



## Proposal Document

### Summary Information

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<b>Title of proposed Action</b>	TRANSFORM: unlocking transformative water solutions for climate resilient livelihoods in southern Somalia
<b>Impact</b>	Contribute to mitigating the impact of climate hazards (flood and drought) on vulnerable populations as well as supporting the stabilization agenda in Somalia
<b>Project Overall objective</b>	Enhanced climate resilient livelihoods and food security in southern Somalia
<b>Proposed implementation period</b>	3 years
<b>Budget proposed</b>	USD 25,000,000

## Introduction

Somalia finds itself increasingly on the frontline of climate change. More than twenty years of data from FAO Somalia Water and Land Information Analysis Unit (SWALIM) clearly shows an emerging pattern of increasing climate volatility with the country experiencing either drought or flood, or both, in 19 of the last 20 years; with the last 10 years showing a marked rise in the frequency of such events.

### Somalia Multi Year Hazard Trend:

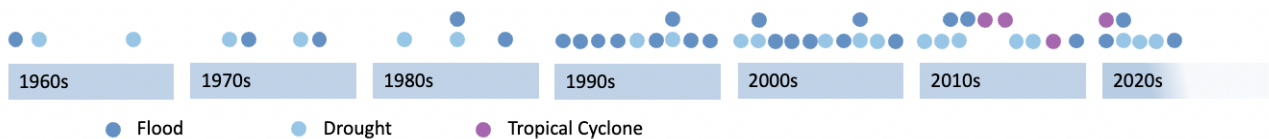


Figure 1. SWALIM Multi-Year Trend Analysis, 2023

The years 2021/22 marked the worst drought in recent history with Somalia experiencing six consecutive below average rainy seasons, which led the country to the brink of famine once again. Although huge injections of aid spending pulled the country back from the brink, three years of extreme drought conditions meant vulnerable populations exhausted their coping strategies, with half of the country's estimated 16million people requiring some kind of humanitarian assistance. As of early 2023, some 6.5million people are still facing acute food insecurity<sup>1</sup> with the first decent rains during Gu season allowing some respite in parts of the country. However, these same rains were sporadic in terms of temporal and spatial distribution leading the flash floods in some areas.

<sup>1</sup> FSNAU post-deyr technical release available here: <https://fsnau.org>

In fact, in May 2023 the Shabelle River experienced one of the largest floods on record due to above normal rainfall in the Ethiopian highlands, causing farmers to lose the first decent harvest in three years. Now as of mid 2023, as the country faces a long path towards drought recovery, it is already facing its next challenge: an almost certain (>90%) likelihood of El Niño, combined with a positive Indian Ocean Dipole. Similar to the events of 1997 and 2006, this combination of meteorological phenomena is known as a ‘Super El Niño’ and in Somalia is usually associated with well above average rainfall resulting in severe flooding. Based on this analysis as well as the latest flood model data and river breakage analysis produced by FAO SWALIM, FAO is anticipating a 100-year return period flood scenario along the two main rivers of Somalia, which is expected to cause significant damage to livelihoods and property and lead to displacement. Floods of this magnitude can result in a large-scale humanitarian crisis.

With other resource partners including USAID’s Bureau of Humanitarian Assistance, in the short-term FAO is advocating for a no regrets approach and has launched an El Niño Preparedness, Mitigation and Response plan outlining immediate actions that can mitigate the impact of flooding in riverine areas. However, flood and drought prevention require longer term investment in infrastructure that can divert excess water away from human settlements (such as Jowhar town) in times of above average rainfall (flood), as well as storing and re-directing it to enable its release in times of below average rainfall (drought). Climate volatility is the new normal for Somalia. Reliance on regular rainfall seasons is no longer viable for agricultural production. Only through effective and sustainable water management and governance it is possible to reduce the impact of climate hazards in Somalia, reducing humanitarian caseloads and sustainably boosting food security towards enhanced social and economic development and stability.

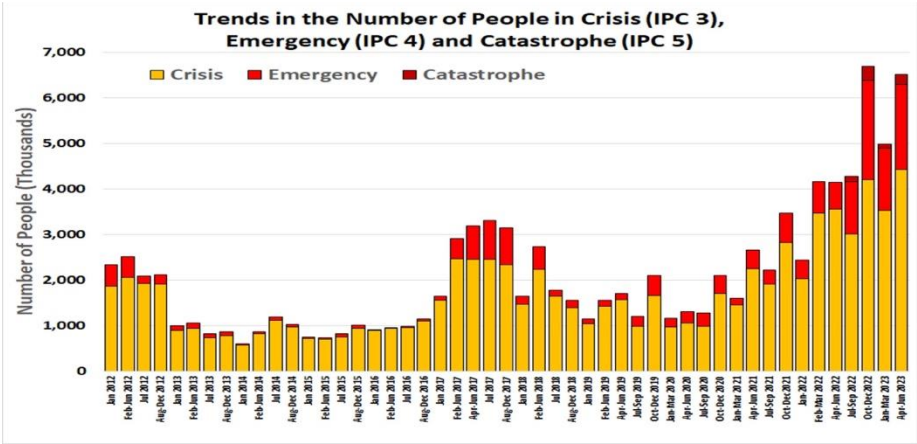


Figure 2. FSNAU IPC Historical Trend Analysis

In addition to increased climate volatility, FAO FSNAU’s historical trend analysis clearly shows increasing levels of vulnerability. The population is not only exposed to more frequent hazards, but these hazards are also lasting longer and are affecting a larger proportion of the population than ever before. This is leading to a large percentage of the Somali population relying on humanitarian aid and remittances for survival year-on-year, with ever increasing humanitarian appeal budgets to sustain relief efforts. While humanitarian assistance budgets increase, there is

no proportionate reduction in humanitarian caseloads, which continue to rise despite billions in aid being invested each year. In 2022, USD1.5 billion was injected into the country in humanitarian aid from the United States Government alone. In 2023, the humanitarian caseload has grown with a Humanitarian Response Plan appealing for USD2.6 billion to help the most vulnerable meet their basic needs for survival. While humanitarian aid is very much needed when acute crisis strikes, as recurring natural hazards are becoming the new normal, a new way of doing business is required. The current response-oriented model addresses the symptoms of these recurrent crises without effectively taking substantial steps towards mitigating the impact of future shocks by addressing the underlying causes. As a result, humanitarian aid budgets are relied upon to deal with ever increasing acute and chronic needs.

These factors are in addition to Somalia's exposure to other threats and natural hazards including pests (such as the Desert Locust), as well as underlying vulnerabilities related to political fragility, conflict and insecurity. The country hosts a large population of internally displaced people, currently estimated at 3.7 million, with displacement largely as a result of lack of resource access and availability, as well as conflict (often over those same resources)<sup>2</sup>. Populations flee to urban centers in search of assistance in times of crisis, such as the recent prolonged drought, multiplying year on year the burden on an already delicate urban social fabric and exacerbating the strain on scarce service availability and under-developed infrastructure. Many never return to their rural homes of origin, those who wish to cite a conducive social, political and economic environment, with an emphasis on viable and inclusive livelihood opportunities, safety and access to resources (including water), as key conditions for return<sup>3</sup>.

Productive sector development (livestock, agriculture, fisheries) in Somalia is hindered by lack of transformative investment, limited policy and regulatory frameworks, and non-existent or dilapidated infrastructure (irrigation and flood control, energy, roads and transport systems as well as seaports, cold-chain storage, post-harvest storage etc.). In a good year, the country produces enough food to meet 40-50% of its cereal needs, relying heavily on imported food to fill the gap leaving it highly vulnerable to global market shocks, such as that seen as a result of COVID-19, which saw prices skyrocket by more than 50 percent in some regions. Reliance on imported food comes at a high cost, out of the reach of many, leaving large portions of the population dependent on humanitarian assistance. As a result, in addition to acute food insecurity and malnutrition stemming from crises such as the drought, the country faces chronic food insecurity and malnutrition with a significant portion of the population facing Crisis (IPC 3) and Emergency (IPC 4) levels of food insecurity every year for the last ten years<sup>4</sup> (see Figure 2 above).

While conflict in Somalia is largely the result of the presence of armed non-state actors, a recent FAO study<sup>5</sup> found conflict and insecurity in origin areas of displacement were caused by multiple factors with 79.3 percent attributed to conflict over the natural resources of land, water and/or pasture. Other causes of conflicts include forceful conscription of children by Al-Shabaab (AS), taxes levied by AS on households, insecurity in areas of origin and political differences. Primary displacement drivers from rural areas are lack of water, food security and conflict. Expanding

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<sup>2</sup> Research on Rural Mobility, Displacement, Food Security and Livelihoods in Somalia, FAO 2022

<sup>3</sup> id

<sup>4</sup> FSNAU Historical Trend Analysis, March 2023.

<sup>5</sup> Research on Rural Mobility, Displacement, Food Security and Livelihoods in Somalia, FAO 2022

resource availability and ensuring equitable access to these resources therefore has powerful implications on security and stability in the Somali context.

With increasingly frequent and widespread crises leading to rising needs, and humanitarian budgets reducing year on year due to competing crises, global economic shocks and changing political landscapes, there is a growing imperative to identify and implement transformative solutions in Somalia; solutions which can reduce the growing humanitarian caseload and support a sustainable return to own production and self-sufficiency, while supporting peace, stability and social cohesion in conflict-affected parts of the country. In particular, enhancing water security is key to unlocking Somalia's productive potential, reducing import reliance and improving food security, hence reducing humanitarian aid dependency. The proposed intervention comes at a pivotal moment. As the Somali Government launches its latest offensive against Al Shabaab focusing on southern Somalia, swathes of territory - including the targeted command area - are under Government control for the first time in many years. This creates an opportunity for the Government to provide access to critical resources - such as water – decreasing the leverage of Al Shabaab over local populations in terms of resource control, as well as creating viable livelihood opportunities, thereby decreasing the incentive of youth to join the militia group. Finally, the emergence of a stronger, more capable Government who is prioritizing longer term solutions to mitigate the impact of humanitarian crises, provides further incentive to restore productive capacity under national leadership and management.

## **Project Background**

In Somalia, much of the land is arid or semi-arid, characterized by sparse and unreliable rainfall, except for the riverine and inter-riverine areas in the south of the country. Agriculture is an important economic activity in Somalia both in terms of meeting the food security needs of the population and generating income, with estimates putting the agriculture sector's contribution to the economy above 75percent<sup>6</sup>. Up until the fall of the Siad Barre regime in the early nineties, Somalia had food sovereignty, producing enough food for domestic consumption as well as export to as far as Europe. This production was partially the result of significant investment by the Government in large-scale irrigation infrastructure, particularly in the high-potential riverine areas in the south. The major cereal crops cultivated in Somalia are sorghum and maize. These crops are grown under both rainfed (sorghum) and under irrigated conditions (maize). Livelihoods based around rain-fed and riverine agriculture provide a significant proportion of food across the country but are extremely susceptible to increasingly unreliable rainfall, flooding and conflict. Irrigated riverine agriculture is centred along the two rivers (Juba and Shabelle), which have provided water for irrigation for many decades, leading to the development of a settled population and well-established agricultural economy. All agriculture and livestock activities in Somalia are extremely dependent on ecosystem services especially water, as surface water and soil moisture in the irrigated and rainfed areas. Ecosystems have evolved over millenia through adaptation to a relatively stable climate with few climate shocks occurring occasionally (like droughts, floods, and pests). The observed increased frequency of these climate related shocks is putting the Somali ecosystems under immense pressure, combined with a fast increase in human population which is another driver of land degradation.

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<sup>6</sup> World Bank Report CEM available here: <https://documents1.worldbank.org/curated/en/781281522164647812/pdf/124651-REVISED-Somalia-CEM-Agriculture-Report-Main-Report-Revised-July-2018.pdf>

In the Middle Shabelle region, development of these water resources started in the 1920s with the implementation of the Jowhar Sugar Estate. Over the following decades, the scale of the irrigation sector grew and, by the end of the 1980s some 60,000 ha were developed for pumped and gravity fed irrigation - half in the Jowhar District and half in the Balcad district (see map in Annex 1). This early irrigation development was dependent on three main factors: i) a reliable supply of water; ii) protection of the irrigable land from flooding; iii) co-ordinated operation and maintenance of the water management system. It is worth noting that the population at the time was approximately half what it is now estimated to be.

The two major risks or impediments to sustainable riverine agriculture production - flood and lack of water for irrigation - are interlinked in this region. Prior to the implementation of the Jowhar Offstream Storage Project (JOSP) in 1980, farmers were subject to the seasonal and annual vagaries of the Shabelle river, both in terms of water shortages (between January and April) and floods (later in May – June and Oct – Nov) each year. The implementation of the JOSP in 1980, provided a degree of regulation and control of the Shabelle water resources downstream of the Sabuun Barrage. During floods, water could be diverted into the 200 million m<sup>3</sup> reservoir to reduce flood risk in Jowhar and further downstream. Release of the stored water in the dry season provided much needed water for *Gu* season cropping. The JOSP works in conjunction with the upstream irrigation and flood relief canals, combined with a riverine embankment system that was able to manage flood risk in the Middle Shabelle and drought risk in Middle and Lower Shabelle.

The irrigation system was initially built in the 1920s with the Sabuun Barrage and FAO Canal (built by FAO) added in the early 1980s. There is no records of significant flooding in the period between 1981 (when the JOSP became operational) and 1990. The JOSP also provided a reliable source of irrigation water. During the civil war, the JOSP deteriorated rapidly and most of the structure's operating gear was destroyed or looted. An inspection in 1996 by Mott MacDonald showed the scheme had been left inoperable, with the following outcomes: i) there were no means of enhancing irrigation supplies in the dry season or drought; ii) increased flood risk was observed both upstream and downstream of Jowhar; iii) the poor state of the riverine bunds all along the Shabelle increased the risk of regular devastating flooding; iv) the Sabuun barrage was also inoperable which resulted in increasing flood levels upstream<sup>7</sup>.

In agropastoral areas further away from rivers, farmers are completely reliant on rainfall for irrigation; rainfall that is increasingly unpredictable. While FAO is exploring longer term solutions also for these areas, including deep groundwater exploration, medium term solutions for sustainable water access are required.

### **Problem statement/ Needs analysis**

A recent World Bank report states that in the short to medium term, recovery of agricultural production, to pre-war levels depends on better security, stronger public and community institutions and kick-starting the rehabilitation of dilapidated flood control, irrigation, and transport infrastructure<sup>8</sup>. Since the 1996 Mott Macdonald study, a number of interventions have been carried

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<sup>7</sup> Mott MacDonald Feasibility Study, 2015

<sup>8</sup> World Bank Report CEM available here: <https://documents1.worldbank.org/curated/en/781281522164647812/pdf/124651-REVISED-Somalia-CEM-Agriculture-Report-Main-Report-Revised-July-2018.pdf>

out to rehabilitate elements of the water management infrastructure in and around the Middle Shabelle region, mostly by FAO.

In particular, rehabilitation of the primary canals has opened up significant cropping areas for smallholders who have continued with cereal crop production after the departure of the commercial sugar farmers. FAO has successfully restored irrigation access for smallholder farmers through the rehabilitation of canals with very positive results, albeit at a relatively small scale since development investments have been limited up to now. Key results include over 80% increases in land utilization rates, 50-80% increases in household yield, up to 90% increases in household income as well as documented improvements across all key food security indicators<sup>9</sup>.

Other observed benefits - to be more intentionally integrated and further assessed in the context of this project – include the fact that these interventions also reduced conflict over resources, providing alternative employment opportunities for youth who may otherwise be at risk of radicalization given the proximity of the infrastructure to Al-Shabaab held areas. Some of the land around the former Sugar Estate has also become home to Internally Displaced Persons (IDPs), many of whom are casually employed on cereal farms. The interventions undertaken to date, while successful in terms of proof of concept, remain relatively small scale. A further hindrance to system functionality is the capacity of the Federal Government to coordinate its ongoing operation and management. This is due to the present condition of the infrastructure as well as the historical lack of an established regional authority with a clearly defined remit and responsibility for river resource management.

Drought as a result of successive failed or below normal rains, remains the most significant cause of severe and large-scale humanitarian crises in Somalia as witnessed in 2011-12 where a fully-fledged famine as a result of drought led to the deaths of over quarter of a million people; and again in 2016-17 where famine was narrowly averted thanks to large-scale injections of aid; and finally in 2021-2022 where the severe drought led to more than 43,000 deaths<sup>10</sup>. Over these years and in between, poor and erratic rains and poor access to irrigation infrastructures have led to low water availability for human, crops and animal consumption, with poor yields and reduction in household food security and income, often resulting in displacement from rural to urban areas where populations become entirely reliant on humanitarian assistance. The JOSP's primary function - storing excess flood water to enhance irrigation supply in the dry season - is an important resilience capacity for the region, which has been unavailable to the local population for over 32 years.

Flooding is another principal factor leading to humanitarian crisis in Somalia. Sedimentation of the Shabelle river channel and deterioration of the riverine embankments means that the bankfull capacity of the river is substantially reduced, heightening the risk of flood and worsening its impact on the surrounding population. Both of the two flood diversion schemes (the Duduble Flood Relief Channel – DFRC- and the Jowhar Offstream Storage Project -JOSP) currently remain inoperable, which means that peak flows in the river are significantly increased, even for low return period events. The topography in the lower reaches of the Shabelle river is particularly unfavourable to

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<sup>9</sup> Results emanating from FAO's monitoring and evaluation reports on EU and Swedish funded projects completed in 2022 in Middle and Lower Shabelle

<sup>10</sup> From Insight to Action: examining mortality in Somalia, MoH, WHO, UNICEF, FSNA, LSHTM, March 2023 available here: <https://www.unicef.org/esa/media/12316/file/From-Insight-to-Action-Somalia-2023.pdf>

containing the river, with the river course being raised above the surrounding flood plain where the farmers are. This means that even a minor breach in the river embankment can result in widespread flooding as the river waters escape from its perched position into the surrounding floodplain which is located at a lower elevation. Damages from low return period flooding are therefore significantly higher than one might expect when compared to areas where the extent of flooding is confined by rising topography away from the river.

The flood hazard risk in Middle Shabelle has now increased to the point where some flooding is expected during each high flow season (i.e. twice per year), with notable flood events in 7 of the last 10 years including in May 2023 where Belet Weyne (upstream of Jowhar) experienced a 100year return period flood with the river reaching bankfull and putting most of the town underwater for several days<sup>11</sup>. Floods can cause significant destruction of infrastructure, inundation of crops, loss of livestock, loss of life and, in severe cases, the relocation of many thousands of people. Critical human and financial capital is diverted to defend against the flooding and to the ensuing relief effort.

In addition to resource scarcity, equitable access to existing resources remains a significant issue in Somalia with resources, opportunities, and assets distributed along clan lines, with the major clans assuming leadership roles and assets. Consequently, minority clans have often been discriminated against; have less access to opportunities, leadership roles and resources. This has created unequal power relations that fuel discrimination, exclusion of minorities, and consequently lead to frequent flare-ups in the struggle for power, manifesting as violent conflict. This becomes more pronounced during periods of resource scarcity, as is often the case among conflicting pastoral and agro pastoral communities. Likewise, women face systemic discrimination in Somalia with limited access to resources and voice in decision-making, with limited representation in key fora. For this reason, transformational projects such as this looking to unlock substantial water resources particularly in southern Somalia, must take into account the complex dynamics of land ownership and use, inclusive and equitable access and management of resources, as well as durable solutions for displaced populations and social cohesion between groups.

## **Project Justification**

This project aims at rehabilitating existing multipurpose - flood defense, drought mitigation and irrigation - infrastructure that used to work until three decades ago, and used to be utilized and managed by the population still living in the project area. The analysis of the project sites carried out under the 2015 Mott MacDonald study confirms that, when operable, the JOSP improved water and food security, and resilience to both flooding and drought in Middle Shabelle, with potential positive impact on food security also in Lower Shabelle and beyond. Secondary benefits include potential to link production into humanitarian supply chains and reduce import dependence. Full rehabilitation of both the JOSP and river embankments in Jowhar is expected to substantially reduce the impact of major flood events, such as that seen in May in Belet Weyne, thanks to the rehabilitation of river embankments using technically sound, innovative and sustainable solutions. The rehabilitated JOSP would provide, a maximum of 200 million m<sup>3</sup> of additional irrigation water per year<sup>12</sup>. The 2015 study identifies that the JOSP system is in a completely non-operable state;

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<sup>11</sup> Data extracted from FAO SWALIM Flood Bulletins in March 2023

<sup>12</sup> Mott MacDonald Feasibility Study, 2015

notwithstanding this, the basic infrastructure remains substantially intact. Therefore, it is expected that the JOSP can be rehabilitated at reasonable and economically viable cost. The JOSP infrastructure rehabilitation works identified in the program include:

- Rehabilitation of the Sabuun barrage
- Flood risk reduction in Middle Shabelle (embankments, drainage and irrigation chambers)
- Rehabilitation of the Supply and Outlet canals
- Jowhar Reservoir rehabilitation

Recognizing the complex dynamics in the command area, FAO has built a partnership with other UN Agencies to tackle other issues surrounding the infrastructure to support the overall success of the programme. These are detailed below in the Streams of work (Table 1).

A World Bank report reinforces watershed management and development as a top priority for the country proposing to increase crop production beyond pre-war levels, through full rehabilitation of pre-war public (irrigation) infrastructure and adoption of improved technologies and climate-smart agriculture practices<sup>13</sup>. In the years since the JOSP fell into disuse, parts of the irrigation command area have started to be used for farming and IDP settlement, including land required for the canal and reservoir. There is a relatively large area of cultivated land on the western side of the reservoir that was part of the Sugar estate of around 2,000ha or 20 percent of the 100km<sup>2</sup> reservoir that have been subject to informal farming and IDP settlement. Up to 40 percent of the old Jowhar Sugar Estate remains in an abandoned and uncultivated condition. In partnership with specialized actors such as IOM, UNEP, UN Habitat and UNIDO, FAO proposes to progressively rehabilitate the estate as a small holder scheme that includes IDPs as beneficiaries. In view of this, Component 1 of the Programme - the Preliminaries - will include a Durable Solutions Plan, Conflict Mitigation Analysis & Plan, a Land Tenure Management Plan and a Governance plan that will look into the feasibility of settlement and livelihoods for IDPs and host small holder farmers within the command area of the JOSP.

Depending on the outcome of feasibility studies, it seems likely further projects will emerge for expansion of agriculture for IDP populations, rehabilitation of secondary canals and drainage to reclaim abandoned land for durable solutions. As a result, land acquisition/tenure issues are likely to be significant if the canal reservoir is to be rehabilitated. Rehabilitation of the infrastructure is a relatively straightforward task, although made difficult in practice by the security, land tenure, durable solutions challenges and potential for conflict over land and water access. Ensuring that infrastructure is managed sustainably can be very challenging with weak institutions, disagreements over operation or water allocation, or inadequate resources for maintenance can rapidly undermine any rehabilitation. Supporting appropriate management organizations will therefore be an important component of the JOSP rehabilitation project.

When irrigation water access is restored in Jowhar, via the Sabuun barrage and the supply canal, small holder farmers will be able to fully irrigate land holdings, and land left under-utilized for decades will be reopened again for cultivation. This presents the small holders and IDP farmers

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<sup>13</sup> World Bank Report CEM (page 144) available here: <https://documents1.worldbank.org/curated/en/781281522164647812/pdf/124651-REVISED-Somalia-CEM-Agriculture-Report-Main-Report-Revised-July-2018.pdf>



in Jowhar district with the opportunity to resume production that is drought and flood resilient. In order to make the best use of this opportunity small holder farmers will be provided with seeds and tools for production. This will be linked to climate smart agriculture extension services that will enable knowledge and skills transfer. These inputs and extension services will be provided after the irrigation water will be flowing in the supply canal. Extension services will be delivered by the MoAI with technical capacity building and backstopping by FAO for the MoAI. FAO will work with MoAI to build the capacity of extension network in Middle Shabelle to ensure that competent extension worker and farmer field schools are in place ready to support small holder farmers once irrigation is restored. Parallel to this FAO will be supporting the MoAI in irrigation management capacity building to ensure oversight of water access, ongoing maintenance of infrastructure. This will lead into the development of new entity with Government and Private sector working to provide irrigation water to Middle Shabelle, and eventually to Lower Shabelle. The Climate Smart Agriculture component of the programme is key but will come after infrastructure rehabilitation. For this reason, the scope of the USAID-funded project focuses on infrastructure rehabilitation, FAO intends to complement USAID funding with that of other resource partners to complete infrastructure works as well as to boost production, market linkages, cooperative development etc. once irrigation is restored.

FAO's programming shows women and youth can play effective roles in peacebuilding at community level; this requires a context specific understanding of how political, economic, environmental and social barriers have contributed to their lack of representation, stability and general wellbeing. For example, community-level structures that are typically involved in the management of natural resources can offer a platform for women to participate in conflict mitigation or resolution. Resource management planning will therefore be an integral part of the programme. It is also essential that the infrastructure works take into account environmental and social safeguarding (ESS), land tenure related issues, and localised conflict dynamics. For this reason, in addition to updating the 2015 Feasibility study, first actions will include carrying out ESS, Durable Solutions, Conflict Mitigation, Land Tenure Management and Governance Analysis and Planning in collaboration with IOM, UNEP, UN Habitat and UNIDO. These critical assessments will be key to informing programme design and sustainability plans.

## **Description of the Action**

Overall, the project seeks to contribute to mitigating the impact of climate hazards on vulnerable populations as well as supporting the stabilization agenda in Somalia. The project has the overall objective of enhancing climate resilient livelihoods and food security in southern Somalia by sustainably restoring access to water for irrigation at large-scale. The project sits within a larger Programme known more broadly as 'Jowhar Offstream Programme (JOSP)', which seeks to sustainably address not only (i) the productive infrastructure rehabilitation but also, (ii) natural resource management, (iii) climate resilient livelihood opportunities and value chain development, (iv) durable solutions, land tenure and conflict mitigation, and (v) effective and accountable governance, since these issues are all inherent to the ultimate success and sustainability of the programme in terms of supporting improved food security and contributing to enhanced peace and stability (see description of programme components in Annex 2).

## *Theory of Change*

**IF** operability of strategically located irrigation infrastructure is restored at scale **AND** communities are supported to access climate smart inputs and technologies to boost local production, ensuring linkages to complementary programming to support aggregation, marketing and humanitarian supply chain linkages, **THEN** the risk of drought and flood will be reduced and household income and food security will sustainably improve **BECAUSE** communities traditionally vulnerably to climate shocks will have reliable and equitable access to water for irrigation that will enable them to produce, sell and consume more healthy and diverse foods and access other basic goods and services, and the infrastructure will enable flood protection as well as preventing drought by diverting and storing excess water to enable its release in times of drought. Furthermore, within the broader programme framework it is expected that as this critical resource – water – is made more available, more equitably to all, and sustainable rural to urban linkages and diversified livelihood pathways are supported, the risk of conflict over scarce resources as well as climate induced displacement will also be reduced leading to enhanced prosperity, safety and stability within riverine communities and beyond.

The USAID project has two specific outcomes. **Outcome one**, “*Sustainable access to water for irrigation is restored*”. This outcome encompasses two main components: i) the necessary preliminary and baseline assessments required to ensure sustainability of the infrastructure, ii) as well as the rehabilitation of three mains pieces of infrastructure. **Outcome two**, “*Enhanced climate resilient livelihoods for populations vulnerable to climate-related shocks (flood and drought)*” the project will kickstart support to production for populations in the catchment area in close collaboration with MoAI, building on complementarity with other actions to extend this support.

Under Outcome 1, the preliminary assessments foreseen include:

- 1) **An update of the engineering feasibility study** by Mott Macdonald in 2015 to properly assess the current status of the infrastructure and inform the technical design and costing of rehabilitation works (outline of scope available in Annex 8);
- 2) **An environmental and social safeguards plan** to comply with FAO’s “do no harm” approach, also identifying opportunities for green infrastructure, nature-based solutions and providing recommendations for effective natural resource management in and around the infrastructure;
- 3) **A Durable Solutions analysis and plan** taking into account the presence of displaced populations in the vicinity of the infrastructure for whom more permanent solutions and livelihood pathways need to be developed;
- 4) Cognisant of the location of the infrastructure in an area afflicted by a multiplicity of complex clan and power dynamics, **a conflict analysis and mitigation plan** that explores in depth the presence and interest of different stakeholder groups and how to ensure equitable access to the water resource and newly irrigable land, which once restored, will be integral to project success but also to informing the local governance mechanisms to be put in place;

- 5) Likewise, a **land tenure management plan** to explore land ownership, use and access will be required to mitigate risk of elite capture and ensure resource access for vulnerable groups including minorities;
- 6) Taking into consideration the limitations of the public sector to effectively ensure operations and maintenance of the infrastructure post-rehabilitation, the project will also explore Private Public Partnership (PPP) opportunities through a **pre-feasibility PPP study** during its inception leveraging on recent experience at Federal level with the development of a national PPP framework;
- 7) Finally, informed by all the above, the project will work closely with local, State and Federal Government as well as communities and other actors to develop a **Governance Plan** for the infrastructure to further ensure its sustainable and equitable management even after the lifespan of the project.

These preliminary assessments are expected to be fully funded between USAID and FCDO contributions, expected to come online in October 2023. In addition to the assessments listed above, a Gender Analysis will also be carried out under the FCDO funded project to inform infrastructure design, implementation and resource management, access and participation.

Secondly, also under Outcome 1, three key pieces of infrastructure will be addressed:

- 1) **Sabuun Barrage rehabilitation:** This is a 35m wide barrage wall across the river at Sabuun village, incorporating seven 4m wide radial gates to regulate the upstream water level. This infrastructure will be rehabilitated in year one, after the engineering feasibility study has been completed. This activity involves three steps: (i) Removal of existing metal, installation of new gates, riveting, and installation of a new mechanical system into the existing concrete infrastructure; (ii) Rehabilitation of top deck of the barrage so that it can also be used as a bridge as it used to be, and rehabilitation of the shoulder structures around the gate; (ii) Replacement of the hydraulic gates and operating gear for the main water control structures.
- 2) **Supply Canal rehabilitation:** This is a 25m wide supply canal head regulator with five 4m wide x 1.3m high vertical lift gates controlling flow of water into a 24km long supply canal with a design capacity of 50 m<sup>3</sup>/s. This activity will be carried out in four stages: (i) reinforcement of the canal intakes and outlets; (ii) Replacement of the existing gates with new metal structures; (iii) Reinforcement of the sides of the canal; (iv) Desilting of the supply canal.
- 3) **Outlet Canal rehabilitation:** This is a 20m wide reservoir outlet regulator with four 4m x 1.8m vertical lift gates for controlling the return flows to the river, via a 25m<sup>3</sup>/s capacity outlet canal of 1.8 km long. The outlet canal rehabilitation will consist of three major components: (a) Civil works at the outlet regulator, such as dredging and bank works upstream and downstream of the structure, reinstatement of the upstream and downstream erosion protection works (earthworks and concrete block revetment), and minor concrete repairs. (ii) Gates and mechanical works including at the outlet regulator, such as 4 new vertical lift gates, replacement of all operating gear (including provision of spare parts), replacement of the stop long gantry beam and hoist equipment, and provision of a full set

of stop-logs; (iii) the outlet canal itself will require bush clearing and earthworks, with the installation of benchmarks every 1 km along the canal banks.

These outputs and activities are described in more detail below. The barrage can be started in year 1 while the Supply Canal and the Outlet Canal rehabilitation will require the completion of the other preliminaries listed above prior to commencement (see also Work Plan in Annex 4).

Under Outcome 2, the project will work closely with the lead ministry (MoAI), forming 20 Farmer Cooperatives supporting some 7,000hhs with climate smart agriculture inputs and providing training to ministry staff on CSA practices. Also under Outcome 2, the project will provide institutional capacity development support to Federal and State level ministry staff and initiate the set-up of project (and programme) governance mechanisms at Federal, State and Local level. Further support to robust, over-arching coordination structures is foreseen under complementary funding from other resource partners.

The above ToC is underpinned by the need to ensure the immediate needs of vulnerable populations are met through complementary humanitarian programming and that the production enhancement, institutional development and other complementary components of the programme are further supported by additional resources. FAO will ensure this by layering, sequencing and integrating USAID's TRANSFORM project with other ongoing and planned programming (including that of USAID's Bureau of Humanitarian Assistance and other humanitarian and development resource partners). Furthermore, FAO's programme approach (described below) ensures that other partners with relevant expertise, field presence and access to diverse funding streams, will be brought in to further support the sustainability of programme outcomes by addressing key risks inherent to the construction of large-scale infrastructure in the context of Somalia, including climate, conflict risk reduction and equitable access to resources, which are considered central to the success of the Programme as mentioned above.

### **Programme approach**

While the proposed USAID funded project is stand-alone - having its own outcomes that are independent from other projects - it is also part of a broader Programme of work developed in collaboration with the Government and other UN Partners. As previously mentioned, this broader umbrella Programme is known as JOSP or Jowhar Offstream Programme and refers to the entire infrastructure system rehabilitation (see map in Annex 1) consisting of 5 main components, as well as a series of complementary actions to be supported by other actors. The main infrastructure or hardware components of the Programme include: 1) the Sabuun Barrage; 2) Middle Shabelle Flood Risk Reduction infrastructure; 3) the Supply Canal; 4) the Jowhar Reservoir; 5) the Outlet Canal.

The USAID contribution under TRANSFORM provides a substantial tranche of funding to activities within Stream 1: Productive Infrastructure Rehabilitation. Specifically, the USAID funds will be used to complete three of these essential pieces of infrastructure: the Sabuun Barrage, the Supply Canal, and the Outlet Canal (see map in Annex 9). These three infrastructure components are expected to be fully covered by USAID funding. Commencing the infrastructure rehabilitation

and providing water access is foundational to all other Programme components. USAID TRANSFORM will also support preliminary assessments critical for informing the other Streams of work. Furthermore, USAID funds will contribute to Stream 3 “Climate smart agriculture and value chain development”, kick-starting some of the production in and around the infrastructure once it has been completed supporting the food security objective of the programme. Additional resource partner funding is required to scale production under this stream. The Programme Steering Committee (as described in the governance structure below) will be the principal fora for leveraging additional financing. However, as production will not start until the infrastructure is online, FAO is confident additional funding sources will be made available by this time. A recap of likely funding sources yet to be confirmed is below in the table. It is important to note that the USAID project is not dependent on other funding sources and can proceed regardless. A more detailed description of the scope of work to be covered within the USAID funded project is available in the workplan in Annex 4. Additional activities under the JOSP Programme are split across five other main areas of work known as ‘Streams’, outlined below and further detailed in Annex 6.

The total Programme value is estimated at USD105million, of this, FAO estimates the total cost of restoring functionality to the system (infrastructure only) is approximately USD42million, with final costs to be confirmed following the update of the 2015 Mott MacDonald Study (Feasibility study under Output 1.1 in Work Plan refers). An outline of the cost of each component is provided in Annex 6.

Table 1.

<b>Stream</b>	<b>Core Component/s</b>	<b>Partner/s</b>	<b>Focus Area</b>	<b>Probable funding source</b>
<b>1</b>	Productive Infrastructure Development	<b>FAO</b>	Rehabilitation of the Jowhar Offstream productive infrastructure system to mitigate flood, drought and provide sustainable access to water for an estimated 1.5million people as well as other related market infrastructure	USAID funding is expected to cover the Sabuun barrage, the outlet canal and the supply canal. FCDO funding is expected to cover the reservoir and the middle shabelle flood risk reduction – this funding is under discussion and will be confirmed by September 2023. The remaining infrastructure gap to be sourced from other funds is the extension of primary and secondary canals to farms. This will be confirmed once the engineering

				feasibility study is updated and other resources will be identified in a next phase.
<b>2</b>	Inclusive & Sustainable NRM	<b>FAO, UNEP</b>	Ensure all works apply ecosystem approaches for the sustainable and inclusive exploitation of the natural resource environment including the implementation of nature-based solutions & watershed management	This component is expected to be fully funded under the FCDO project.
<b>3</b>	Climate smart production & value chain development	<b>FAO, UNIDO</b>	Get people back into production in a sustainable manner that takes into account the increasing climate volatility and provide linkages to markets and business development opportunities	This component is only partially funded under USAID and requires additional resources. However, as this requires the infrastructure to be online, there is time until year 2 to mobilise additional resources. FAO and UNIDO will carry out preliminary assessments to inform the value chain development during year 1.
<b>4</b>	DSS, land tenure & Social inclusion	<b>FAO, IOM, UN Habitat</b>	Localized analysis of conflict dynamics and needs with the creation of solution pathways for displaced populations including land dispute resolution and promotion of social cohesion and stabilization in target communities	This component is only partially funded by other resource partners. UNEP and IOM have Danish funding (USD3.5million) to contribute to this and FAO and IOM have PBF funding under discussion which is expected to further contribute (USD2million). A substantial gap remains as reflected in Annex 6.
<b>5</b>	Effective & Accountable Governance	<b>All Partners</b>	Institutional capacity development at all levels (Federal, State, Local) and community support for enhanced sustainability and ownership and	The governance component is expected to be funded in very small part by USAID (due to focus on infrastructure), partially funded by FCDO and largely funded by the

			management of project outcomes & services	Somalia Joint Fund. It is anticipated that SJF funds will cover the principal costs in this respect, with possible additional funding needed to support implementation of public private partnerships or other recommendations which will emerge from the preliminary assessments.
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### **Contingency Planning**

The transformative nature of this programme implies that there are inherent risks that must be taken into consideration (see Risk Management Matrix in Annex 3). These risks are being considered and factored into Programme design from the outset, with a multiplicity of stakeholders engaged to ensure all available mitigation measures are in place. However, in the worst-case scenario, where implementation of the proposed project outcomes is not feasible, FAO has discussed a potential Plan B with USAID which would focus on the construction of mega water catchments, in areas prone to acute and chronic food insecurity as a means of supporting the objective of sustainable water access, albeit at a less transformative scale. Since the budgetary implications of such a shift would be substantial, in the eventuality that contingency plans are required FAO will consult with USAID for a revision of scope. The scope and details of this Plan B are outlined in Annex 10.

### **Proposed project design**

At impact level the Programme seeks to contribute to co-creating thriving, resilient, safe and inclusive communities along the Shabelle and beyond and is conceived as a multi-partner, multi-donor transformative initiative.

Within this broader programme framework, USAID TRANSFORM will contribute to mitigating the impact of climate hazards (flood and drought) on vulnerable populations as well as supporting the stabilization agenda in Somalia, with the overall objective of enhancing climate resilient livelihoods and food security in southern Somalia.

### **Outcome 1: Sustainable access to water for irrigation is restored**

Output: 1.1 Preliminary assessments to further inform programme design are completed

*Activities: 1.1.1 Engineering feasibility plan (update of 2015 Mott Macdonald study); 1.1.2 Environmental Social Safeguards Plan; 1.1.3 Durable Solutions Analysis & Plan; 1.1.4 Conflict*

*Mitigation Analysis & Plan; 1.1.5 Land Tenure Management Plan; 1.1.6 Public Private Partnership Pre-feasibility study; 1.1.7 JOSP Governance Plan*

For the successful completion of these preliminaries FAO intends to work in close partnership with a number of UN Agencies and government entities as outlined in Annex 7. Each Agency will work with the relevant line ministries on the design and execution of the assessments along the lines described above. These preliminaries are intended to inform the broader Programme as well as the infrastructure rehabilitation under this project. These assessments are fully funded primarily by USAID with complementary funding from ongoing EU projects and committed FCDO funding.

Output 1.2 Sabuun barrage is rehabilitated

*Activities: 1.2.1 Barrage gate replacement; 1.2.2 Supply regulator replacement; 1.2.3 Earthworks, Dredging & Erosion protection.*

These activities are expected to be fully funded by USAID. In year one of the project, remedial works are required at the barrage wall and surrounding embankments. These include:

- Dredging and bank works upstream and downstream of the barrage;
- Reinstatement of the upstream and downstream erosion protection works (earthworks and gabion walls);
- Minor concrete repairs and new hand railing on the barrage wall; and,
- New gauge boards and re-establishment of rating curve.

Barrage gates and mechanical rehabilitation works:

Final works will be determined following the updated Engineering Feasibility study (Activity 1.1.1) but it is expected that there is a need for 7 new radial gates. The gate bearings appear to all remain in place and it may be possible to fix the new gates to the existing bearings, thus avoiding the need to replace the civil to mechanical interface. This area will need to be considered in detail during the feasibility study and design phase and is expected to take place in year 1 of the project. The rehabilitation of the barrage gates is expected to include:

- Replacement of all operating gear, including provision of spare parts;
- Replacement of the stop long gantry beam and hoist equipment;
- Provision of a full set of stop-logs; and,
- 2 new penstock gates.

Output 1.3 Supply canal is rehabilitated

*Activities: 1.3.1 Canal rehabilitation; 1.3.2 canal outlet rehabilitation*

These activities are expected to be fully funded by USAID. The rehabilitation of the supply canal will take place in year 2 of the project. It involves civil works, new gates and mechanical works, bush clearance, survey, earthworks, desilting and irrigation offtakes.

#### Civil works

The following remedial works are expected to be required at the supply canal head regulator:



- Dredging and bank works upstream and downstream of the structure;
- Reinstatement of the upstream and downstream erosion protection works (earthworks and concrete block revetment);
- Minor concrete repairs; and,
- New hand railing.

### Gates and mechanical works

- 4 new vertical lift gates;
- Replacement of all operating gear, including provision of spare parts;
- Replacement of the stop long gantry beam and hoist equipment; and,
- Provision of a full set of stop-logs

### Bush Clearance:

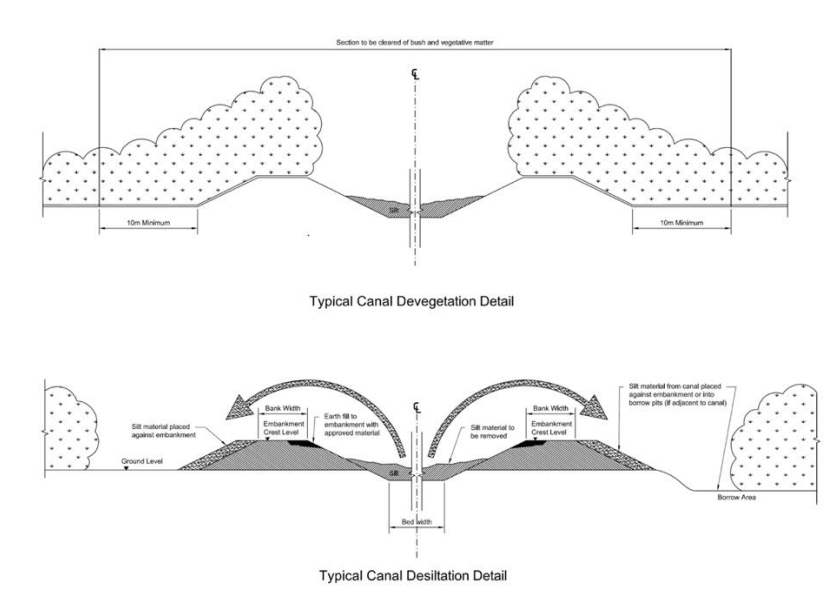
Clearing of the supply canal embankments and bed is essential to allow a proper inspection and topographical survey of the canal banks to be carried out. This activity will therefore need to be completed prior to commencement of any other works.

Bush clearing will comprise:

- Felling of all larger trees and removal of all sizeable wood for use as firewood or for sale;
- Clearing of embankments from all shrubs and minor trees and disposal from the site;
- Uprooting of all tree and shrub stumps and roots and disposal from site; and,
- Clearing of benchmark sites as indicated by the engineer.

The canal cross section should be cleared to 10m from the outside of the toe of the embankment, as shown in Figure 3:

Figure 3. Supply Canal De-silting



### Survey:

A detailed survey of the supply canal cross section is essential for the desilting and remodeling of the canal profile. Survey duties will include the following:

- Establish permanent benchmarks at 1km intervals along the canal, all along the right bank at 20m from the toe of the embankment, surveyed to the nearest mm;
- Survey of cross sections at 100m intervals;
- Set out the design cross sections at the location of each recorded cross section, using pegs or steel rods (to be done immediately before excavation commences);
- During excavation and remodeling of the canal, levels will need to be checked and set out again frequently; and,
- Once excavation is completed, as-built longitudinal and cross sections are to be surveyed and presented in a drawing album with cross sections at 100m intervals.

The presence of a sufficient number of suitably experienced survey staff is of paramount importance to the quality of the works.

### Earthworks:

The extent of earthworks in the supply canal is largely dependent on the level of accumulated sediment within the canal and the extent of damage to the existing canal embankments. It is anticipated that even after rehabilitation to the original design cross section, the canal will not be able to convey 50m<sup>3</sup>/s as was originally intended at the time of design. Nonetheless, significant flood alleviation benefits were achieved in 1981 when the capacity was approximately 40m<sup>3</sup>/s. It is unlikely, given the current condition of the canal that remodeling to achieve a higher flow capacity would add significant cost to the project, however, for the purposes of this report, only restoration to the original cross section has been considered. The earthworks within the supply canal will likely comprise the following:

- Clearing and grubbing of all sections of the embankments affected by fill or remodelling operations;
- Removal of silt from the canal and placing this on the outside slope of the canal embankments;
- Preparation of formation to receive fill material, including scarifying and control of moisture content;
- Importation of approved fill material from borrow areas for fill and compacted fill as directed by the Engineer, including control of moisture content, etc.;
- Remodel canal embankments, including fill and compacted fill, to raise embankment level and/or dimensions specified, including compaction; and,
- Final remodeling of the canal cross sections to the shape and dimensions on the design drawings.

### Irrigation Offtakes:

During and after the bush clearing activities, the location and capacity of future outlet structures for flood irrigation along the feeder canal will be identified by supervisory staff. These will be for regulated flood irrigation during the time the feeder canal normally flows. All outlet structures will be provided with a simple lifting gate on the canal side of the embankment and will have a maximum capacity of 60 L/s. A total of 15 outlet structures are envisaged, each with a maximum capacity of about 60 l/s. Where larger discharges are required, two parallel pipes may be installed.

The detailed work-plan of the supply canal rehabilitation will be developed over the year one as the results of preliminary analysis and recommendations are incorporated into the design and implementation planning. This will result in a more detailed revision of the work plan for years 2 and 3.

### Staffing:

FAO has a global roster of civil and irrigation engineers which it relies on to recruit for project leadership and technical roles. In addition, FAO already has a strong team of national staff engineers on irrigation and flood infrastructure for World Bank flood and irrigation projects in the target area. FAO also engages a recruitment firm (CTG) for field supervision engineers that have a high level field access in newly liberated areas. FAO will be able to staff the JOSP with sufficiently with technical staff at sufficient volume to deliver the program.

Output 1.4 Reservoir outlet canal is rehabilitated

*Activities: 1.4.1 Outlet Regulator rehabilitation; 1.4.2 Outlet Canal rehabilitation; 1.4.3 Outlet Canal closure structure rehabilitation; 1.4.4 Advisory services for site supervision.*

These activities are expected to be fully funded by USAID. In order to connect the reservoir back to the river and provide stored water downstream for irrigation, the outlet canal requires substantial rehabilitation. This also involves civil works, new gates and mechanical works, and bush clearing and earthworks. The reservoir when at full capacity is 200,000,000 mc<sup>3</sup> of water storage. This is sufficient to provide irrigation to the majority of irrigation command areas in Lower Shabelle. The lower shabelle has run dry during dry season multiple times in the last decade. When the reservoir was functional it provided water of irrigation over all seasons.

### Civil works

The following remedial works are required at the JOSP outlet regulator:

- Dredging and bank works upstream and downstream of the structure;
- Reinstatement of the upstream and downstream erosion protection works (earthworks and concrete block revetment); and,
- Minor concrete repairs.

### Gates and mechanical works

- 4 new vertical lift gates;

- Replacement of all operating gear, including provision of spare parts;
- Replacement of the stop long gantry beam and hoist equipment; and,
- Provision of a full set of stop-logs.

### Bush clearing and earthworks

Bush clearing and earthworks on the outlet canal are substantially the same as those of the supply canal. Generally, the embankments of the outlet canal are less overgrown and the canal bed is usually dry. This means that the preparation work required for the earthworks will be less than as for the supply canal. Once again benchmarks will need to be placed at 1km intervals. The outfall into the Shabelle is presently blocked by an embankment constructed by the local villagers to prevent flooding when the river level is high. The embankment also provides an access track across the outlet channel.

When the JOSP reservoir was previously in operation, this embankment would need to be removed every year in the dry season and temporarily replaced as river levels rise in the Gu season. This activity commands resources that would otherwise be used to maintain the system. It would seem sensible to provide a simple gated closure structure with a road bridge at the end of the outlet channel. This would be constructed behind the existing canal closure, within the canal bed, prior to excavation out to the river. Final scope will be determined following the outcomes of the updated Feasibility study (Activity 1.1.1).

### **Outcome 2: Enhanced climate resilient livelihoods for populations vulnerable to climate-related shocks (flood and drought)**

Output: 2.1 Small holder farmers are provided with climate smart inputs and extension services

*Activities: 2.1.1 Community mobilization and registration of 7000 small scale farmers and establishment of 20 farmer cooperatives; 2.1.2 Provide training to the MOAI extension staff and cooperative lead farmers on Climate Smart Agriculture practices and enhance provision extension support cooperative members; Activity 2.1.3. Support farmers with Agricultural Inputs.*

The targets listed here are specific to USAID funding. FAO is seeking funding from other resource partners to further scale these activities. FAO, with the support of the Ministry of Agriculture and Irrigation in Hirshabelle, will facilitate the establishment and registration of 20 farmer producer groups, comprising 7,000 small-scale farmers who are engaged in riverine farming along the Shabelle riverine area and around the water catchments In Johwar district. FAO will conduct community mobilization sessions, screen, and register the 7000 farmers into FAO database. The 7000 farmers will be supported to form 20 cooperatives and to nominate 10 lead farmers from each cooperative, who will play a crucial role in disseminating training and coordinating activities.

FAO will provide climate smart Agriculture training to the 12 extension staff from the MOAI Hirshabelle. The training will include context-specific topics on sustainable agricultural practices and good agricultural practices, such as intercropping, integrated production, pest management, and integrated soil management, including the use of compost manure, soil cover, and post-harvest loss management. The trained extension staff will train the 200 lead farmers from 20 Farmer

producer groups on Climate Smart Agriculture and provide extension support to the farmers in adoption of these practices.

To enhance the productive capacity of the 7000 riverine small-scale farmers, farmers will receive with agricultural inputs, which will include seeds, farm tools, and post-harvest management tools. Each farmer will receive improved varieties of maize (20 kg) and cowpea (10 kg), 240 grams of assorted vegetables, a machete, a hoe, a forked hoe, a tarpaulin sheet, and a hermetic bag for household-level storage.

Although women are active participants in the agriculture sector, they are not generally in roles that empower them as decision makers and in many cases would not inherently have control over resources allocation – such as irrigation access, how production is planned, harvested, value added and sold. Women are often regarded as auxiliary labourers to the family farms, rather than farmers or agri-business people. Key to addressing this dynamic in the JOSP program is the governance capacity building of institutions that manage irrigation and farmer producer groups and cooperatives. FAO has a track record of ensuring that irrigation management groups, producer groups and cooperatives in riverine areas provide guaranteed number of women within the group membership and within leadership roles. This approach promotes women as key participants and decision-makers in the planning of irrigation use and production, and gives them a voice at leadership level on processes and decisions. FAO will ensure such approaches are promoted when management committees are formed and trained.

Output 2.2 Capacity development support to Ministry of Agriculture & Irrigation (MoAI) at State and Federal levels

*Activities: 2.2.1 Letter of agreement with FGS and Hirshabelle State MoAI for staff capacity building, 2.2.2 “Learn by doing” implementation of irrigation infrastructure management and delivery of extension services.*

These activities are funded by USAID with potential additional funding identified to expand the scope of the activities. There are three types of governance arrangements and capacity building under the JOSP to be addressed. These include i) the development of JOSP central management organization; ii) the Jowhar Irrigation Organization; and, iii) the TRANSFORM project governance mechanism. All three mechanisms will sit under MoAI, which will require significant capacity building into order to develop and sustain these institutions.

Rehabilitation of infrastructure must be accompanied by good arrangements for management by government, private sector and community. Ensuring that infrastructure is managed sustainably can be very challenging with risks of weak institutions, disagreements over operation or water allocation, or inadequate resources for maintenance can rapidly undermine any rehabilitation. The two problems of flood alleviation and irrigation are linked but distinct issues, with different institutional challenges. Irrigation, particularly on a small scale-can be managed in a relatively straight forward way by local canal committees, by the people who benefit directly – this is the current local practice. Flood alleviation, by contrast, benefits a variable group of people at unpredictable times. The JOSP would benefit different, albeit overlapping, communities for these

two functions. The governance arrangement needs to cover these two functions, whereby flood flows are diverted into offline storage reservoirs so that peak flood flows can be limited to the river channel capacity, and the water made available for irrigation in the subsequent dry season providing a transformative solution for the two major problems. This will require two types of governance bodies, one for flood water management and the other for irrigation water management.

A JOSP Central Management Organization (CMO) will need to be created to manage the Sabuun barrage, the supply canal, the storage reservoir and the outlet canal. This institution will be responsible for flood water management and storage, and its release back into the river to ensure downstream irrigation access for direct off take canals. A second organization will need to be established or strengthened (if existing already) for the management of irrigation water from the JOSP into each primary canal command area supplied by the JOSP. The JOSR (Jowhar Offstream Reservoir) was intended to store flood water which could be released back to the Shabelle river so that water could be diverted again further downstream to enable irrigation through a large number of direct offtake primary canals from the river. These intakes are not entirely dependent on release from JOSR but benefit if releases are appropriately timed. Irrigation upstream of the JOSR also benefits indirectly as it is able to abstract a greater proportion of the river flow than it would be permitted to if the JOSR was not operational. By diverting flood water at times of high river flows, the JOSP reduces the risk of the river banks being overtopped (which damages both adjacent agricultural land and villages/towns). Much of the flood-protected land would be in the 25km reach between the Sabuun weir and the outfall from JOSR, and thus would not benefit directly from irrigation improvements beyond being connected to the supply canal and outlet canals. Downstream of the outfall they should benefit from both flood protection and improved irrigation. There should be no conflict of interest between management for flood protection and for downstream irrigation, but priorities for investment might differ between the two interest groups. There will need to be organizations responsible for operation and maintenance of all components of the JOSP as well as the Shabelle river and all the existing irrigation systems. This will include:

- A Central Management Organization for the JOSP to ensure operation during floods and release of water during the subsequent irrigation season, and for maintenance of supply canal and structures. It will also be responsible for maintenance of the river channel and embankments. The Central Management Organization is a new entity to be created made up of federal and state governments (HSS & SWS). The actual location and its constitution will be the result of government, private sector and irrigation stakeholder consultations and specialist expert input from water governance consultancy to design the institution. The formation of this institution will need to be government owned at federal and state level, but the specific details to be defined and agreed will be the result of the year one consultation and design process with stakeholders.
- An Irrigation Committee that will manage primary water committees for each command area serviced by the JOSP, including all direct offtakes as well as those taking water from JOSP supply canal and direct intakes. These organizations will need to coordinate with the JOSP management organization. These organisations will need to be led by the Ministry of Agriculture and Irrigation, with technical support and backstopping from FAO.

Each primary canal has a separate water committee and farmers group/ cooperative. There is no peak institution currently. An irrigation committee would need to be created for the management of irrigation water provided by the JOSP. The design of this group will be a result of the governance model to be created in year one.

The JOSP Central Management Organization will need to:

- Agree allocation of responsibilities with local authorities and users/representative organizations on all aspects of planning and operation;
- Mitigation and resolve potential conflicts of interest between irrigation command area institutions;
- Open the Sabuun barrage when river flows exceed a specified level, and there is storage available within JOSR;
- Coordinate with outlet representative organizations on timing of releases from JOSP reservoir;
- Coordinate with farmers/residents around the reservoir and monitor impact of storage of water land use;
- Ensure that drainage from Jowhar is not impeded when reservoir is full;
- JOSP asset management planning and budgeting;
- Maintain river banks between Sabuun and Balcad; and,
- Maintain Sabuun barrage, and supply channel and outlet canal.

The remainder of the irrigation between Sabuun and JOSR outfall, and all irrigation further downstream as far as Balcad weir is managed on an ad hoc basis via a large number of individual outlets/canals from the river, without any weir to control water level. These rely on the river water level being high enough to command the canal, and not so high that it overtops or breaches the banks. There are existing primary canal committees for most of these, which should be strengthened.

The Jowhar Irrigation Organization will need to:

- Agree on abstraction rules with JOSP organization;
- Manage irrigation within Jowhar and direct intakes command area serviced by JOSP;
- Coordinate operation with JOSR reservoir releases;
- Inform water committee users of timing of irrigation (pre-season planning); and,
- Manage irrigation release to irrigation command areas serviced by the JOSP.

The JOSP Central Management Organization and the Jowhar Irrigation Committee will not be fully implemented by the TRANSFORM project due to funding constraints. During year one of the USAID project, the Terms of Reference for the establishment of the two institutions will be developed by the project, which will be implemented by other donor funding in years 1 – 5 (FCDO and other resource partners).

During the development of these two institutions, the broader JOSP Programme will be governed by a Steering Committee that will be chaired by Federal MoAI with membership of the Federal MoEWR and MoECC, the Hirshabelle MoAI, MoEWR, MoI, MoECC, participating UN Agencies as well as contributing resource partners. The function of this committee is to provide overall strategic guidance to assessment, planning, implementation of the JOSP program across the multiple projects and sectors. This Institution will be for the 5 years of the JOSP Programme implementation with gradual hand over of responsibility to the JOSP Central Management Organisation for ongoing programme management. TRANSFORM is a project within JOSP and the governance structure of this project will be represented within the Programme Governance Committee. These governance structures are expected to be funded primarily by the Somalia Joint Fund and other resource partners, with minimal costs attributed to the USAID project (due to the focus on infrastructure in the same).

The TRANSFORM project governance mechanism will be made up of two levels, a Steering committee at federal level and a Technical Working Group at Hirshabelle level. The Steering Committee will be focused on strategic level management of the TRANSFORM project. The committee will be co-chaired by Federal MoAI and USAID, with membership by FAO, Hirshabelle MoAI and the Ministry of Energy and Water Resources. This group will meet biannually to review and endorse annual plans and at the end of each annual implementation cycle to review progress and make adjustments to the project design and modalities. This project specific group will also be mirrored by other project steering committees for other donor funded projects within the JOSP programme.

The JOSP Technical Working Group will be co-chaired by the Hirshabelle MoAI and FAO, with membership UN agencies with projects within the JOSP framework. The role of the TWG is ensure that all work on projects within the JOSP Programme (including USAID TRANSFORM) from assessment, planning and implementation is coordinated according to overall plans and the integration between infrastructure and other social and environmental project elements occurs. This group will meet quarterly throughout the project lifetime and conduct annual reviews for performance management

FAO will build the capacity of MoAI staff at Federal and State level by creating management and technical team for TRANSFORM with membership of MoAI planning and engineering staff. The ministry staff will be supported to preform key roles within the project assessment, planning, implementation and monitoring to increase the government ownership of the project of for their better understanding of the project. During the feasibility study the ministry will support the project to avoid the overlap of the other ongoing on completed projects.



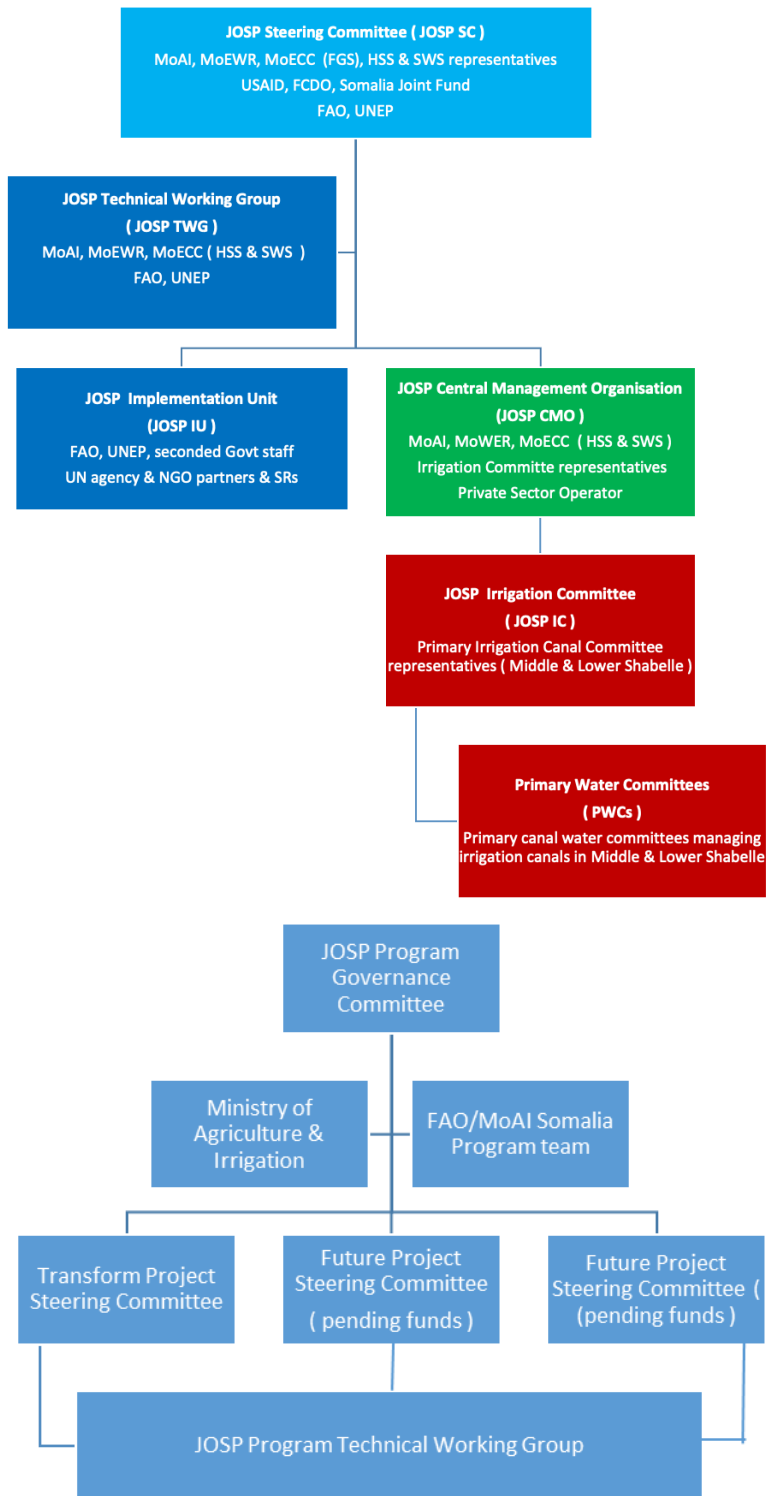


Figure 4 : Proposed JOSP programme and TRANSFORM project governance structure<sup>14</sup>

<sup>14</sup> Consultations with line ministries are ongoing and this may be subject to amendment pending the final outcomes of these consultations

### ***Project target beneficiaries***

Based on SWALIM estimates of the potential land under irrigation as a result of JOSP rehabilitation, FAO estimates 1.5million people will have restored access to irrigation, enough to cultivate over 50,000ha of arable land as a result of the restoration of functionality to the JOSP overall. This rehabilitation of the full system will require additional investment by other resource partners to complement the USAID funding.

FAO estimates that as a direct result of the USAID intervention some 7,000 smallholder farmer households will benefit from restored irrigation within a three-year period, supporting production across an estimated 14,000ha in riverine areas. Direct beneficiaries of irrigation and flood water within the area based of JOSP infrastructure as a result of USAID funding in Jowhar is 7,000 HHs. These households will receive flood protection as flood water is diverted and also irrigation water during wet and dry season. In addition, these 7,000 HH will receive one season of Climate Smart Agriculture (CSA) input and extension services to kick start scale up of agricultural production once there is more irrigation water available.

USAID's infrastructure investment has potential for much greater reach as part of the Programme Approach when combined with other funds (already committed). The catchment population across the four districts that will benefit from the fully rehabilitated infrastructure (Jowhar, Afgoye, Merka, Balcad) is estimated at 1.5million people. To reap the full benefit to this catchment population requires additional resources (full programme implementation), the Programme currently stands at 77% in terms of funding committed as of year 1, with more expected to be mobilised during the project duration. Beneficiary figures will be further verified using the land cover mapping to be carried out by SWALIM (under FCDO funding) as well as the updating of the flood model (multi-donor initiative), hence numbers may be subject to change during the inception phase.

FAO also expects that IDPs in the area will benefit from increased casual labor opportunities as a result of the additional land area under cultivation, the studies conducted by IOM will inform targets for this. Finally, FAO expects that through the restoration of the infrastructure as well as the work on community dynamics and effective water resource management, conflict risk in the area will be reduced. Given the transformative nature of the programme and multi-partner, inter-ministerial approach, it is also anticipated that the programme will be catalytic, triggering a series of spin-off actions with repercussions up to regional, even national, level. For example, stabilization programming can leverage the infrastructure to support further advances in terms of security and safety amongst local populations including road construction.

A breakdown of beneficiary estimates are available in Annex 12 below.

### **Alignment of the Action to strategic frameworks**

The proposed programme and project are fully aligned to key national framework documents. The Somalia National Development Plan (NDP9) identifies water as critical to health, food security,

nutrition as well as social and economic development. It also highlights water infrastructure repair and management as key priority areas of intervention.

The United Nations Sustainable Development Cooperation Framework (UNSDCF) aligns to the NDP and outlines the proposed contributions of UN Agencies to the same. In particular, this project will support the Social Development pillar by enhancing equitable access to resources, mitigating the impact of climate-related disasters on vulnerable people and enhancing resilience. The UNSDCF also emphasizes the criticality of UN Partnerships in achieving the objectives set out in the Framework. This programme recognizes the centrality of inter-agency and inter-actor collaboration to achieve the deliverables set out herewith.

The 27ctive27mme also contributes to all three of FAO Somalia's Country Programming Framework objectives, with a particular focus on Outcome 2: The number of people impacted by climate change, natural disasters, and environmental degradation is reduced.

The need to identify sustainable solutions to water security also emerges in key policy and strategy documents of multiple line ministries including the National Water Resource Strategy (NWRS) and the Blue Economy Strategy (BES), amongst others.

Finally, the targeted infrastructure scheme sits within the geographical focal zone outlined in USAID 5 year strategy for Somalia and the planned interventions align to USAID DO 2 "Enable marginalized Somalis to more effectively withstand shocks and stresses", but also indirectly to DO1, in terms of its potential to address conflict stemming from resource access and governance related issues.

### **Sustainability of the proposed Action**

The infrastructure proposed for rehabilitation already exists, hence the environmental impact of the rehabilitation is expected to be limited. However, partners will conduct an Environmental and Social Safeguarding (ESS) assessment during the inception phase of the USAID funded portion of the Programme. Safeguards policies are essential tools to prevent and mitigate undue harm to people and their environment in the development and humanitarian processes. In this project, ESS considerations are critical in ensuring environmental sustainability which will lead to reduced tensions and competition over resources as well as helping communities and the projects adapt and respond to the changes happening around Climate Change. Social safeguards add protection layers that can prevent adverse impacts on the lives of dozens, hundreds or even thousands of families. They also help prevent social exclusion. The ESS is needed to support green, resilient and inclusive development/Peacebuilding and Humanitarian programming by strengthening protections for people and the environment and making important suggestions and recommendations in areas such as labor, inclusion and non-discrimination, gender, climate change, biodiversity, community health and safety, and stakeholder engagement. It uses a risk-based and proportionate approach that applies increased oversight and resources to complex projects and allows for greater responsiveness to changes in project circumstances through adaptive risk

management and stakeholder engagement. It promotes integrated environmental and social risk management. In light of this, FAO proposes to work with UNEP to deliver ESS solutions as well as to support Nature Based Solutions in and around the infrastructure. UNEP will also explore the possibility, post-rehabilitation, of seeking protected status for the reservoir, which is a natural wetlands to preserve biodiversity and community ownership.

In terms of operation and maintenance, as mentioned above, it is expected that a Public Private Partnership model may prove the most appropriate for post-rehabilitation sustainability. PPPs have the potential to facilitate an expanded role for the private sector in irrigation, mobilize expertise in the sector, and ensure medium- to long- term sustainability. It is worth noting that the irrigation sector has not changed its basic developmental paradigm for over 60 years. This model relies on public funding for capital investment combined with public management and supply of water resources to farmers at highly subsidized rates. Yet the last few decades have witnessed a significant decline in investment in irrigation projects in the developing world. One reason may be that the traditional public model does not serve either governments or citizens as it was first intended to. Partners will carry out a PPP pre-feasibility assessment during the USAID-funded preliminaries, this will be led by UNIDO based on their experience developing a PPP framework at Federal level, which can be translated to this localized context.

Given that several locations within the JOSP command area have recently been recovered from al-Shabaab by the Somali government, within the broader programme partners plan to roll-out the sub-district Community Stabilization Index (COSI) to inform integrated programming designed to rebuild the social contract between communities and local authorities at village level. IOM's early recovery model harnesses rural-urban connectivity to catalyze sustainable economic networks that bridge diverse communities. Locally sustainable packages of activities facilitate greater interdependence between communities and enhance trust in local government by incentivizing the co-financing of infrastructure and the joint management of natural resources, encouraging collaboration instead of competition.

Locally led and owned sustainable solution pathways would be developed for the existing 76,990 IDPs residing in Jowhar. A comprehensive political economic analysis and risk assessment would be conducted to accurately identify potential spoilers and challenges to the programme and mitigation strategies developed accordingly. Following this the programme would work with local authorities and community to undertake community consultations, intention surveys and profiling assessments of the displaced populations and the surrounding host community to ensure that their perspectives, needs, skills and capacities are considered in the design of settlements. In parallel land tenure negotiations would ensure that the existing sites are protected from forced evictions and that the land allocated for cultivation is subject to a thorough due diligence process and documentation secured. It is critical that this programme is aligned to a wider urban development plan and vision for Jowhar area which will be developed with UNEP and UN Habitat expertise. It

is anticipated that the first year of the programme would be invested in ensuring these assessments are completed and inform the implementation of Year 2 and 3. Year 2 would focus on relocation and reintegration of the identified communities into the new settlements and Year 3 would transition these households into self-reliance through established livelihoods in cultivation of sugar estates.

While the assessments to be carried out by IOM, UNEP, UNIDO and UN Habitat fall within the scope of the USAID-funded project, the implementation of the Durable Solutions Plan, Conflict Mitigation Analysis & Plan and Land Tenure Management Plan and Environmental and Social Safeguarding Plans will require funding from other resource partners. The Agencies are in advanced negotiations with at least two other resource partners for this and the remaining interventions, although it is anticipated that some gaps will require further funding.

### **Management arrangements**

In the initial period following rehabilitation, a central management organization is proposed for the JOSP, to ensure operation during floods and release of water during the subsequent irrigation season, and for maintenance of all canals and structures. It will also be responsible for maintenance of the river channel and banks and to maintain drainage. The central management organization will coordinate with the existing canal committees who will agree abstraction rules for the JOSP, coordinate canal operation with releases from the JOSP, inform users of timing of irrigation and to manage irrigation within individual command areas.

Governance capacity building for the JOSP will begin in year 1 of the TRANSFORM project and other complimentary projects funded by other donors. The first year will focus on scoping the governance system for the JOSP Central Management Organisation with irrigation and governance consultancy working closely with Federal and Hirshabelle and South West State governments. This will focus on MoAI, MoEWR & MoECC as key line ministries for water management for flood, irrigation and environmental resources. The outcome of this scoping process will be a JOSP governance design with clear roles, responsibility and systems for JOSP management and maintenance of the infrastructure to ensure flood water harvesting and storage, for later use for irrigation and environmental benefits for Middle and Lower Shabelle regions. In year 2 the focus of the governance capacity building will move to establishment of the JOSP Central Management Organisation with the Federal and State governments. This will include the selection and capacity building of focal points for each stakeholder group, as well as the selection of private sector operator for the infrastructure management, maintenance and cost recovery for these services. In year three, once key infrastructure is operational, the governance emphasis will move to piloting the infrastructure operations, maintenance and cover recovery with irrigation users. This will result in multiple cycles of seasonal flood harvesting, storage and release to river and irrigation command areas for users. The detail of this multi-year governance building process will be need to be co-created with government, irrigation users with the support of specialist technical consultants with strong background in water governance at this regional scale

In the longer term, an authority needs to be set up to allocate water and regulate abstractions, but the immediate priority is to manage the existing infrastructure. It is significant that much of the work recommended for the JOSP and the wider river infrastructure relates to maintenance that has been previously deferred. If investment into the infrastructure is to result in sustained benefits then it is vital that future operation and maintenance is properly carried out and managed. Funding maintenance activities present a particular challenge, as the beneficiaries of the JOSP scheme are highly dispersed, with a proportion of the stored irrigation water benefiting those in Middle and Lower Shabelle. The flood relief benefits offered by the scheme will be enjoyed by a large number of people but may not be directly associated with operation of the scheme. Obtaining sufficient maintenance revenue from the water beneficiaries must be the long-term target, however this seems a distant prospect and it is likely that the only way to sustain the level of maintenance required, at least in the initial years of operation will be to directly fund the required work. Longer term, when revenue generation is sufficient and JOSP governance has been strengthened, it may be possible to move towards a more sustainable revenue model through a Private Public Partnership approach. When it was constructed in 1980, the JOSP was a vital element in the long-term water management of the Shabelle river basin. Rehabilitation of the scheme has the potential to bring significant flood and irrigation improvements to the region and to act as a focus for wider transformation in the regeneration of riverine agriculture. Building such an authority is a prerequisite for the long-term success of the program and is dependent on a large number of factors, not least continued political stability and security in the program region.

FAO has strong collaboration with both federal and state level authorities to encourage and sustain active involvement of government institutions. FAO will continue to build the capacity of government offices and institutions on policy strengthening and skill building to be able to manage food systems sustainably. In the context of the JOSP programme FAO will work hand-in-hand with the Ministry of Agriculture and Irrigation as lead ministry in a coordination role as well as supporting infrastructure development and technical expertise at Federal, State and local levels.

This investment in government capacity and leadership is fundamental to sustain and build on results beyond the life of this project. FAO shall work closely with government institutions to increase the capacity of government to put in place regulations, and to produce, disseminate and share high-quality information as well as to deliver market-oriented extension services. FAO will support the development of an area-based production plan and will lead seasonal food security and market gap analysis.

Complementary to this project with other partner resources, FAO will support the government at Federal level to develop a water monitoring system, a Somalia Irrigation Strategy and Irrigation Master plan, and a comprehensive agriculture production system, and to chair the Project Steering Committee. It establishes key information platforms such as water management, community governance and flood monitoring systems that will serve as foundations to reduce disaster or food

crisis risks in the future. The government at Federal and State level provide services to farmers and water management committees including training of water management committees. The government at State Level will monitor the progress and quality of works achieved by community, contractors and local partners; support water management committees in canal maintenance and planning water provision to farmers in the irrigation command area. In summary the government at Federal and State level have an overarching coordination function, facilitating and coordinating project activities. Among other roles, the Government at state level will be involve in beneficiary selection and community mobilization, training.

### **Monitoring and evaluation Approach**

FAO's Monitoring, Evaluation and Learning (MEL) Unit will work closely with project implementation teams, and partners to conduct all Monitoring and evaluation (M&E) activities for the project with an aim of measuring the achievements under each outcome. In carrying out the M&E activities, to measure the impact and outcomes on a short-term and long-term basis, FAO proposes to employ a three-pronged approach, that is, secondary data review, quantitative (household interviews) and qualitative methods (Focus Group Discussions- FGDs and Key Informant Interviews).

FAO proposes the use of a lighter version of the Resilience Index Measurement and Analysis<sup>15</sup> (RIMA) quantitative approach as the main MEL approach plus additional modules of the project's interest. This methodology systematically explores the relationship between a core set of context-specific variables of resilience to construct the resilience capacity index (RCI) based on the four pillars of resilience (assets, social safety nets, adaptive capacity and access to basic services). The approach will utilize the short RIMA tool and will incorporate other modules of interest to assess the impact of the intervention. The RIMA methodology will assist in assessing the impact of the project on household's resilience, testing the theory of change and assessing main outcome indicators of the project. Moreover, RCI provides useful reference information for supporting targeting decisions, identifying the specific weaknesses (or negative coping mechanisms) that increase vulnerability and the contribution of each pillar to household resilience resilience capacity. In addition, key food security indicators including Food Insecurity Experience Scale (FIES), Food Consumption Score (FCS) and Reduced Coping Strategy Index (rCSI) will be measured.

MEL activities will include the following: i) A baseline study will be conducted during the inception phase of the project to determine baseline values for target indicators in the Results Framework; ii) Routine process monitoring and post distribution monitoring will be conducted by the MEL unit to review the status and completeness of the infrastructures. Process monitoring will be important in analyzing progress towards achievement of project outcomes and will be a critical juncture at which adaptive programming will be done; iii) Crop field yield assessments to estimate yields for selected crops and ; iv) An end line impact assessment will be conducted after the

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<sup>15</sup> FAO.2016. RIMA II: Analysing resilience for better targeting and action. <https://www.fao.org/3/cb2348en/CB2348EN.pdf>

completion of the project activities. It will seek to measure progress and success against target outcome indicators set during the baseline, as well as draw lessons and recommendations from the project. All the studies will include a gender lens that will be critical in informing on appropriateness of modalities employed.

A detailed project monitoring and evaluation framework will be prepared at the inception phase, including proxy indicators that will be useful in monitoring the effectiveness and efficiency of processes and implementation approaches used. Besides the monitoring activities mentioned above, the project team shall regularly monitor the delivery of the project using project management tools. These will enable them to collect real-time information, identify positive and negative unintended outcomes of the project, information that will be useful to inform the review of project delivery approaches for adaptive programming.

Learning will be informed by the different M&E studies and processes conducted during the project life. Three learning loops using Collaborate, Learning, and Adaptation (CLA) process will be used to refine the design and implementation modalities. The first learning loop will occur with baseline results, with a revision the Log frame where necessary, adaptation of approaches, and revision of the work-plan. The second learning loop will be monitoring and review to support programming refinement. This activity will allow the information generated and key learning to be shared and internalized by stakeholders at various levels. The third learning loop results from endline assessment that will provide learning on successful strategies (what works, what doesn't work), projects' relevance and sustainability for future resilience/ development programming. The endline results will be a result of stakeholder consultation forums held to present findings, validate the conclusions and make sense of these results.

The studies' data collection will employ a mixed approach where FAO Field Analysts and third-party monitoring will be used. The use of the third-party monitors enables access to all project areas, especially where security challenges may restrict FAO access.

In addition to the above-mentioned project specific monitoring and evaluation, under the JOSP Programme, FAO's SWALIM will support monitoring of impact and outcome level indicators with interventions such as: i) **The creation of a detailed baseline for the JOSP area of influence** (Middle and Lower Shabelle). This activity will be crucial to be able to measure the impact, in an objective way, of the improved water availability and water management in the food system. This baseline will include a detailed land cover mapping using very high-resolution images to ascertain number of plants per square unit and quantify the increased food production; ii) **Improved water resource monitoring**. As of now there is only one river gauge in Jowhar. In order to be able to measure the amount of water abstracted by the JOSP area, the amount of water flowing in the river upstream, and downstream of the JOSP must be measured. FAO proposes to install two new river gauges (one upstream in Mahadday Weyne, and one downstream in Balcad), and to have gauge readers in both locations. In addition, the volumes of water in the main canal and in the most important primary canals must be measured. The canal water monitoring will also



serve to eventually inform the design of a fee structure for the water users. Furthermore, SWALIM will monitor by means of automated remote sensing analysis, the amount of water in the reservoir and the status of vegetation in the command area; and iii) **Crop monitoring** for regular monitoring of crops and infrastructure stability and maintenance needs. Drones will be equipped with both a LiDAR sensor and a camera. The combination of the two sensors is the best for monitoring crop growth (sensing the height of the plants and therefore their vegetative status) and for monitoring infrastructure by means of both elevation dataset (provided by LiDAR) and images (provided by the camera). This activity can only be implemented with a strong component of capacity building of the local authorities and local communities. Institutional capacity building will be attached to all these activities. These programme level monitoring activities require additional resources from other resource partners.

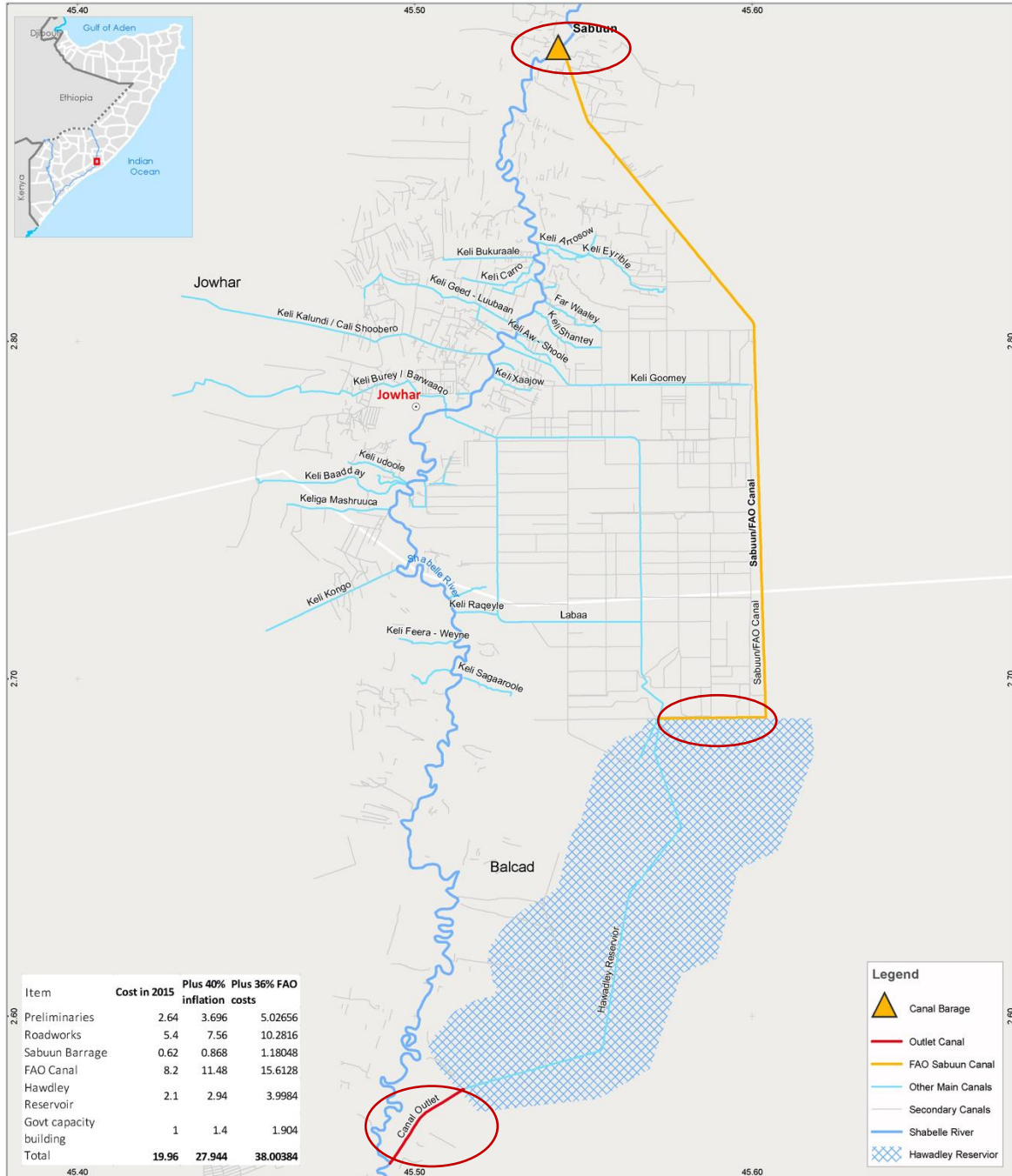
### Proposed budget summary:

Budget Item	Budget in USD
Personnel Costs	3,542,118
Contracts	15,746,877
Travel	403,284
Training	124,584
Equipment and Supplies	1,333,396
Technical Support Services	211,494
General Operating Expenses	1,771,401
Sub-total	23,133,154
Project Support Costs	<b>1,619,321</b>
1% Levy <sup>16</sup>	<b>24,752,475</b>
Grand Total	<b>247,525</b>

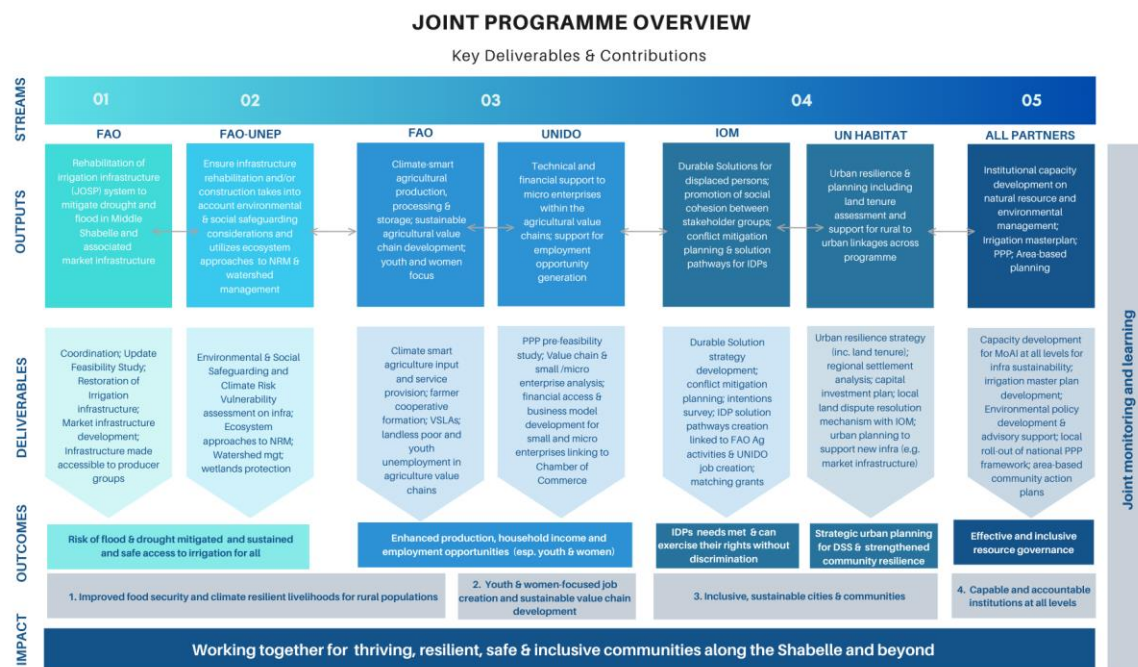
### Annex 1 – Map of the JOSP Command Area

<sup>16</sup> In May 2018, as part of the larger reform package on the United Nations development system (UNDS), UN member states introduced a 1% levy on tightly earmarked financial contributions for development-related activities.

The TRANSFORM project targets the three main pieces of infrastructure circled in red below: 1) the Sabuun Barrage; 2) the Supply Canal; 3) the Outlet Canal. FAO is in discussion with other resources partners to fund the remaining gaps.



## Annex 2. Overview of Jowhar Offstream Programme to which TRANSFORM contributes



Additional programme documents are available on request.

## Annex 3 – Risk Management Matrix

Description of Risk	Likelihood	Impact	Mitigation Measure
<b>Environmental</b>			
Environmental damage as a result of infrastructure rehabilitation	Medium	High	Comprehensive ESS assessment to be carried out in collaboration with UNEP as well as potential implementation of NBS in and around infrastructure (with other partner resources)
Exceptional floods hit the construction site	Medium	High	An emergency plan is properly designed and implemented rigorously and an adequate EWS is provided by SWALIM and local communities upstream of the site. The existing flood model and the historical record of flood extent will inform the emergency plan and flood monitoring will continue throughout the project duration.
<b>Socio-cultural</b>			

Risk of new/increased conflict over water resources and/or exclusion of minority groups	Low	High	Location specific conflict and clan dynamic analysis as well as specific attention to displaced populations and other vulnerable groups will be integral part of project design and implementation; putting in place effective water mgt structures and regulation at local level
Land Tenure disputes	Medium	High	Adequate prior assessment of rehab sites through a Land Tenure study and adequate community engagement (elders, authorities etc.) prior to commencement of works will be crucial to mitigating the risk of land related disputes
Inequitable access	Medium	Medium	Community mgt committees to be established; monitoring by govt authorities and/or third party particularly for access for minority groups; community feedback and complaint mechanisms established (hotline, spot checks etc.), possible PPP set-up
Sexual and Gender-Based Violence or protection risks around infrastructure	Low	Medium	Affirmative gender action built into programme design; infrastructure and site design take into account specific needs of different groups and risk of SGBV
Community acceptance	Low	Medium-High	FAO will work closely with communities from the outset to ensure they are fully aware of the project objectives and actively engaged in its outcomes. In particular, attention will be paid to women and youth engagement through dedicated peace-building mechanisms at programme level (funded by other resources partners), minority groups (especially as concerns land access and use), IDPs (as highlighted below). FAO's experience in similar projects has shown that community engagement is a critical step before any infrastructure work is initiated to avoid conflict and/or delays in timelines. Furthermore, at programme level the comprehensive preliminary assessments will explore community dynamics and ensure these are fully taken into account in project design and implementation.
<b>Financial</b>			

Additional financing not identified	Medium	High	FAO and partners are already lobbying other resource partners and gaining traction on the concept with the support of USAID and have a reasonable level of confidence additional funding can be obtained to complete the programme; FAO is proposing a modular approach that will the infrastructure rehabilitated with USAID funds is functional by end of project even without other investments
<b>Technical</b>			
Inadequate quality of material	Low	Medium	Adequate standards in procurement (details tech specs)
Maintenance & operational capacity and supply of spare parts	Low	Medium	Community/service provider capacity development on O&M (ideally built into PPP or similar management agreements)
Delays in the execution of the engineering works dragging into the rainy season	Medium-low	Medium	Workplan will take into account potential delays due to delays in supply chain or other socio-environmental factors. The engineering works will be implemented in small blocks so that if a delay occurs it will not impact on the overall structures. Strict field supervision will be put in place too with daily plans of work.
Inadequate capacity of the constructor	Medium-Low	Medium-High	A very strict procurement and contractual process will be put in place to guarantee that the contractors will execute the works according to the plans and that they will have an adequate communication plan in case of deviations from the timeline. Adequate external M&E will be in place with very frequent checks.
<b>Other</b>			
Deterioration of the security environment and/or change in access to project sites	Medium	High	FAO will monitor closely any developments in the security situation at the project locations as well as at national level that can impact project outcomes and/or access to sites for contractors and project staff. In the event of a substantial deterioration of the security and operating environment (including in the eventuality of an ATMIS draw down in the area), FAO

		<p>will work closely with USAID as well as UNDSS/UNSOM and relevant fora at national level including government to identify solutions and assess the impact on project objectives. The project team will liaise also via UNSOM with key stakeholders such as the Somali National Army, local security forces, and local government. Should security and access result in extensive delays or extended inoperability the project team will consider reprogramming in consultation with USAID.</p>
<p>Lack of adequate governance provisions lead to poor operations and maintenance and infrastructure disrepair/loss of investment</p>	<p>Medium</p>	<p>High</p> <p>The JOSP central management organisation ( CMO ) will be established following a rigorous stakeholder engagement process at federal and state level with government and user groups. This will be undertaken by an experienced water governance consultant with the MoEWR and MoAI over year one. This group will have clear constitution and bylaws established with government chairpersonship as reflected in the project governance structure in the narrative. The JOSP CMO will have capacity building from years 2 – 5 of the project to ensure it has the management and technical staff required to ensure ongoing operation and maintenance of the infrastructure. The JOSP CMO will engage a private sector operator to ensure the day-to-day operations and seasonal maintenance of the infrastructure. The project will provide capacity building to this service provider to ensure they can deliver services to quality standards. The service provider will be responsible for collecting fees for water access from irrigation users. This will be from the peak irrigation user group that represents the command areas serviced by the JOSP. This cost recovery for irrigation water access will be used by the JOSP CMO to ensure that ongoing maintenance of the infrastructure.</p>

Inadequate provision for Durable Solutions for IDPs at risk of displacement	Low	Medium-high	IOM has been engaged to undertake an assessment and develop durable solutions plan for IDP communities within and around the reservoir area, as part of the TRANSFORM project. IOM has also secured funding from government of Denmark to provide durable solutions for these communities in locations at risk of displacement.
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See also Annex 11 below on construction risk management.

#### **Annex 4 – Workplan**

See Excel table in Annex (sheet 1 “USAID Workplan”).

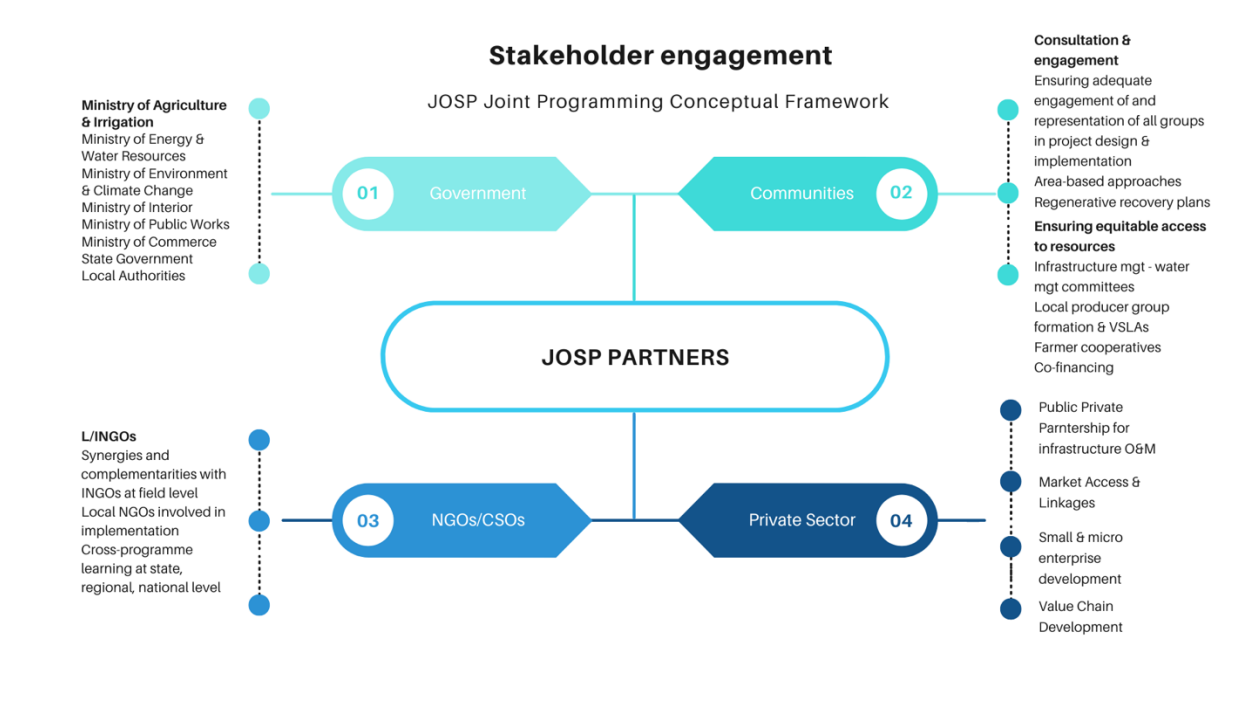
#### **Annex 5 – Project Results Framework**

See Excel in Annex (sheet 2 “Results Framework”)

#### **Annex 6 – Summary of Programme Scope**

See Excel in Annex (sheet 3 “Programme Scope”)

## Annex 7 – Mapping of Programme Stakeholders



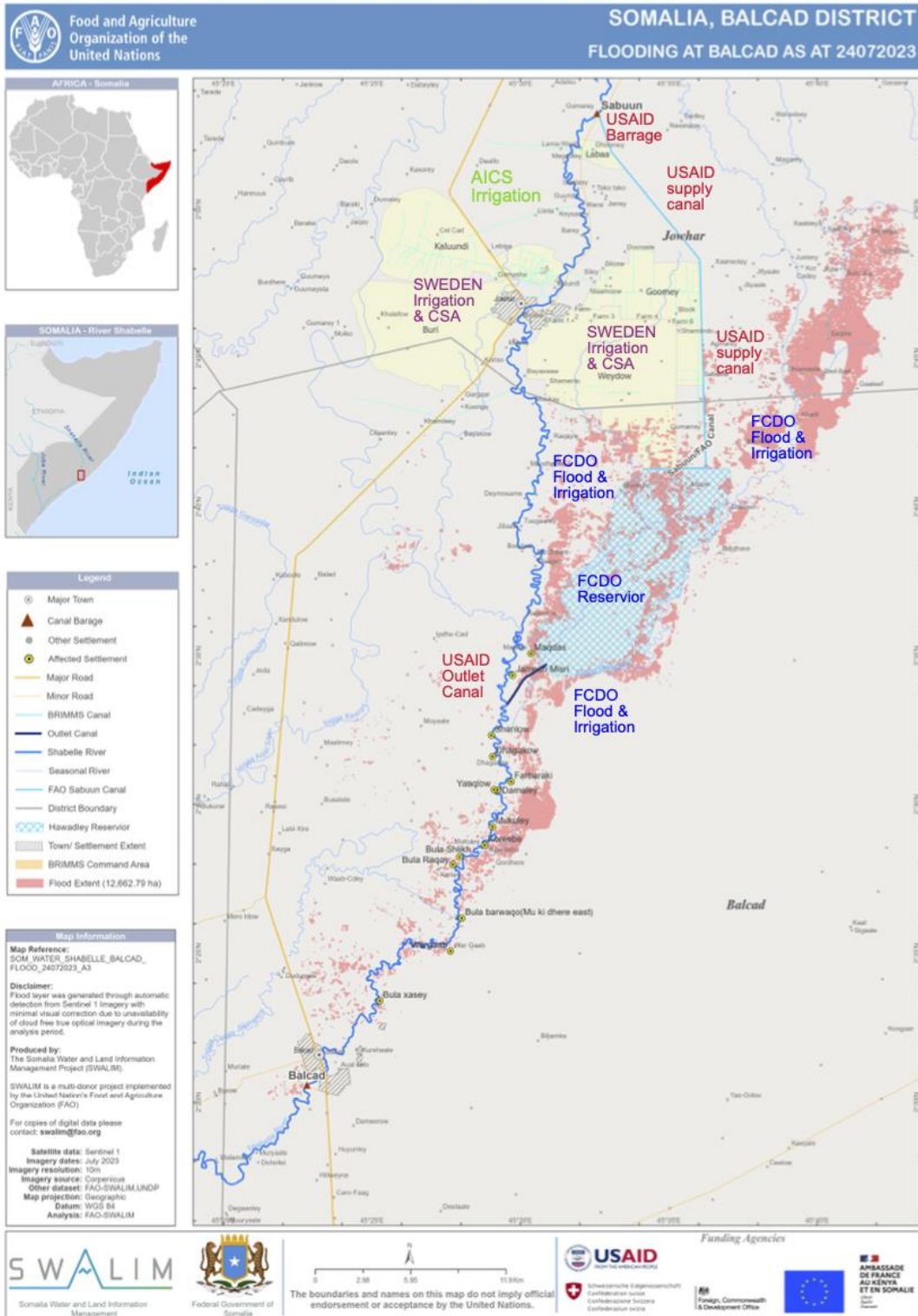
## Annex 8 – Scope of ToR for Engineering Feasibility Study update

- 1) Full update of the 2015 Feasibility report for the ‘Irrigation Water Management in the Middle Shabelle Region’, including: Field verification of the structural and operational status of the infrastructure and water uses; field verification of the reservoir status; field verification of the outlet canal;
- 2) Full costing updates for the rehabilitation of the whole system, following in the lines of the 2015 Feasibility report;
- 3) Engineering design drawings and boq for the rehabilitation;
- 4) Recommendation of the engineering standards to be followed for the rehabilitation;
- 5) Production of Reports at inception, mid term and final after 5 weeks from inception;
- 6) Delivery of report, digital drawings in AutoCad, field photos, and field GPS points with annotations; and,
- 7) Delivery of updated costing for the rehabilitation.

ToR for other preliminary assessments can be provided upon request.



# Annex 9: Map of multi-donor programme (completed and planned)



## **Annex 10 Summary of Plan B ‘Mega water catchments in South West State’**

As outlined in the Contingency Plan section of the document, in the event that the planned transformative interventions are not possible, for example due to a severe deterioration in the security situation or other impediments, FAO has discussed with USAID a possible Plan B. This entails the construction of a series of mega water catchments in chronically food insecure locations in southern Somalia. FAO wishes to highlight that while this Plan B would support to overall objective of sustainably improving food security, it will be at a much less transformative scale than the initially proposed interventions with only localized and medium-term improvements in water access and food security expected.

Somalia has experienced 26 annual drought and flood events in the last 18 years. “Normal rains” can no longer be relied upon. There is a need to harvest excess water when it is available, to store it for times of drought. Lack of effective water infrastructure, harvesting and environmental management render already vulnerable populations even more susceptible to the impact of climate change. A concerted effort is needed to address the acute multifaceted water challenges in agro-pastoral and pastoral areas of Somalia. These range from flash flood and drought mitigation, to lack of water for productive use and human consumption – with implications across the Food Security, Nutrition, WASH, Health and Environment sectors. In response to this context, FAO will leverage its work with Government, NGO and UN partners to build more effective water infrastructure and management systems in areas affected by prolonged drought. FAO will rehabilitate large strategic water catchments in areas of the Bay region, where water access is a big recurrent issue, including those frequently targeted for water trucking during the 2021 - 22 drought. The catchments have been in place since the 1980s and are large in size for drought resilience. However, these have not been maintained for decades. The proposed project will rehabilitate the catchments with excavation, embankment reinforcement and enhancements for multi-purpose and all year use. These catchments will be made to last with new technology to line their base, and designed drawing from FAO global standards in rural water harvesting. In addition, the surrounding watershed, from which water is harvested, will be analysed for a improvement in water harvesting capacity and reduced erosion. The resulting analysis will result in a plan to be implemented with community for earthworks and Nature based solution to increase water capture, reduce soil erosion and increase forest and pasture production within the watershed of the catchments. All aspects of the catchment relating to human consumption will be handled in full coordination with the WASH Cluster (using protocols developed by UNICEF and MoEWR). Site selection will take into account recent water and land resource mapping and community action plans. All catchments will be in areas with ongoing livelihood programmes to maximize their impact by FAO. Target areas will be 15 sites in the Bay region of South West State.

Beneficiaries: 6,750 HH direct (500 HH per catchment)

1. Outcome: Expedite recovery and build back better from 2021-22 drought in rural Bay region of Somalia by ensuing future drought impacts are mitigated.

1. Outputs: The rehabilitation of 15 multi-use strategic water catchments and surrounding watershed in Bay region of SWS including:

- 15 water catchments identified and watershed analysis and planning
- 15 water catchments and watershed rehabilitated including Nature Based Solutions
- Mobilized communities using the 15 water catchments into committees for management and maintenance of infrastructure and watershed.
- Training 15 water catchments committees to easily manage the water catchments
- Capacity building of MoEWR in supervision of water committees
- 15 market gardens providing village level food security in 15 villages for 1500 HH ( 100 HH per village)
- Water for 75,000 head of livestock in dry seasons

Outcome Indicators:

- Percentage target communities with water access for human and livestock use in dry season
- Percentage of HH's per village with water access in dry season
- Percentage of communities with water committees managing and maintaining water catchment
- Number of water catchments rehabilitated and active
- Kgs of vegetables per season harvested
- HH diet FCS & Diet Diversity Score
- HH income increase

Output Indicators:

- Number of target sites with complete site assessments
- Number of complete water catchment with multi-use infrastructure
- Number of construction progress milestones achieved to BoQ and drawings
- Number of target sites handed over to community management
- Number of female members of community water committees.
- Number of market gardens functioning all year
- Number of HHs with diversified livelihood sources
- Number of livestock with all season water access

The overall project budget would remain the same at USD25million.

## **Annex 11: Management of Construction Risk for infrastructure in TRANSFORM**

FAO will take the follow 3 phase process to address risk management around the JOSP infrastructure rehabilitation:

- 1. Identify construction activities:** The critical infrastructure activities in the TRANSFORM project are the Sabuun barrage wall, the JOSP supply canal and the outlet canal. These sites were previously designed and constructed as part of the JOSP water management system. FAO will work closely with engineering firm Mott Macdonald, who were the consulting firm that first designed the JOSP infrastructure to update a 2015 feasibility study of the rehabilitation of these 3 key infrastructures. FAO will provide USAID with the finding of the revised feasibility study to ensure that proposed rehabilitation of these sites aligns with USAID's A&A Plan System, that estimated costs are within budget allocation and to ensure that the appropriate for the contracting instruments for compliance to USAID infrastructure guidelines are observed.
- 2. Assess construction risk:** Each site will be assessed using a risk screening tool for environmental and social safeguards. This will result in risks being identified for specific treatment measures. Appropriate mitigation measures will be incorporate into the engineering design and implementation modalities to reduce the risk of harm. In addition, the flood modelling will identify possible negative impacts of the infrastructure rehabilitation and propose design modifications to treat the risk of these impacts.
- 3. Mitigate and monitor risk:** FAO will monitor construction risk treatment measures as part of the monitoring of the performance of contractor activities. The reporting on risk management activities will be included in project reporting to USAID. New risk levels that occur due to contextual changes will be captured in reporting and proposed risk-screening mitigation measures throughout the implementation period of an activity to reduce risk and improve the performance of infrastructure rehabilitation activities.

FAO's approach to implement infrastructure activities in JOSP (and TRANSFORM) is to minimize construction, environmental and social risks through rigorous assessment, planning and allocation technical staff to ensure high quality design and oversight. These aspects will be closely examined within the scope of the preliminary assessments described above but nonetheless include these key processes:

- 1. Engineering feasibility studies:** to analyse the feasibility of proposed rehabilitation of infrastructure to inform costing, design, maintenance and governance of the infrastructure. This will include looking at alternative options and cost benefits of the infrastructure rehabilitation, how the infrastructure will mitigate projected climate change risks over time;
- 2. Land rights/use assessments:** How land rights where the infrastructure been established as either government owned or communal land, with no disputes on the land ownership.

In the event of dispute and occupation of the land, a government lead and community agreed solution will be identified before rehabilitation proceeds;

3. **Protection risk and conflict mitigation:** the project will assess and mitigate social risks such as gender violence and inter-clan conflict and the viability of the community feedback mechanism as part of a robust risk management and monitoring process;
4. **Local stakeholder engagement:** FAO will assess how to involve local level contractors in rehabilitation activities in order to increase community acceptance of the works and strengthen capacity of local contractor to later play a role in maintenance activities within the governance structure of the JOSP CMO. FAO has experience successfully implementing this approach in some of the examples provided below in Annex 14.
5. **International Building Codes:** for water infrastructure according to international standards can be adhered to within the JOSP infrastructure;
6. **Environmental and Social risks:** are identified and proposed safeguards treatment methods defined;
7. **Technical capacity:** qualified engineers with high levels of experience in irrigation and civil engineer projects are sourced to be part of the core team. This will include international and national staff members. Consulting engineering specialists will provide should prepare, review and certify the engineering design (defining construction requirements, producing the drawings and technical specifications, and preparing the cost-estimate for the construction) to ensure their quality, accuracy and completeness prior to the procurement of construction services.
8. **Operations and maintenance considerations:** are included in planning from the outset. At the completion of the detailed design phase in the first year, financial and human resources will be allocated for the operations and maintenance of the rehabilitated infrastructure and related services. This will include training, management contract, third-party monitoring and capacity building of government, community and commercial stakeholders to maintain the JOSP infrastructure.
9. **Construction management:** FAO will conduct a design, bid and delivery approach to executing construction activities, in alignment FAO procurement regulations. This will be supported consulting engineering firm at design and completion phases, with FAO engineers providing the works of bid evaluation, tender award, supervision and quality assurance at milestone and final completion.
10. **Quality assurance:** contractors working on the JOSP infrastructure rehabilitation will meet minimum capacity, qualification and experience for the type and scale of works for JOSP rehabilitation lots.
11. **Costs:** FAO will provide fixed price contracts for construction contracts in order to provide control over costs of the rehabilitation works and reduce risk for over-expenditure. Cost estimates will be first be established with feasibility study, and followed by site assessment and design with detailed Bill of Quantities
12. **Defect liability:** FAO will award contracts that include performance bonds, guarantees, warranty requirements, liquidated damages to ensure contract completion. Contracts will include warranty for defects liability to guarantee the performance of infrastructure.

## **FAO Construction Management Process**

FAO has an infrastructure Unit staffed with qualified international and national engineers. They are supported by East Africa regional Lead Technical Officer for review of assessment, design, tender documentation. In the case of TRANSFORM project, these technical resources will work with consulting engineering firm to first undertake update of the feasibility study, and then design rehabilitation works. These works will then be tendered in lots to match the capacity of contractors within Somalia, and internationally in the case that technical expertise is insufficient within Somalia. The tenders will be first be technical evaluated by FAO using criteria established in the design and tender documents with the consulting engineering firm. This will be followed by commercial evaluation by the FAO procurement team. Upon award of the contract, winning contractors will be required to provide performance bonds for contracts over specified value to mitigate risks. Contractors will be supervised at site by FAO engineer, who will be accompanied by MoAI engineer. This is to support capacity building of the MoAI staff in overall management and maintenance of the infrastructure upon completion. Key milestones within the contract will recorded and checked by consulting engineering firm for QA purposes before payment for that milestone. Upon completion of the contract, the final inspection by FAO, MoAI engineers will take place, and the a final review by the consulting engineering firm for quality assurance. A defects liability period of one year will be applied for all contractor works, during which time they contractor must return to site to fix any defects that are reported by supervising engineers. Once the defects liability process is completed, the balance of performance guarantee funds will be returned to contractor and handover will occur. A handover of the completed works from FAO to the MoAI will then occur with the government taking ownership of the rehabilitated infrastructure. The ongoing management and maintenance of the infrastructure will be the responsibility of the JOSP Central Management Organization (CMO). The CMO will be defined through rigorous consultation process with government, user groups and commercial sector actors by a water governance consulting partner, working closely with FAO, MoAI and the MoEWR. This will result formation of new institution in year 2 that will assume the responsibility for the water management and infrastructure management of the JOSP. The CMO will be chaired by government (MoAI & MoEWR) and with user group membership from irrigation committee. The CMO will engage a private sector actor to provide services of infrastructure operations and maintenance to ensure flood water harvesting and irrigation access. The JOSP program, funded by multiple donors, will cover the capacity building activities to develop this institution over a 5-year period to ensure sustainable management and maintenance of the JOSP.

## Annex 12: Detailed breakdown of beneficiary estimates

The below estimates are based on current available data from FSNAU and SWALIM and are expected to change once detailed baseline data has been collected during the inception phase of the project/programme. Project specific estimates (USAID column below) are notional, based on geographical coverage of the USAID-related infrastructure, USAID's contribution should be considered as an integral part of the JOSP programme-level targets.

### A) Irrigation

<b>Irrigation</b>	<b>Total District Population (no. of pp)</b>	<b>Riverine Gravity Irrigation (no. of pp)</b>	<b>% supported by JOSP</b>	<b>% USAID</b>
<i>Afgoye</i>	505,587	64,957	100%	32,479
<i>Jowhar</i>	391,961	97,281	100%	48,641
<i>Balcad</i>	358,453	50,691	100%	25,346
<i>Merka</i>	264,679	90,665	100%	45,333
<i>Qooroley</i>	135,558	65,293	100%	32,647
<b>TOTAL</b>	<b>1,656,238</b>	<b>368,887</b>		<b>184,444</b>

### B) Flood Protection

<b>Flood relief</b>	<b>Total District Population (no. of pp)</b>	<b>Riverine (rural)</b>	<b>Agropas total (rural)</b>	<b>Pastoral (rural)</b>	<b>Urban</b>	<b>IDP (rural &amp; urban)</b>	<b>% JOSP</b>	<b>% USAID</b>
<i>Afgoye</i>	505,587	64,957	238,175	6,186	166,965	29,574	505,857	252,929
<i>Jowhar</i>	391,961	97,281	138,625	7,296	71,799	76,960	391,961	195,981
<i>Balcad</i>	358,453	50,691	152,072	50,691	83,999	21,000	358,453	179,227
<i>Merka</i>	264,679	90,665	16,838	2,589	117,633	36,954	110,092	55,046
<i>Qooroley</i>	135,558	65,293	13,978	9,479	46,808	0	135,558	67,779
<b>TOTAL</b>	<b>1,656,238</b>	<b>368,887</b>	<b>559,688</b>	<b>76,241</b>	<b>487,204</b>	<b>164,488</b>	<b>1,501,921</b>	<b>750,961</b>

C) Drought mitigation

<b>Drought relief</b>	<b>Total District Population (no. of pp)</b>	<b>Riverine (rural)</b>	<b>Agropastoral (rural)</b>	<b>Pastoral (rural)</b>	<b>Urban</b>	<b>IDP (rural &amp; urban)</b>	<b>% JOSP</b>	<b>% USAID</b>
<i>Afgoye</i>	505,587	64,957	238,175	6,186	166,965	29,574	100%	252,794
<i>Jowhar</i>	391,961	97,281	138,625	7,296	71,799	76,960	100%	195,981
<i>Balcad</i>	358,453	50,691	152,072	50,691	83,999	21,000	100%	179,227
<i>Merka</i>	264,679	90,665	16,838	2,589	117,633	36,954	100%	132,340
<i>Qooroley</i>	135,558	65,293	13,978	9,479	46,808	0	100%	67,779
<b>TOTAL</b>	<b>1,656,238</b>	<b>303,930</b>	<b>321,513</b>	<b>70,055</b>	<b>320,239</b>	<b>134,914</b>		<b>828,119</b>



### Annex 13: Value-for-Money

Statement 1: JOSP is expected to substantially reduce acute food insecurity in the region/s saving an estimated USD36million per year in food/cash related assistance to IPC 3+ populations

*This is based on a 5yr average of an IPC3+ caseload across the target districts of 165,253 people (27,542HHs) using a CBT cost of USD110/HH/mth with an estimated cost requirement for assistance of USD36million per year for the target districts.*

Statement 2: Farmers with restored access to irrigation will produce enough food to feed their families for 12 months and generate substantial surplus for sale. Surplus estimates are below, to be refined at baseline. This surplus is expected to provide income for families to meet additional needs such as healthcare, education and re-investment into production. The additional food surplus will increase local food availability decreasing the need for importation of cereals and thus helping to ensure affordability. The additional income generated by producers is expected to have knock on effects for the local economy boosting local development.

Below figures represent estimates based on current available data and are subject to change once detailed baseline data has been collected. In particular, the land cover baseline planned under the programme will be critical for informing impact measurement in terms of land under cultivation and yield, while household economy data will be critical for informing household income, use and benefits.

<b>JOSP impact for Maize</b>		
<i>Parameter</i>	<i>values</i>	<i>Units</i>
Total Ha cultivated (considering 92% of land only)	487,976	Ha
Total harvest considering yield of 2Mt/ha	975,953	Mt
30% post-harvest losses	292,786	Mt
Total harvest after post-harvest losses (2Mt-30%)	683,167	Mt
Value of total harvest for 1 season (300 usd/tonn)	204,950,038	USD
Actual value of production, per season	51,237,509	USD
Added \$ value of cereal production in % (JOSP), per season	300%	
Added Mt of production thanks to JOSP, per season	512,375	Mt
Added Mt per capita (average, of pop in gravity irr), per season	1.39	Mt
Added value per capita, per season	417	USD

Statement 3: FAO's experience demonstrates that where water is restored, equitably managed and governed, the risk of resource-based conflict is reduced. FAO expects that as a result of government-managed reliable access to irrigation armed non-state actors will be less able to leverage resources such as water in order to gain control over local populations. Furthermore, the income and livelihood opportunities generated as a result of the programme are expected to intentionally engage youth at-risk of radicalization, reducing the likelihood of recruitment into armed groups as an income source. This is based on FAO's programming experience in similar areas, conflict dynamics will be covered in preliminaries and closely monitored and reported on throughout the project cycle.

## **Annex 14: Learning from related previous and ongoing programming**

Below is a summary of key learning in relation to the proposed interventions. These stem from three different projects implemented within the areas targeted under the TRANSFORM project.

### **Example 1.**

<b>Project title</b>	Global Network Against Food Crises Partnership Programme – Country Investment Somalia (PROACT)
<b>Resource Partner</b>	European Union
<b>Budget</b>	USD 4,495,039
<b>Dates</b>	2018 to 2021
<b>Geographical coverage</b>	Lower Shabelle region in South West State of Somalia
<b>Statistics (endline)</b>	<ul style="list-style-type: none"> <li>- 88% increase in land under irrigation</li> <li>- 58% yield increase (cowpea) and 57% (maize)</li> <li>- 89% increase in beneficiary income from sale of produce</li> <li>- Improved food security (51.6% increase in FCS; ProACT HH average rCSI score of 3.99 vs. 4.88 control group)</li> </ul>
<b>Key Achievements</b>	<ul style="list-style-type: none"> <li>- 143.6kms of irrigation canals</li> <li>- 66 ancillary structures</li> <li>- Joint monitoring and supervision with MoAI (FGS and SWS)</li> <li>- Formation and training of 5 water management committees across 5 command areas <ul style="list-style-type: none"> <li>o Training on water management, public asset management, water resource conflict management, irrigation management, flood management, canal maintenance and governance structures</li> </ul> </li> <li>- 5 Farmer Groups (cooperatives) across 5 command areas with registration at local and national level <ul style="list-style-type: none"> <li>o Training on climate-smart agriculture, innovative technologies, post-harvest management, cooperative governance</li> </ul> </li> <li>- Institutional capacity development including Training-of-Trainers (ToT) to ministry officials on water management, public asset management, water resource conflict management, flood management, canal maintenance and governance structures</li> <li>- Seasonal analysis of food security and markets</li> <li>- Establishment of water management and flood monitoring systems within irrigation committees (including installation of <i>Digniin</i> FAO's early warning application on 165 mobile phones)</li> <li>- Successful engagement of MoAI in project implementation including: <ul style="list-style-type: none"> <li>o Registration of farmer groups</li> <li>o Clearance and endorsement of letters to local contractors</li> <li>o Leading distribution of equipment</li> <li>o Register and endorse water committees with local authorities</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ Provision of letters stating that the irrigation canals and the land on which they sit are free of liens and encumbrances before the tenders were launched to ensure no land ownership disputes</li> <li>○ Both MoAI FGS and MoAI SWS developed draft Terms of Reference (ToR) for Shabelle Basin River authorities to help with the regulation, control and maintenance of irrigation water from River Shabelle. This will help in reducing water resource conflicts and will create a conducive environment for farmers along the Shabelle River</li> <li>○ Both ministries at the state and federal level conducted the joint monitoring of rehabilitation of works, making recommendations to contractors and solving conflicts that could arise from the field.</li> <li>○ Both ministries at the state and federal level trained water user committees on conflict management in order to ensure that any emerging disputes are addressed in a peaceful manner. The water management structures are effective in establishing rules and regulations around water usage.</li> <li>○</li> </ul>
<b>Lessons</b>	<ul style="list-style-type: none"> <li>- Initial 24-month project duration proved insufficient. Large-scale infrastructure projects require a minimum of 3 years.</li> <li>- Integrated approach of using Cash-for-work and commercial contracting supported income for youth and women</li> <li>- Community engagement was positive with farmers in the command area willing to support commercial contractors and FAO partners in order to see functionality of canals restored</li> <li>- Al-Shabaab has rejected the construction of big vehicle crossings in the final phase of canal works informing contractors that the passage is to be reduced from 4.6m to 2.5m wide in order to limit heavy army vehicle usage/access</li> <li>- Implementation of peace contributing activities promotes project effectiveness and fosters joint collaboration and problem solving in conflict-affected contexts. The design of interventions in similar contexts should therefore undertake measures that contribute to addressing the drivers of conflict.</li> <li>- Understanding the peace and conflict dynamics of the context of intervention, prior to project design and implementation, is essential. This informs the implementation of strategies and activities that foster resource-sharing, mutual trust and co-existence.</li> <li>- Integrating various representative stakeholders into the context analysis and conflict sensitivity processes is crucial when working in fragile and conflict-affected contexts.</li> <li>- Increasing women's participation in project sites requires investments within interventions that aim to change socio-cultural norms that currently undermine the potential of women in project areas.</li> </ul>

**Example 2.**

<b>Project title</b>	Building Resilience In Middle Shabelle (BRIMS)
<b>Resource Partner</b>	The Swedish Embassy
<b>Budget</b>	USD 8,934,749
<b>Dates</b>	2018 to 2023
<b>Geographical coverage</b>	Middle Shabelle Region in Hirshabelle State
<b>Statistics (midline)</b>	<ul style="list-style-type: none"> <li>- 84% increase in utilization rate/land under irrigation (midline)</li> <li>- 48% increase in yield (cowpea), 37% increase in yield (maize)</li> <li>- 14% increase in income from sale of produce (midline)</li> <li>- avg. rCSI score of 13.9 vs. control group 14.13</li> </ul>
<b>Key Achievements</b>	<u>As of midline only</u> <ul style="list-style-type: none"> <li>- 33.55kms of canals rehabilitated and ancillary structures</li> <li>- Technical assessments for remaining canals and embankments</li> <li>- Validation workshop with MoAI FGS and Hirshabelle</li> <li>- Training on CSA to MoAI staff and farmer cooperatives</li> <li>- Training to water committees on public and private asset management, irrigated crop production, irrigation canal management</li> <li>- LoUs with MoAI at FGS and FMS level for monitoring and supervision</li> <li>- Seasonal analysis on food security</li> </ul>

### Example 3.

<b>Project title</b>	Promoting Inclusive Action in Peacebuilding (PIAP Initiative)
<b>Resource Partner</b>	United Nations Peace-building Fund
<b>Budget</b>	USD 525,000
<b>Dates</b>	2021 to 2023 (ongoing)
<b>Geographical coverage</b>	Lower Shabelle in South West State
<b>Key Achievements</b>	<ul style="list-style-type: none"> <li>- Government partners have been engaged actively and consistently across all activities with leadership of the Ministry of Youth and Sports at the Federal Ministry level</li> <li>- FAO conducted a Conflict Sensitivity Programme Clinic with government endorsement and PSC participation</li> <li>- Drafted the Letter of Agreement with Southwest State Ministry of Youth and Sports for capacity building support and monitoring</li> <li>- Held a “Verification Workshop” with FAO engineers presenting the technical review of the irrigation canals to the Southwest State (SWS) Ministry of Agriculture and Irrigation</li> <li>- In-person meeting with SWS Ministry of Youth and the CSO/Shaqodoon to resolve concerns about security risks arising from resource- based</li> </ul>

	<p>conflicts as well as roles and responsibilities of the two parties within this project</p> <ul style="list-style-type: none"> <li>- Online lessons learning event to share promising practices from the project’s engagement of young men and women in the prevention and management of resource-based conflicts</li> <li>- Facilitated collaborative efforts by young people in the Marka district to address inter-communal and inter-clan tensions surrounding water management through inclusive dialogue platforms and participatory process to foster trust, cooperation, and understanding among the two main villages of Shamabod and Buufow</li> <li>- Canals for rehabilitation were identified by youth groups who advocated for the projects and won co- funding for canal rehabilitation under this project. This will be done in collaboration with the existing canal committees who have been heavily engaged throughout the process. This will help ensure that young men and women from the area steer the sustainable management of the community-owned irrigation canals thereby strengthening their leadership and decision-making capacities.</li> </ul>
<b>Lessons</b>	<ul style="list-style-type: none"> <li>- Young people have taken on leadership roles, empowering them to contribute actively to decision-making processes and the overall development of their communities. These decisions have been informed by perspectives from the two communities (Shalambod and Buufow) – allowing for inclusivity and fairness in the the management of water resources</li> <li>- By promoting inclusive action in peacebuilding, the project has strengthened community resilience by addressing some of the root causes of resource-based conflicts. Through capacity building initiatives, young people have gained skills in advocacy, negotiation, and cooperation, increasing their civic participation at the village level and in community governance. This has led to some observable enthusiasm, social cohesion, reduced tensions and empowerment in their ability to positively mobilize their respective communities for collaborative action.</li> </ul>

**Example 4.**

<b>Project title</b>	<b>SOMALIA CRISIS RECOVERY PROJECT (SCRP)</b>
<b>Resource Partner</b>	World Bank/Federal Government of Somalia
<b>Budget</b>	2,936,898
<b>Dates</b>	2022 to 2024 (ongoing)
<b>Geographical coverage</b>	Hirshabelle State, Southwest State and Jubaland land state – riverine areas
<b>Key Achievements</b>	<ul style="list-style-type: none"> <li>- 124 river embankment sites assessed, designed and supervised for rehabilitation (17,332.8Kms)</li> </ul>

	<ul style="list-style-type: none"> <li>- 57 primary irrigation canals assessed and designed for rehabilitation (182,332 Kms). Supervision about to commence</li> </ul>
<b>Lessons</b>	<ul style="list-style-type: none"> <li>- Rehabilitation of infrastructure in low access locations are possible with a combination of MoAI staff and FAO employed CTG engineers trained and deployed for assessment and supervision roles.</li> <li>- MoAI capacity building in assessment, design and supervision is important opportunity provided by irrigation projects with learning by doing</li> <li>- Local government and community consultation and prioritization of infrastructure to be rehabilitated provide high level of acceptance and access for assessment, supervision, and contractors</li> <li>- Build back better approaches provide higher level of flood protection and lower maintenance for river embankments</li> </ul>