation Strengthened in Key River Basins	5.1 Analysis of Transboundary Cooperation Identifies Model Programs and Interventions	5.1.1 Number of transboundary water resources sustainability assessments undertaken	ME	4.5.2-41e	2	2	1 by OSU
	5.2 Transboundary Pilot Project Launched	5.2.1 Number of exchanges (government-to-government, non-government-to-non-government; non-government-to-government)	ME	NA	2	4	0
6. Technical and Outreach Capacity of USAID Staff in WASH Programming Enhanced	6.1 WASH Technical and Outreach Capacity of USAID Staff Increased	6.1.1 Number of WASH training events for USAID staff	ME/AFR	NA	2	3	0
		6.1.2 Number of USAID staff trained in WASH	ME/AFR	NA	60	90	0
		6.1.3 Number of WASH guidance materials updated or developed	ME/AFR	NA	4	6	0
	6.2 USAID WASH Visibility and Outreach Increased	6.2.1 Number of conferences and outreach events facilitated or supported	ME/AFR	NA	4	6	2: AfWW 2012 WWW2013