

# SWALIM Update

**10th Edition**  
September 2015 -  
December 2015

## SWALIM in Mogadishu

by Jeremiah Njeru



A Participant stresses a point during a discussion on the use of SWALIM information

When we announced the SWALIM Open Days in Mogadishu – one in a series of Open Day events, following those held in Hargeisa, Somaliland and Garowe, Puntland – we were concerned that we would have to navigate complex logistical and security arrangements. This was also the first full-fledged SWALIM Open Days event ever held in the Somali Capital. A pleasant surprise awaited us in the beautiful and sea-breeze-swept city. The Somali involvement and commitment was clearly demonstrated at the event, held from 5 to 10 October, 2015.

The Open Days kicked off on Monday, 5 October, with a high-level meeting involving senior Federal Government officers and the FAO Somalia Representative, Mr. Richard Trenchard, who opened the meeting. We were delighted by the depth of understanding that government officers from the four counterpart institutions (Water, Agriculture, Environment and Livestock) showed on key water and land development issues - and by their articulation of possible solutions. We learned of projects that were already formulated and documented and were only waiting funding for final design and implementation. SWALIM's presentations were followed by open and lively discussions,

and the government's commitment to partner with SWALIM was clearly articulated.

What was organized to be the first SWALIM open day in Mogadishu turned out to be an active platform for strengthening SWALIM collaboration with key partners and for engagement with the wider group of water and land sector stakeholders. A spirit of reaching for "the common good" with Somalia water and land resources was evident throughout the five days of the event and the time turned out to be too short to address all the interesting and important issues that were raised.

On Wednesday and Thursday, technical staff from the four partner ministries, the Disaster Management Agency, and representatives of three academic institutions, worked with the SWALIM technical staff to assess and document the water and land information management capacity needs of the Federal Government and its agencies along four thematic areas – Water, Agriculture, Environment and Disaster Risk Management. The assessment started with a stock-taking exercise, by the compilation of capacity development plans in these four thematic areas.



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## SWALIM at the Land and Water Days

by Hussein Gadain

SWALIM participated in the 2015 Land and Water Days (LWD) that took place in FAO Headquarters in Rome, Italy from 10 to 12 November. The LWD is a three-day event jointly organized by the Food and Agriculture Organization (FAO), the International Fund for Agricultural Development (IFAD), and the World Food Programme (WFP). The event gathers experts and stakeholders to discuss land and water policies, governance, investments, and the adoption of management practices linked to food security and resilience to climate change. LWD 2015 was the third edition of the event and focused on "Reaching Effective and Lasting Impacts for Land and Water Actions". The event previously took place in Rome in 2012, and in Amman, Jordan in 2013.

The forum provided SWALIM with an opportunity to disseminate and share its knowledge, information and tools with over 200 participants. The target audience of the event included FAO, IFAD and WFP professionals involved in land and water-related projects at headquarters, in the regions and in field projects, as well as their technical partners. Participants had an opportunity to experience several knowledge sharing tools during the three-day meeting, including a series of interactive technical sessions showcasing good practices, thematic and regional working groups, and visual documentation of field operations. Discussions centred on what works and what can be improved. Finally, a series of training or information sessions on tools, software, and methodologies were



presented in side meetings.

SWALIM made a presentation on the session, "Land and Water Assessments for Identifying Vulnerabilities and Sustaining Rural Livelihoods", and participated in Project Think Shop 2 on "Documenting Project Experiences" to share SWALIM's long history in this area. SWALIM products and tools were also displayed on computers and posters in the "market place" under the theme "Information and Decision Support for Land and Water".

More than 200 digital copies (on CD-ROM) were given out of SWALIM products, including the Somali Water and Land Reports, the Atlas of Somali Water and Land Resources, the Atlas of the Juba and Shabelle Rivers in Southern Somalia, and the Key Messages booklet on Somali Water and Land Resources. In addition, a demonstration was provided on how to access the online SWALIM Digital Document Repository (SDDR) and the Water Sources Live Map web application, as well as showcasing the newly revamped SWALIM web site to participants in the "market place".

## Partners Trained on Geospatial Technology

by James Ngochoch

With the high demand for training on geospatial tools, SWALIM planned and conducted two training sessions in November, 2015, targeting partner agencies from South Central Somalia. Nearly 50 staff members from 40 partner agencies participated in the two 5-day sessions in Nairobi.

The hands-on training aimed to equip partners with the skills required to plan and carry out reliable field data collection, compile the findings, and share them as simple maps. Participants were also trained on the application and interpretation of various SWALIM geospatial products.

The main subjects covered within the training included: how to use Google Earth (GE) software for the identification and planning of field surveys, how to correctly set up, configure, upload locations and navigate to target field locations with Global Positioning System (GPS) equipment; and finally, how to download and map results from field surveys using both commercial (Esri ArcGIS) and open-source (QGIS) software. Each student was able to produce maps showing the location of the collected field data.

A major hindrance for many partners who would like to use GIS more is the high cost of commercial GIS software, which is why SWALIM



makes a point of also training on open source tools.

The response to the training was very positive with most overall ratings of the course at "very good" to "excellent", according to participants' evaluations. In addition to requesting more advanced training to improve their acquired skills, participants requested that more time be allocated for the sessions.

To register your interest in these courses, send an email to: [swalim@fao.org](mailto:swalim@fao.org) or visit our website to fill in the request form: <http://www.faoswalim.org/forms/contact-us>.

# SWALIM Supports Gully Erosion Rehabilitation Monitoring System in Puntland

by Ugo Leonardi

Land degradation is one of the most serious ecological problems in Puntland. The effects of land degradation are dramatic, ranging from soil erosion to vegetation loss to deep gully formation that impacts pasture for livestock, and are increasing at a rapid pace. In dry lands like Puntland, the methods used to mitigate the consequences of land degradation are mainly based on the construction of infrastructure that reduces surface water flow, supporting at the same time vegetation growth and eventually producing a positive environmental impact.

One of the EU-funded Millennium Development Goals (MDG) initiatives on natural resources management in Puntland is to support livelihoods through rehabilitation of rangeland degradation which, thanks to the collaboration of the NGOs ADESO and CARE, is putting in place mitigation measures and has so far implemented 222 gully control infrastructure works.

To support this work, SWALIM has been requested by the European Union to monitor the construction of the gully control infrastructures. In the political and security environment of Somalia, identifying, assessing and monitoring these activities is a major challenge. SWALIM developed a monitoring system based on the analyses of change (reductions in bare land and improvements in vegetation cover) and verification of the construction of the infrastructure, using Very High Resolution (VHR) satellite images. Moreover, to confirm the findings, SWALIM and the Ministry of Environment, Wildlife and Tourism (MoEWT) of Puntland worked in partnership to monitor the mitigation infrastructure in the field and its results, both in terms of vegetation regrowth for pasture and reduction of degradation. Staff of the MoEWT was specifically trained by SWALIM in field data collection and two field missions have been successfully conducted.

## How it Works

Satellite images covering the affected areas were used to create

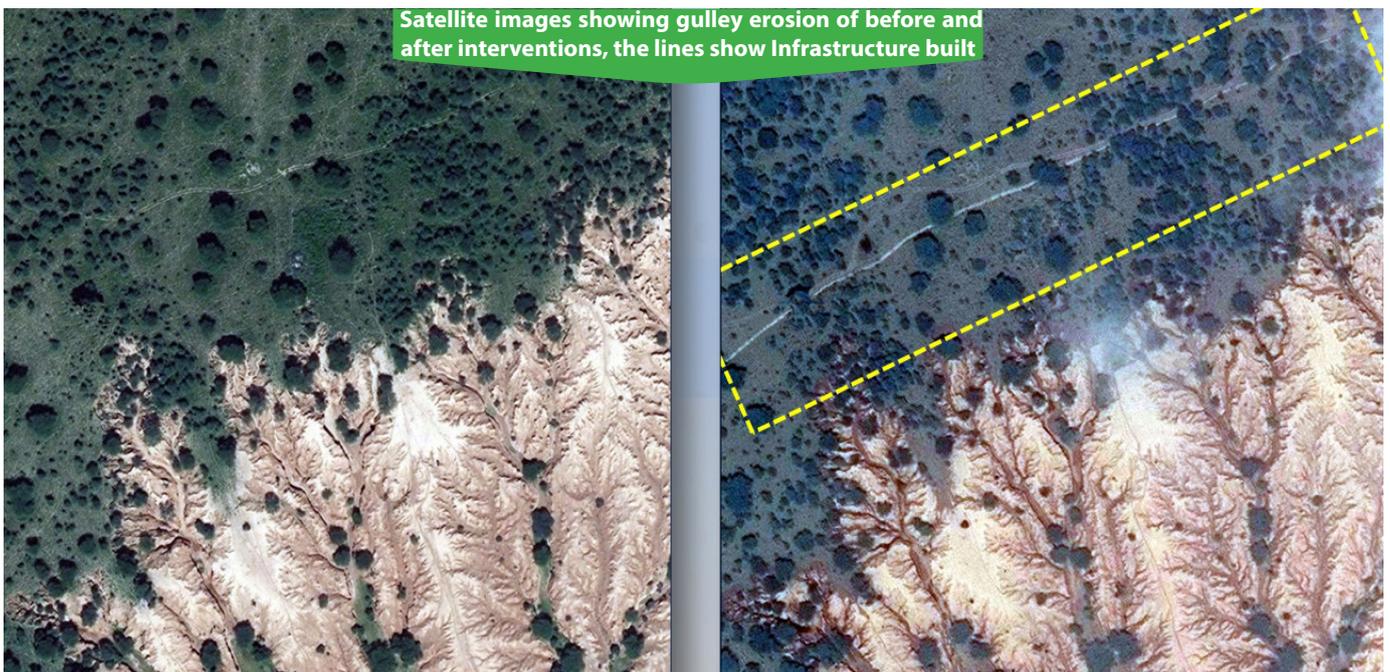
Photo showing mitigation infrastructure put in place in MDG initiative framework.



baseline maps of land degradation for all intervention sites, capturing the situation on the ground at the beginning of the EU initiative. A second set of images, acquired after the interventions, allowed assessment of the impact and confirmation that the infrastructure for gully control had actually been put in place. Using the satellite monitoring system developed, SWALIM has assessed 33 out of the 49 CARE sites and 82 out of the 173 ADESO.

The development of a methodology to quantify the impact of the mitigation infrastructure using remote sensing techniques is currently in the pipeline. This will assess specifically the reduction in bare land, improvements in vegetation cover, and the stabilization or reduction of gully erosion. This methodology will be finalized in the next months by SWALIM and European Union Joint Research Centre (JRC) experts.

Satellite images showing gully erosion of before and after interventions, the lines show Infrastructure built



## SWALIM Holds High Level Information Sharing Meeting in Hargeisa

by Jeremiah Njeru

On 5th December, 2015, SWALIM held a high level meeting with five Somaliland government partner institutions. The meeting was attended by three line ministries; Agriculture, Water Resources, Environment and Rural Development, together with the Natural Disaster Response and Preparedness Agency (NERAD) and the Somaliland Ministry of Planning and International Cooperation.

The aim of the high level meeting was to update partner institutions on the progress made so far in transferring SWALIM Information systems to the Somaliland partners. The systems include a field monitoring network, tools for data processing and analysis, and a client service platform that supports information requests across a range of outlets. Over the years, SWALIM has been building the capacity of the line ministries to take over the SWALIM systems, with 10 data centers already operating in the different regions of Somalia.

SWALIM CTA and Somaliland Liaison Office manager hand over data to the Director General, Somaliland Ministry of Agriculture



## Launch of the Somali National Biodiversity Strategy and Action Plan (NBSAP)

by Saleem Ullah

SWALIM conducted the NBSAP formulation process through an inclusive and quality conscious approach. The NBSAP went through national and global scrutiny and has been endorsed as a landmark document. On 23 January 2016, the FAO Representative for Somalia, who mentioned that biodiversity contributes up to 70% of Somali livelihoods, handed over this document to the Federal Government and it was launched by the Deputy Prime Minister of Somalia as a National Document. The Deputy Prime Minister concluded the launch

by announcing the commitment and support at the highest level to implement the document in true spirit through mainstreaming biodiversity conservation in the National Development Plan, on one hand, and forging partnership with International Development Partners on the other.

The launch was attended by some fifty participants, representing Government Ministries, civil society, media, academia and the private sector.

NBSAP launch at villa Somalia (from right. Richard Trenchard, Rep FAO Somalia; Peter Clercq, Deputy Envoy of the UN Secretary General for Somalia; Mohammad Omer Arte, Deputy Prime Minister of Somalia; Buri Hamza, State Minister for Environment; Hussein Gadain, CTA SWALIM; Saleem Ullah, NBSAP Consultant)



## El Niño, How SWALIM Supported Early Warning and Preparedness

by P. Muchiri and U. Leonardi

### SWALIM Early Warning Activities During the El Niño Event

The El Niño climate phenomenon of 2015 was predicted to be one of the strongest and most destructive in history (see [SWALIM Newsletter Update 9](#) of May-August 2015). In anticipation of the potentially dire effects in Somalia, SWALIM worked hard with development partners and Somali authorities to mount an unprecedented campaign of preparedness. Unlike in previous years, when floods caused death and devastation on farmland, infrastructure and facilities such as schools, the situation was different this time round - with most destruction averted following the early actions undertaken. While the more extreme El Niño predictions were not born out in Somalia, a large part of the reason for the limited damage recorded was due to the timely efforts of SWALIM and partners.

During the build-up to the expected heavy rains, SWALIM became a hub for inter-agency co-ordination of all El Niño early warning and preparedness activities in the county. Through the SWALIM information systems, communities were warned well in advance about impending floods and were thus able to stay out of danger. Before and during the season, SWALIM distributed information packages pointing out dangerous situations to avoid and also advising about issues like the importance of protecting river banks. About 8,800 SMSs were disseminated and over 3,000 copies of flood preparedness brochures were distributed within the vulnerable communities along the

Juba and Shabelle Rivers. The information campaign not only helped to prevent massive economic losses, but also saved lives.

SWALIM enhanced the existing early warning system to include an SMS alert system, called Digniin (from a Somali word meaning “warning”). Digniin (see box on page 10) permits observers across Somalia to report El Niño-related incidents via telephone messages. The messages received from these observers and other relevant information is then structured, verified and, if appropriate, relayed as an alert to vulnerable communities in near-real-time. In addition to the Digniin, SWALIM distributed early warning information through e-mail, radio and its live web page of [flood information](#).

### Preparedness through Remote Monitoring of River Breakages

SWALIM routinely monitors riverbank breakages and areas of potential flooding along the Juba and Shabelle Rivers in Somalia. In July 2015, SWALIM used satellite images, combined with field observations, to identify weak points along the rivers and shared this information with development partners, local authorities and communities. In connection with the El Niño Preparedness Action Plan, this information was used to select 24 open riverbank points along the Shabelle River where repair works were successfully implemented by FAO Somalia in collaboration with the Ministry of Agriculture of the Federal Government of Somalia. The repairs were later validated by SWALIM

[Continued on Next Page](#)

The red point shows where water spillage originated in April 2015, near Boodale Village. Signs of the flooding are indicated with the red arrows



The bright linear feature indicated with yellow circle is the reinforcement of the embankment (sand bags) preventing a new spillage as of January 2016.



through remote sensing and field observations. The timely and well-targeted preparedness activities prevented disaster in many areas, especially along the most vulnerable parts of Middle and Lower Shabelle regions. Analysis of recent satellite images confirmed the reduced flooding, mainly along the portions of Shabelle River embankment where FAO helped organize interventions.

Further analysis comparing two images of flooded areas in Jowhar in May 2015 and in January 2016 show a reduction of 43% of flooded agricultural land. Considering only the maize yield in Shabelle Region during the last Deyr season, reduced losses could be translated into an estimated 6.7 Million USD savings.

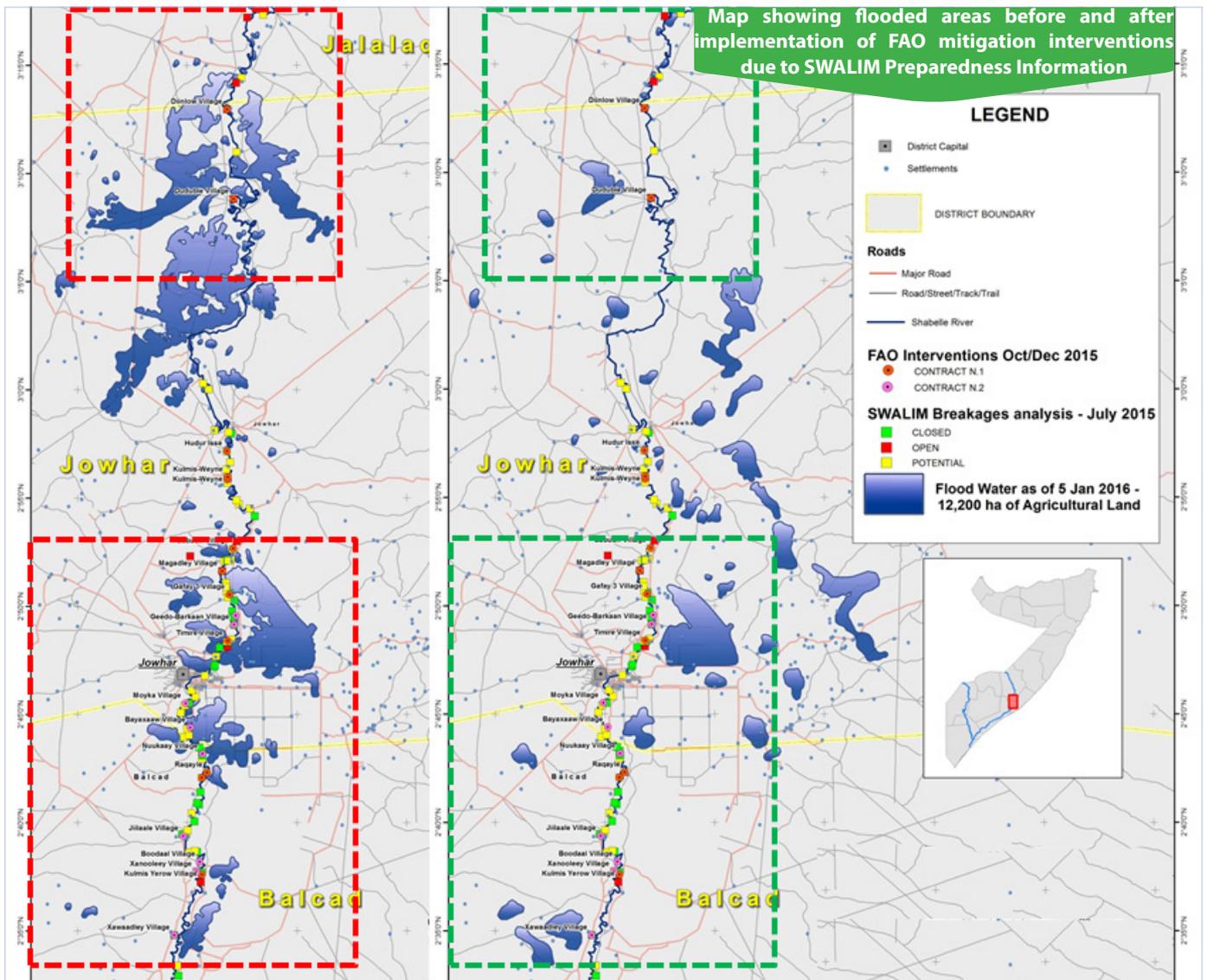
**“Information for Action” Helps Build Community Resilience**

The early warning systems deployed during El Niño event helped to address a major shortcoming of natural disaster management: the weak link between early warning and early response to needy situations. The success of the Digniin network was a good indicator of how collaboration between development agencies, national governments and

humanitarian agencies can support effective response. further empowered local communities as the first responders to El Niño threats by establishing more effective community-based warning systems, organizing temporary labour opportunities to repair communal infrastructure and providing information and tools to mitigate losses at the household level.

SWALIM also partnered with government ministries for a five-day training workshop on Disaster Risk Reduction (DRR) in Mogadishu during the month of October, 2015. The training held as part of the El Nino preparedness plan by FAO covered basic knowledge and skills on Disaster Risk Reduction (DRR), drought resilience techniques and drought risk management. Participants also learned to apply their knowledge to enhance resilience to drought and to prepare and respond effectively to drought risks.

These efforts were made possible thanks to flexible and early donor funds, notably from the: United Kingdom Department for International Development (DFID), the United States Agency for International Development/Office for Foreign Disaster Assistance (USAID/OFDA) and Food for Peace (FFP), and the United Nations Central Emergency Response Fund (CERF).



# How the DIGNIIN/FRISC Mobile Phone Flood Early Warning System Works

by David Dion

SWALIM, with support from USAID/OFDA and DFID funding, developed and integrated an SMS-based alert system into the Flood Risk and Response Management Information System (FRRMIS) ahead of the expected heavy El Niño rains this year.

The alert system includes climate data collection using mobile phones in the field with an Android “app” (application) named “Digniin” - Somali for “warning”). The app helps field observers to record important data for flood early warning, such as rainfall and river level information.

Once the observer has the data, **Digniin** sends SMS (Simple Messaging System) messages to a web-based server (the Flood Risk Information Service Centre or “FRISC”), which then updates the FRRMIS database on a continual basis. The administrator control screen alerts the SWALIM and FSNAU monitoring staff of emerging situations of risk, actual flood occurrences and other events which may affect the local communities. The experts evaluate these data and determine whether to send an alert immediately, whether further verification is required and what messages should be sent to which groups of recipients.

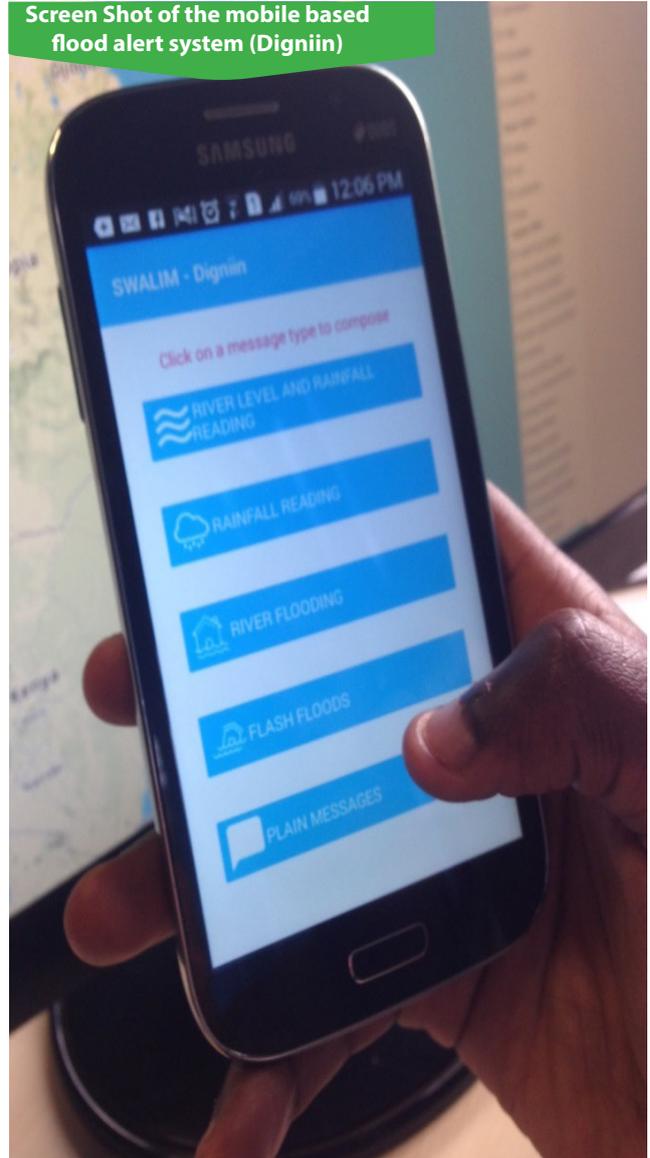
The alert system already has over 4,000 registered recipients. During the critical period of El Niño rains, over 8,800 warning messages were sent out to community members alerting them of impending risks.

The dynamically updated data can be viewed in tabular, graph and dynamic map formats on the FRRMIS page of the SWALIM web site at: <http://www.frrmis.faoswalim.org/>

The SMS alert system has also been creatively applied to another vital purpose: some 8,000 warning messages were sent by SMS to fishermen at sea and to communities along the Puntland and Somaliland coast 36 hours before two cyclones (MEGH and CHAPALA) hit the Gulf of Aden coast, potentially saving numerous lives and much valuable property.

SWALIM is now investigating further uses of the SMS technologies developed for the DIGNIIN/FRISC system and will share this know-how and experience with partners and other sectors in FAO.

Screen Shot of the mobile based flood alert system (Digniin)



## SWALIM Digital Document

### Repository (SDDR) Updates

SDDR has been updated with the following time-series data for the period upto October 2015:

- Climate data from automatic weather stations
- Rainfall data from manual stations
- River levels and discharge data
- Synoptic stations data

## Did You Know?

Somalia’s annual average rainfall is 282 millimetres with 75% of the rain falling during Gu rainy season and 25% during the Deyr rainy season?

Somalia has 6 river basins namely: Juba, Shabelle, Ogaden, Darror, Gulf of Aden and Nugaal

SWALIM has a total of 7 weather alerts and bulletins issued before, during and after the rainy seasons?

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To unsubscribe, send a blank mail to [swalim@fao.org](mailto:swalim@fao.org) with the word “unsubscribe Newsletter” as the subject.

## Survey of Water Sources in Galmudug State Kicks Off

by *Flavian Muthusi*

SWALIM has partnered with the General Service Agency (GSA), a local NGO, to carry out a water sources survey in Galmudug State in Central Somalia. The survey is a significant milestone in the region, as the last comprehensive water sources inventory for Central/South Somalia was undertaken by SWALIM way back in 2009. Since then, only limited updates with varying levels of details and coverage, have been carried out by partners working in the water sector in the region. The region is one of the water scarce areas in Somalia where ground water is very deep and of poor quality.

The current survey collects details about the location of the water source operational status, usage, physical parameters, basic water quality and ownership. Water samples are also collected for detailed laboratory analysis. The field enumerators were trained by SWALIM staff on the survey methodology and use of the equipment before embarking on the field data collection.



Data acquired from this survey will be used to update the ["Water Sources Live Map."](#) The data is also an important input for developing the hydro-geological map and identifying areas of high potential for successful drilling.

## Water and Land Intervention Information Sharing Platform (WALISP) Ready for Launch

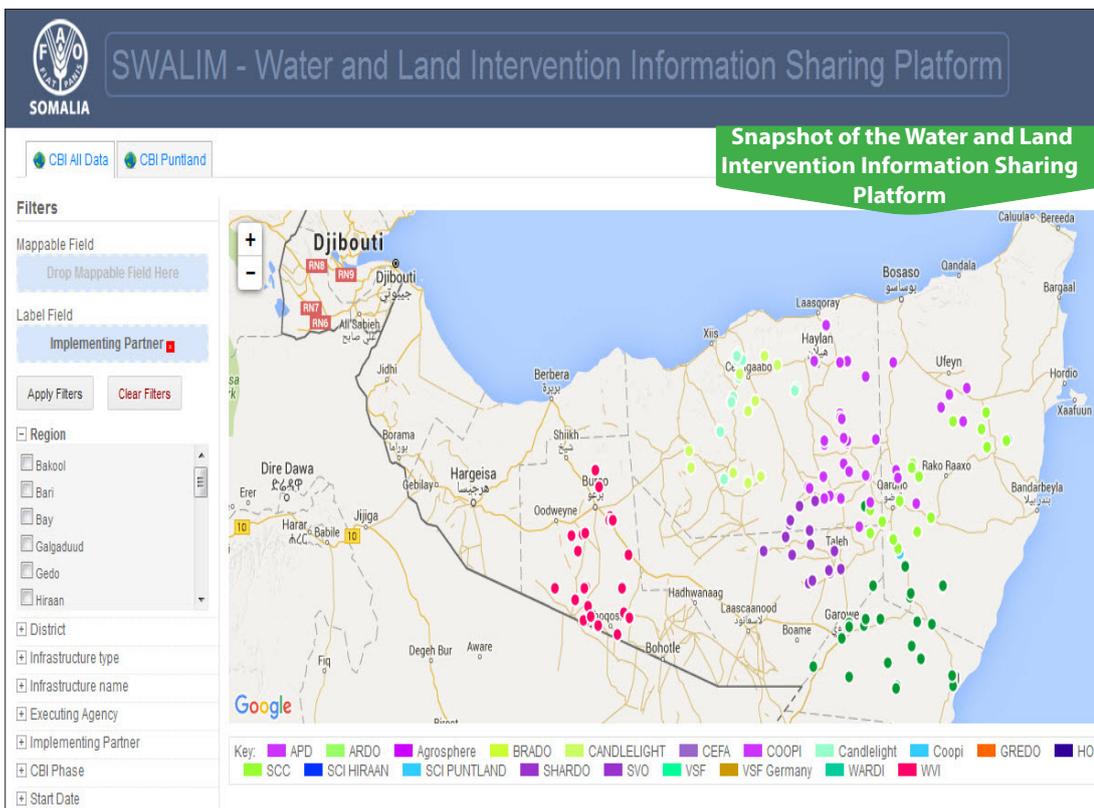
by *Stephen Waswa*

SWALIM has developed the Water and Land Intervention Information Sharing Platform ([WALISP](#)), to facilitate the sharing of information on water and land rehabilitation and interventions allowing users to visualize on a map the works undertaken by FAO-supported implementing partners on water and land resources. Users are also able to access photos of the infrastructure sites taken before, during and after rehabilitation, as well as query and filter the data

on implementing partners, cash-based intervention phases and infrastructure types, such as catchments, feeder roads and canals. By bringing together this previously inaccessible data, the system facilitates inter-agency harmonization of efforts on land and water projects and helps avoid duplication of efforts by development partners. The information sharing platform has currently been updated with the FAO Cash-Based Interventions (CBI) data since

its start in 2012 until to date. More recent data will be incorporated once verification is finalized.

The platform is expected to enable informed actions and decisions by stakeholders by providing a one-stop-shop for information on the status of productive infrastructure in Somalia, as well as a summary of the resources used and their distribution. The platform further helps in compiling, archiving, querying and sharing information on past interventions and is aimed at building the capacity of partners and counterparts to use the information available in the system to support policy makers, researchers, development organizations and other stakeholders.



# Feasibility Study on irrigation water management in the Middle Shabelle region complete

by *Flavian Muthusi*

The feasibility study comprising a desk review, field surveys and data analysis of the Middle Shabelle Irrigation Water Management System came to a successful end. The study aimed to assess the structural conditions and possible rehabilitation of the Jowhar Off-Stream Storage Reservoir (JOSR) and associated irrigation infrastructure with the objective of enabling improved agricultural production and flood control in the region.

The structural assessment found the JOSR system completely inoperable. The Shabelle River and flood relief canal bed had heavy silt; the Sabuun barrage hydraulic gates were missing; vegetation was growing in the canals and on the embankments; and the Jowhar Off-Stream Storage Reservoir (JOSSR) embankments were badly damaged by floods. The reservoir floor was even being used for cultivation.

A series of interventions were recommended, both for the JOSR and wider river infrastructure. The interventions involve improved management and governance of the water resources of the Shabelle River, better flood control, and the rehabilitation of major irrigation and drainage infrastructure. Key to these interventions would be the formulation of a practical master-plan for the rehabilitation, management and operation of the river system in the Middle Shabelle region as a whole.

Rehabilitation of the JOSR could have enormous economic impact for

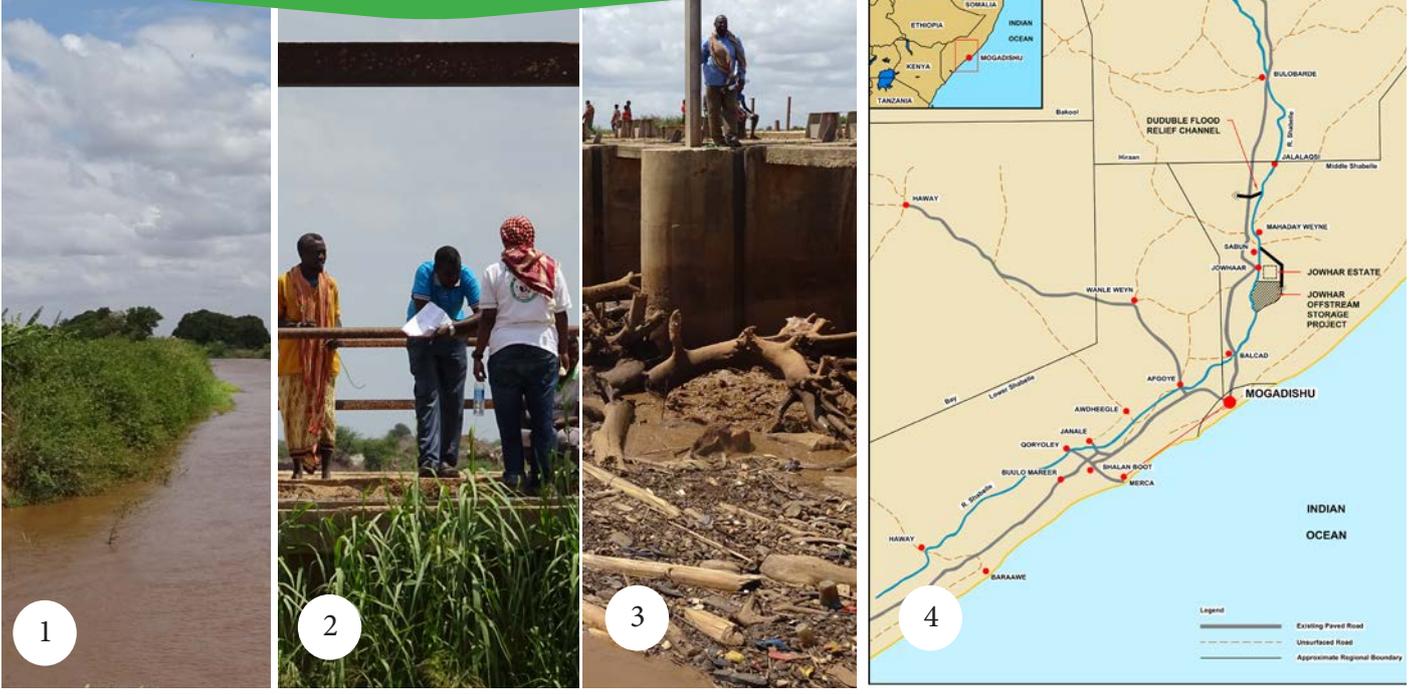
households in Middle Shabelle and would enhance the community's resilience to both droughts and floods. The heart of the JOSR system is the 200 million-cubic-meter-capacity reservoir, which can provide 100 million cubic meters of sustained irrigation water over the dry season. With this amount of water, 42 000 hectares of land can be irrigated, potentially yielding 100 000 metric tons of maize equivalent to 30 million dollars annually.

In addition to boosting agricultural production, diverting the high river waters to the reservoir controls floods downstream, as evidenced in the period between 1981 and 1990, when the system was operational and there were no major floods recorded in Middle or Lower Shabelle region.

Since the inception of the study, SWALIM has been working closely with the Ministry of Agriculture of the Federal Government of Somalia and the Middle Shabelle Regional Authorities, as they will be the institutions to implement the rehabilitation projects and operate the system. Further, the national and regional institutions need to be strengthened to operate, maintain and govern the Middle Shabelle water resources in a sustainable manner.

The study was funded by DFID and conducted by Mott McDonald. Copies of the final study report can be requested from SWALIM ([swalim@fao.org](mailto:swalim@fao.org)).

1 - Photos of a section of the Shabelle River at Jowhar. 2 - Field enumerators during condition survey. 3 - The upstream of the Sabuun Barrage structure blocked by dead trees and silt. 4 - Map showing location of the (JOSR) project



**Training Timetable February - April 2016**

Course	Date	Location
GIS mapping and large format printing	February 2016	Garowe
GIS and Land Cover Mapping	March 2016	Garowe
Disaster Risk Reduction	March 2016	Hargeisa, Garowe
GIS and Land Cover Mapping	April 2016	Mogadishu
Disaster Risk Reduction	April 2016	Mogadishu
SDDR	April 2016	Mogadishu

## Pictorial

Participants of the high level information sharing meeting in Hargeisa



Conditional survey at the Sabuun barrage



Repairing of a river breakage in Middle Shabelle



SWALIM CTA makes a presentation at the Land and Water days



Comments?

The Editorial Staff of SWALIM Update invites letters, comments and opinions from readers. Address your comments to:

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