Implemented by:

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Training of Women and Youth on Sustainable IWRM Practices within the Shabelle River Basin, Somalia

Report

Prepared for:

GIZ -Somalia

Prepared by:

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Mogadishu, Somalia

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1. Introduction

1.1. Programme Background and Context

GIZ, with support from BMZ implements programmes in Somalia aimed at institutionalizing sustainable management of water resources through the Integrated Water Resources management (IWRM) approach. GIZ programmatic approach has sharp focus on the Shabelle river basin, recognizing that it's a critical national resource in the provision of water and sustenance of the economy and livelihoods. The current project in Shabelle river basin aims to achieve the following goals:

- Conduct a river basin analysis and hence develop institutional capacities for the management of water resources
- Improve technical staff capacities in the application of hydrological techniques for collection and utilization of data
- Integration of satellite data and strategic gauge stations to improve monitoring
- Management training on different aspects of sustainable water resources management
- Improvement of coordination mechanisms among water sectors and actors

1.2. Cross-learning activities for decision makers

GIZ envisions that with the above cross-cutting support, actors in the water ecosystem will be better equipped to identify and solve the many water challenges along the Shabelle river basin. Marked improvements are expected to become manifest in the areas of:

- Establishment of water user organizations
- Operational water monitoring
- Improved coordination in the management of irrigation initiatives between Hirshabelle, South
- West, Jubaland and Banadir.
- Rehabilitation of agriculture.

Specifically, the project is design to benefit youth and women with the appreciation that these, together with children are the groups most vulnerable to external environmental shocks. It therefore follows that interventions targeted at them would yield the most impact in terms of benefits, behavior and practices change and sustainability of gains. This will also help to reverse the marginalization of these groups by the current water resources management structures. This is mostly as a result of water resources management being largely in the control of non-state actors like traditional community organs (largely patriarchal and elderly dominated) and militia organizations. In adopting IWRM, GIZ aims to integrate water management processes at all levels across state, ethic, clans, gender, and age boundaries to promote ownership.

In the backdrop of the above information, GIZ contracted Optimal Performance and Development Limited to conduct training for youth and women in Johwar and Beledweyne areas.

1.3. Objectives of the Assignment

The overall objective of the assignment was to enhance the skills of women and young people in sustainable management of water resources through trainings on ecological relationships in water resource management and water use in increasing of agricultural production.

Specifically, the assignment aimed to:

1. Conduct Six trainings on increasing agricultural production targeting 60 women and/or young persons

2. Conduct Six training targeting 30 women and youth on ecological relationships in sustainable management of water resources

2. Projects Achievements

2.1. Inception and preparations

The consultants held a virtual inception meeting with GIZ project team. The aim was to build a mutual understanding of the project and its expectations in respect to its design, execution and deliverables. The session was also used to build foundations for effective stakeholder engagement and partner support across the implementation cycle. The inception meeting handled diverse issues including but not limited to project delivery milestones, clarifying expectations, roles and responsibilities, resource needs, working arrangement and communication arrangement between GIZ and consultants, Review of the project scope & milestones, Workplan, communication and meeting plans and next steps.

From the inception, the work plan and implementation plans were clarified with clear timelines set for each activity. The project roll-out received close and strong GIZ technical team support that has been a key success driver as espoused across this report.

See annex 1 for a detailed inception report.

2.2. Desk Review

The process entailed mapping of existing water management initiatives, the challenges faced in Hirshebelle and Somalia, and some understanding of the demand for trainings related to increasing agricultural production and ecological relationships in sustainable management of water resources which will be critical for the development of a training strategy.

The desk review sought to capture lessons and promising practices from current agricultural production activities, sustainable management of water resources and previous efforts to train the communities on those topics.

2.3. Stakeholder Mapping

Stakeholders' identification was done through active consultations between the GIZ, The Director General in the Ministry of Energy and Water Resources (MoEWR), Ministry of Agriculture and irrigation (MoAI), Officials from state governments, community leaders, and relevant Development partners. The stake holders were drawn from various backgrounds including:

i. The ministry of Energy and Water Resources and all other related ministries such as Ministry of Agriculture and Irrigation.
ii. Institutional and regulatory actors
iii. Service providers in the water sector (Public and private)
iv. Private actors: Businesses depending on water for their production process; businesses profiting from the water chain; and businesses selling water-dependent products;
v. River basin organizations including village water associations
vi. Non- profit actors in the water sector
vii. Women and youth groups
viii. Civil societies in the water sector: consumers and their associations, civil society at large.

2.4. Capacity Needs Assessment

A capacity Needs Assessment was conducted using multiple approaches including desk review, KIIs and stakeholders' engagement workshops. This aimed at establishing the training needs for the youth and women so as to enhance the skills of women and young people in sustainable management of water resources through trainings on ecological relationships in water resource management and water use in increasing of agricultural production.

The Assessment utilized desk review and KIIs, to know the capacity, capabilities, gaps, challenges, weaknesses, strengths and general needs of the youth and women in water sector in Johwar.

A full detailed report can be seen in Annex 2

2.5. Training Materials Development

Prior to the actual training, the consultants in collaboration with GIZ prepared training materials covering the scope of the training. The manual is a comprehensive guide to training of youth and women in Johwar and Beledwenye with contents on:

1. Increasing agricultural production
2. Ecological relationships in sustainable management of water resources

The materials included a systems-based approach to the concepts of the above topics and aimed to enhance the skills of women and young people with regards to sustainable management of water resources. All materials developed were sent to GIZ project team electronically for approval.

Annex 3 gives snap shots of the training materials developed.

2.6. Selection of Participants

The consultants collaborated with GIZ and the Ministry of Energy and Water Resources (MoEWR), to develop a criterion for selecting the training participants. The criteria considered critical characteristics that potential participants must possess to be in this training such as age, experience in ecological relationships in sustainable management of water resources/ experience in agricultural production, background in water resource management and related courses as well as background in training of youth and women, residency and the gender inclusion. This ensured that we were getting the right candidates for the training who will graduate to be Trainers.

The full list of the selected trainees is annexed on annex 4

2.7. Training Workshops

Two training workshops were held in Johwar and Beledwenye respectively. The training workshops adopted a blended participatory methodology, consisting of plenary presentations by the facilitators, discussions, lectures, case studies, role plays, brainstorming session, exercises, clarifications and sharing of experiences on the various components of:

- Increasing agricultural production
- Ecological relationships in sustainable management of water resources

The selection of the methodology was content specific so as to achieve the purpose of training effectively and efficiently. On the other hand, the training sessions were stimulating enough, but at the same time left time and opportunity for reflection. Small working groups were also established and used for more focused deliberations.

The trainings also analyzed best practices and causes of bottlenecks in the agricultural production and Ecological relationships in sustainable management of water resources. Participants shared success stories and experiences.

Participants were in many instances asked to role play, demonstrate, illustrate and explain various tasks performed to ensure increase in agricultural production and sustaining a healthy ecology. Facilitators used the exercises to correct or enforce some practices. The trainings were structured to be delivered within a period of 4 days as detailed in the training programmes provided as Annex 5 of this report.

3. Findings

3.1. Shabelle Basin Profile

The Shabelle river is one of the most important water resources in Somalia, playing a key role for food and livelihood security and economic development of the country. It is the principal source of water for about 4 million people in Somalia, supporting livelihoods and the economy in the basin known as Somalia's breadbasket. The Shabelle river relies on the water supply from the Ethiopian highlands. The Shabelle is effectively a closed drainage basin since river flow normally does not reach the Indian Ocean. Rather, flow that reaches the low end of the river is mostly lost in the sands in southern Somalia, feeding an ecologically sensitive wetland area and recharging groundwater aquifer. Only in Exceptional flood years does the Shabelle join the Juba river (Abdullahi Elmi Mohamed, 2013).

The Shabelle flows are characterized by significant interannual variations. The river hasa high sediment load. It also has a high saline content even during high flows. The Shabelle is the principal water source for Somalia's most productive agricultural zone in the Middle and Lower Shabelle regions. Most of the basin receives only 400 mm of rain per year or less. However, Ethiopian highlands receives high rainfall feeding the basin. There is a pocket of quite substantial rainfall at the south-western tip of the basin, with average annual precipitation ranging between 400 and 700 mm, which should be enough to grow a crop. There are two seasons in the Shabelle basin, the GU and the Deyr Seasons. The first season of rain start in early April and extend until mid-June. The second rainy season (Deyr) in Lower Shabelle is from October to early December.

Reference evapotranspiration in the Shabelle basin is high and ranges from 1000 to 3000 mm/year. Apart from a small wedge in the north-western corner of the basin, RET exceeds rainfall for the entire basin, typically by a very substantial margin. It means that water demand by plants is much higher than the available rainfall and explains the high sensitivity of the Shabelle basin to droughts. Drought conditions occur frequently in the basin because of the low and highly variable rainfall.

Climate change has a had a toll on the Shabelle basin as much as it has in the country. In the last thirty years, Somalia has frequently been affected by droughts, famines and water-related humanitarian crises. Water is scarce and the only perennial streams, the Juba and Shabelle rivers, are trans-boundary with river flows mainly originating from the Ethiopian highlands. Pressure on the scarce and finite Shabelle waters is growing rapidly. While fast-tracking counter measures is needed, the sustainable management of the basin's natural resources is vital.

3.2. Demographics

The Population on the Somalian side of Shabelle basin is close to 2,152,033 (LandScan 2019) with population concentrations in the southern region. While primarily rural, there are also some larger towns including Beledweyne, Jowhar, Balcad, and Afgooye. There is also a sizeable population around Baidao and Buur Hakaba, and along the main highways.

In the Shabelle basin, the predominantly rural population comprises pastoralists, crop-farmers and agro-pastoralist, the latter combining crop production with raising livestock such as sheep, goats, cattle and camels. However, nomadic pastoralism is highly practiced in Somalia and therefore pastoralists are not confided in the basin. Population living close to the river engage in irrigation agriculture, whereas the people living further away use rainfed agriculture. Irrigation agriculture relies on water provided by the Shabelle, particularly during dryer seasons. Main crops include maize, sesame, sugar cane, and vegetables.

3.3. Challenges in water Sector in Somalia

a) Information and Knowledge Challenges

i. Data collection and storage: Lack of data, monitoring and information management of the water sector;

There is limited information on water-related ecosystems in the Shabelle basin. The war also was a cause for neglect and abandonment of data collection, as well as failure of monitoring of water resources on Juba and Shabelle River basins. Besides the inability to collect data, one and a half decades of civil strife in Somalia resulted in the loss or damage of most of the water- and land-related information collected in the previous half century. For example, there is currently no detailed assessment of water quality, pollution sources and loads in the Shabelle basin. A detailed study of groundwater availability in the Shabelle basin in Somalia does not exist either. Information about the extent and sustainable yield of deep underground water source is scarce too making it harder to know its viability.

There is only limited knowledge available about how exactly water resources are dealt with at the local level between different user groups and within as well as across different locations along the Shabelle. Further, there is no accurate information exists on 1) the current extent of irrigated agriculture, 2) total irrigation water demand, 3) water productivity in irrigated agriculture, and 4) total water availability.

However, in the recent past, efforts have been made to recover data and to collect information on water and its management. There are many international organizations and national institutions working in Somalia, each of which has developed its own data and information, and produces new data based on various sources because of the limited availability of data in Somalia, which makes getting accurate data for others a difficult issue. Emerging institutions such as

Somalia Water and Land Information Management (SWALIM) have greatly improved the data collection and sharing.

ii. Knowledge Distribution

During civil war, some people were displaced from the farms by the militia groups. Sadly, several of these new farmers have little or no knowledge about irrigation farming as they had not traditionally engaged in farming activities.

iii. Trainings and capacity building

There is generally lack of training of stakeholders to enable them maintain the water systems sustainably. In addition, the local community is not well trained in agricultural practices which are necessary for a healthy ecosystem. The lack of skilled workers has affected the construction, management and maintenance of the water supply systems (UNICEF, 2018b). Capacity development is needed in Somalia to:

- Advance national and federal states' organizational visions in the integration of good water governance.
- Foster the abilities of individuals, institutions and communities to overcome challenges and to contribute towards local solutions in the water sector and natural resources management

The absence of extension services and the unavailability of agricultural inputs such as fertilizer and pesticides have further exacerbated the situation causing low yields in Shabelle basin. The lack of mechanization to desilt the canals and do proper farming is another challenge in Shabelle basin.

b) Climate Change

i. Floods: Flooding is a major risk in the river basins;

Somalia experiences two types of flooding: river floods and flash floods. River floods occur along the Juba and Shabelle rivers in Southern Somalia, whereas flash floods are common along the intermittent streams in the northern part of the country. In the recent past, the country has experienced an increasing severity and frequency of floods.

Recurrent floods inundate large tracts of land along the river together with adjacent low-lying areas, and cause significant damage to infrastructure, crops, livestock, and property. In addition, floods are accompanied by an elevated risk of malnutrition and water-borne diseases, and displace a large number of people. Recurrent floods in the Shabelle basin cause damage to homes and the road network, displacement of people in rural and urban areas, loss of crops or delayed planting, and the spread of water-borne diseases.

The following three main flood regions can be distinguished:

- The Shabelle valley in Hiran region; flooding occurs close to the Shabelle channel.

- The large alluvial valley in the Middle Shabelle region; flooding is widespread.
- The area immediately upstream of the Shabelle-Juba confluence.

From upstream to downstream, the following principal flood events have been identified:

a. When Shabelle levels are high, flash floods from local tributaries cannot drain into the main river, causing back-water effect and inundations near the confluence (with the Shabelle). Flooded areas are quite small and mainly concern agricultural land within the narrow alluvial valley. This occurs mainly along the Shabelle in the Hiran region. While flooding occurs every year, including in dry and normal years, the damage caused by this type of flooding is only significant in wet years because of the prolonged duration of the flood, which delays planting or affects crop growth.
b. Parts of the Shabelle valley in the Hiran region are flooded because of bank overtopping or because embankments are breached. Flood waters cannot return to the main river and gradually seep downstream in the alluvial zone adjacent to the river. Water is trapped in low lying areas, where it causes prolonged inundations and only slowly recedes.
c. Flooding of Beledweyne city—with a population of over 250,000—has become a regular event. Some 80% of the city was affected in 2019, with inundations lasting for several weeks and causing widespread disruption and damage. Anecdotal evidence suggests an increase in the frequency and extent of flooding of Beledweyne, although community-led interventions in 2020 have prevented flooding in the first half of 2021.
d. Widespread flooding in Middle Shabelle in the area around Jowhar. Bank overtopping in the alluvial valley causes flows in the Shabelle channel to decrease from 160 to 100 m3/s and inundates adjacent areas. Periodic flooding leads to extensive damage to agriculture and closing of critical infrastructure such as the Beledweyne-Jowhar-Mogadishu highway and Jowhar airport. Inundations can last for several weeks and disrupt the local road system and transport network. Flooding in this region happens every year—including in drought and normal years—but the inundated area is larger in wet years, causing widespread displacement of the local population. During this period, farmers cannot access markets or procure agricultural inputs, and schools and public infrastructure are closed. Flooding of pit-latrines causes the spread of water-borne diseases and contamination of water sources, while standing water increases the occurrence of malaria. Increased flood damage is partly attributed to uncontrolled settlements in the floodplain.
e. Flooding of agricultural lands in the respective irrigation schemes. Implications are similar to d).
f. Incidental flooding near the Juba-Shabelle confluence. This only occurs during years with exceptional high flows.

The above-mentioned flood events in the Shabelle basin are caused by a combination of factors including but not limited to:

- More intense rainfall because of climate change

- Riverbed aggradation
- Higher flood peak on degraded land
- Embankment breakage
- No storage capacity to capture the flood-peak
- Silted flood release canal
- Uncoordinated operation of the barrage system. etc

ii. Droughts

Droughts in Somalia are common, occurring moderately every 3–4 years and severely every 7–9 years, which affect people and livestock. In 2006, thousands of Somalis fled to Kenya to escape drought, famine, and fighting. The 2011 drought devastated agriculture and livestock and resulted in 955,000 Somali refugees in neighboring countries. By 2017, acute hunger had struck 6.3 million people across the country; 65% of them are living in rural areas due to the loss of production, productive assets, and income sources during the drought.

Water scarcity because water availability is naturally a climatic issue

Besides water scarcity, some 183 mm of the average annual rainfall (439 mm) is lost to evaporation (source: FAO WaPOR, for the period 2009 to 2020). Average annual precipitation in the alluvial zone is below 400 mm while potential evapotranspiration exceeds 2000 mm per year. There is no rainfall in the period from January to March.

Evaporation represents rainfall that returns to the water cycle without productive use. This implies that over 40% of the renewable water resources (i.e. rainfall) in the dryland area in the Shabelle basin in Somalia are lost without productive use. This represents a huge waste of resources.

The problem of unpredictability and wide variations in rainfall, which is generally low

There is simply not enough water to sustain irrigation on all land in the Shabelle basin that would in theory be suitable for irrigated agriculture. The climate has been particularly harsh in Somalia hence affecting the water sector.

c) Institutional Challenges

i. Water governance

Since the start of the civil war, state and federal government actors have effectively been absent in Shabelle basin and not (yet) been able to rebuild institutional structures beyond some urban areas. Fragmented local communities, non-state humanitarian as well as private sector actors have since dominated water resources governance in the basin.

Though the government has tried to re-establish water governance structures at the national level by creating the Ministry of Energy and Water Resources and National Water Resource Strategy, there is uncoordinated management of water resources between the Federal Line Ministries and Federal Member States. The institutions involved in the water sector do not have

clear or documented roles, which creates a conflict of responsibilities among and within the institutions involved in the water sector and competition over resources such as water project funds.

Community Institutions: Currently, rules and procedures for regulating access and distribution of water are formulated at a very fragmented, localized level and multiple local and informal arrangements have developed over the last decades.

For example, local water management committees (so-called maddas) have been established amongst the agro-pastroalist groups in the lower Shabelle (Gomes 2006, Hassan 2015). These maddas inform gatekeepers (yassin) about their water requirements. Based on this information on water requirements, gatekeepers then organize seasonal schedules for water allocation and also organize repairs and maintenance which they assign to different madda members. Twice a year, farmers have to desilt a section of the main irrigation canal as well as a section of their distributary or otherwise pay a fine. Disputes between community members and/or gatekeepers are mediated by traditional Baxaar or village council of elders (masarweyn). Village committees manage land issues and aspects related to water intakes for pastoralists (Gomes 2006). It is reported, that to some degree village committees also report and coordinate water abstraction as well as flood warning across villages.

Private Actors: Private actors in general play an important role in Somalia, often providing services that are traditionally managed by state entities, including in the water, health and energy sectors. Water supply in urban areas for instance is predominantly provided by different individual private actors and companies (e.g. Mumin Global Service and Trading Agency, Farjanno or Ijaabo Water). It is reported that in some urban centers PPS-arrangements have been set up with donor support. Private actors here provide services under some degree of public sector regulation (AfDB 2015). The private sector is also relevant in providing skilled laborers for various water activities such as civil works construction, repairs and maintenance of water related infrastructure (such as repairing pumps). However, marginalized communities (e.g. those belonging to weaker clans or less financial means) have limited or no access to private sector services. For example, during times of drought pastoralists often rely on water provided by very costly and often unaffordable privately-owned water tankers. In these situations, water for livestock can only be accessed by more well-off herders and those with stronger clan structures.

Finally, also **donor agencies** and **NGOs** play an important role in providing and rehabilitating water and sanitation as well as irrigation and flood mitigation infrastructure. While donors and NGOs often provide the financial resources and capacity building activities, operation, regulation and maintenance are usually managed directly by communities or private actors. Often projects establish new structures (such as farmer associations, water or irrigation committees) or build on already existing ones.

ii. Policies guiding water resources

Lack of sustainable development of the transboundary river basins;

The lack of transboundary water agreement between the neighboring countries has affected the possibility of constructing all proposed water infrastructure project including the Baardheere Dam (Mourad, 2020; Salman, 2011), which makes the rivers vulnerable to upstream uses.

Two key constraints in the Horn of Africa are weak state institutions and capacity, and the effects of a long history of distrust among countries especially Somalia and Ethipia. These constraints negatively affect regional organizations, institutional arrangements and initiatives. They also limit the options for sustainable governance of water resources and for anticipating and pre-empting other climate-related security risks in the Horn of Africa. Acceptance of shared interests at a regional level is impeded by national agendas and ambitions. In a region that is dominated by important transboundary lifelines such as the Juba–Shabelle basins, a regional perspective should receive more attention and become a key priority.

iii. Functionalities (Accountability, Transparency etc)

Moreover, the capacity to prioritize, manage, and deliver ongoing or proposed investment opportunities is limited due to corruption, ongoing violence, and political unrest.

iv. Staffing

d) Community Challenges

i. Development and urbanization.

The rapid increases in urbanization put pressure on scarce land and water resources, which leads to environmental stress in many developing countries. In Somalia, population and urbanization growth poses a challenge to development and poverty reduction. Therefore, the focus should be given to sustainable water services and to water use productivity in agriculture and livestock

ii. Water management and practices- Over exploitation and competition from users

Continued irrigation development, possible upstream water development in Ethiopia, climate change, and growing abstractions for other productive purposes, notably domestic and industrial water supply has put more pressure to the already drying basin. Unconstrained and uncoordinated irrigation development—as has occurred in recent years—in combination with low water productivity will inevitably reach the limit of the Shabelle system and compromise secure water supply. This situation is exacerbated by the absence of storage capacity and the high-interannual variability of the Shabelle, which supplies abundant water in wet years but quickly causes deficits in drought years.

A major implication of the absence of governmental institutions is that water abstractions from the Shabelle are unregulated and uncoordinated. The current water abstraction regime could be categorized as ‘first come, first serve’.

Numerous (small and mid-size) private irrigation schemes have been developed outside the original command areas. For instance, a large irrigation area (>7,500 ha) has emerged along

Duduble flood relief canal. In other instances, irrigation water is pumped directly from the Shabelle river. These abstractions are not regulated.

Thus, currently, the total area equipped for irrigation probably exceeds the capacity of the Shabelle river, specifically in a drought year. It is noted that the exact size of the irrigated area is unknown. In the absence of regulation or management of water abstractions, the risk of over-abstraction is high.

iii. Pollution, and Water and sanitation

Pollution and wastewater management in the Shabelle basin is a rapidly growing problem, specifically near urban areas especially in Mogadishu, while as water treatment facilities are inadequate. Pollution sources include uncontrolled dumping of waste into rivers, agricultural run-off and and lack of sanitation and wastewater management. Inadequate sanitation facilities in urban areas and the riparian zone intensify the spread of waterborne diseases. Overflowing of sanitary latrines during flood events poses a serious health risk to communities and ecosystems in flood-prone areas.

Moreover, the Gu floods (April-May) are often of high salinity and therefore not suitable for irrigation in the first 10-14 days of this flood period. It further reduces water availability for irrigation. By contrast, high salinity of the Shabelle waters does not occur during the Deyr rainy season.

iv. Conflicts:

Somalia is a country of high-water stress (WB 2020). The continuous decline in freshwater availability has resulted in fierce competition and recurring local conflicts over water resources. Control over water resources between different clans and regional government authorities has been a sensitive issue which often results in conflicts, particularly between different user groups from livestock and agricultural communities (MoEWR 2021). Conflicts over water often erupt when wells dry up and local water supplies diminish, particularly during dry seasons when groups of pastoralists settle closer to the riverine areas of the Shabelle. While traditionally, these types of disputes have been mediated by clan elders and other community members, the increasing amount of escalating conflicts seem to indicate that the coping capacities of these institutions become overstretched.

v. Poverty

e) Water related Agricultural Challenges

i. Competition from animals, agriculture and human

Water from Shabelle basin not only faces over exploitation from different users but competition among them is also a problem. Quite often, the limited water resources are a source of conflicts.

ii. Technology and Innovation in Water resource management

Assets, infrastructure including canals, irrigation equipment etc

During floods, there is likely to be high sediment loads in the Shabelle, as these lead to siltation of irrigation infrastructure. Because of poor maintenance and siltation, the capacity of most canals to supply water to the irrigation fields has substantially decreased. Some canals are completely silted or overgrown with vegetation. Where water delivery has failed, fields have been abandoned, mostly at the tail-end of the former irrigation schemes

Besides, none of the 9 barrages used for regulating water for irrigation is currently fully operational. All require major rehabilitation work because gates are stuck, embedded in mud, or have disappeared, while lifting gears are broken.

The situation is worsened by the lack of storage capacity for the water systems in Shabelle basin, Somalia. The Jowhar Off-Stream Storage Reservoir—with a capacity of 200 mcm—is not operational while a planned Duduble off-stream reservoir—with a proposed capacity of 130 mcm—was never developed. Thus, for now, the storage capacity in the Shabelle basin in Somalia is inadequate to provide for secure water supply for the entire irrigated area for all years. It increases vulnerability to periodic drought years. (Sub-surface and groundwater storage potential is not included in this assessment. Potential upstream storage in Ethiopia is also not considered).

iii. Insecurity and Accessibility

Insecurity affected the development of services in many areas;

During the civil war many of the farms in the lower Shabelle region were taken over by armed militias from pastoralist groups that fought against the Siad Barre regime (coming from other areas within Somalia). Land tenure has since become very complex issue that is connected with many disputes (FSNAU 2013, WB & FAO 2018). The lack of formal governance structures (and its impacts in terms lack of security and public services) is filled by informal structures, including arrangements by local communities, private actors and Al Shabaab.

Resulting insecurity is a major problem in many parts of the country, including the Shabelle basin (particularly the lower basin). Al-Shabaab controls large areas of land, particularly in the middle and lower basin, and often launches attacks on governmentcontrolled checkpoints and buildings (WB & FAO 2018). Al Shabaab has established a parallel governance system in many rural areas. For example, in the Hirshabelle FMS larger cities are run by government while rural areas remain under control of Al Shabaab (MoP 2020).

In 2010, the lack of water resources created conflicts and fights among clans over pasture and water resources, which left 20 dead and displaced thousands of families from several villages in central Somalia. Insecurity poses big challenges to Somalia's short-term stability and long-term development. For example, in 2011 Al-Shabab buried the main borehole, the main water supply of the Garbaharey city— "water terrorism"—and controlled some of the water points, through which people from government-controlled areas were not allowed to fetch water, and boys were recruited to do this.

f) Problems of the financial constraints faced in water sector.

Lack of resources to develop and implement water management plans.

The federal government is not involved in managing irrigation schemes, while state level and local governments have limited capacity for operation and maintenance of the large irrigation schemes. Many large irrigation infrastructure elements—such as main and secondary canals, as well as off-take and diversion structures—silt regularly and gradually deteriorate. Some have completely silted.

In addition, periodic flooding damages the road network within the irrigation areas and disrupts the transport system. It cuts off market access for farmers, herewith reducing the price for their produce. Further, it increases the costs for inputs such as diesel or fertilizer. Lower returns lead to less funds for maintenance of irrigation infrastructure or investments in agro inputs. As a result, many irrigation schemes do not generate adequate financial surplus to provide for proper maintenance of main canals and large water control and diversion structures. This perpetuates the 'bricolage' nature of most of the current irrigation schemes.

3.4. Feedback from Training workshops

Generally, the participants embraced the training topics and delivery methods used by the facilitators. The activity was very successful and the objectives were met. Equally, the selection of participants and the learning activities was aprpreciated not only by the trainees but also by the MoEWR. The importance of such training was stressed further by the ministry through request to conduct more training of this kind in each district of Hirshebelle.

Training Expectations

The participants highlighted their expectations which were summarized in the following bullet points:

- To know more about water, irrigation and floods protection
- To know more about water and related issues
- To boost their knowledge on water quality management
- To be familiar with water laws in Hirshabelle state
- Some of the women and youth expected funding at the end of the training to continue with training or to do water related projects
- Get certification of attendance
- Get new friends and coworkers

4. Challenges

1. **Training Demand**: While the number of the youth interested and qualified for the training was high, there were limited slots. This calls for more trainings either through GIZ and its

partners or through the ToT model using the already trained women and youth. little as selection was a problem.

2. **Short training period**: The training time was limited despite having a very lively and interactive workshop. The feedback through engaging questions indicated that the women and youth were eager to learn more. This was limited by time.

5. Conclusion and Recommendations

The training workshop improved the capacity of participants who were exposed to adopt modern technologies, modern tools and opportunities to develop and sustain the Integrated use of water resources to increase agricultural production as well as boosting Ecological relationships in sustainable management of water resources.

It is envisaged that the enhanced capacity of stakeholders will result in increased modern technology adoption by the locals in the target areas. The participants are expected to train other stakeholders, thereby increasing the pool of expertise in the community.

Key recommendations included:

1. Creation of a platform for stakeholders from The Director General in the Ministry of Energy and Water Resources (MoEWR), Ministry of Agriculture and irrigation (MoAI), Officials from state governments, community leaders, and relevant Development partners, universities, and producers to deliberate on how agricultural production and better use of water resources can be boosted in the Johwar and Beledweyne regions through research and development.
2. Use of the trained participants to train more youth and women.
3. The government to introduce incentives for adoption of modern technologies of agriculture and water management.
4. The participants recommended annual events in recognition of practical innovations in IWRM and ecological management.

6. Annexes

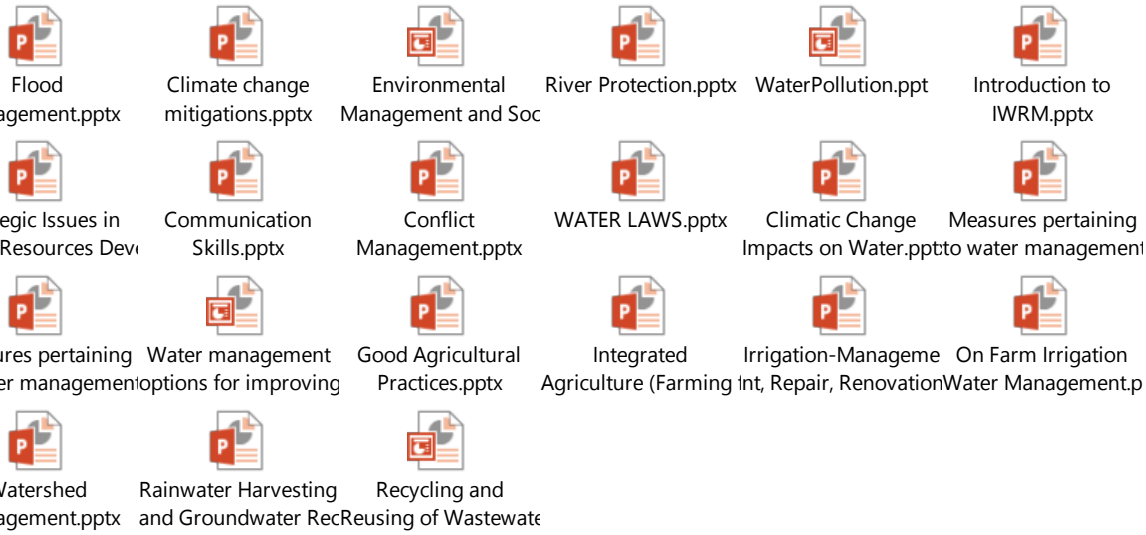
Annex 1: Inception Report

Inception Report.docx

Annex 2: Capacity needs assessment Report

Women and Youth-Capacity Assessment

Annex 3: Training Material Samples



Annex 4: Training participants Lists

Attendance Sheets for IWRM Training

Attendance Sheets for ecological relationships in sustainable management of water resources Training

Annex 5: Training Agenda

Annex 6: Photos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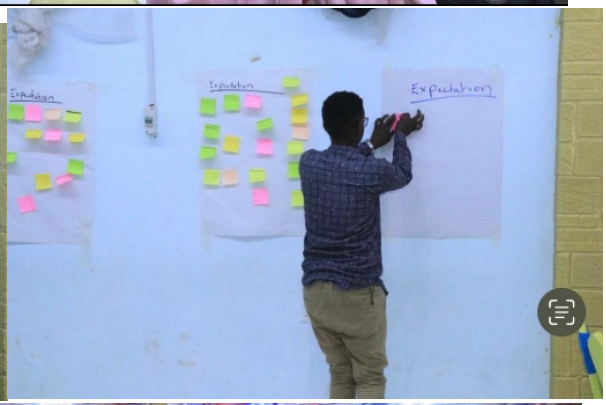
Capture by Survey cam


02/15/2023 09:41 AM
4.743746°, 45.207378°
39.714054m
20.0m
Capture by Survey cam


02/16/2023 09:36 AM
4.743725°, 45.207277°
39.714252m
7.0m
Capture by Survey cam


02/16/2023 09:23 AM
4.743532°, 45.207379°
39.714725m
172.1m
Capture by Survey cam


Expection


Expectation
Expectation
Expectation


Group 5
Feb/2023