UNITED NATIONS SOMALIA

UN Somalia Joint Fund
Project Document

Feasibility for very deep groundwater in Somalia

Project description

The objective of this project is to conduct a study and associated consultations aiming to determine the feasibility of exploiting water resources located in very deep aquifers in Somalia and to understand the risks, opportunities and identify the mitigation measures for the drilling of the very deep boreholes necessary for this purpose. The main expected outcome of the project is a agreement among key stakeholders on the best locations for the pilot drilling of very deep groundwater boreholes. The potential impact in due course could be to expand water access for populations in urban and peri-urban areas of Somalia, thus alleviating the negative impacts of droughts on both humans and livestock and mitigating conflict over access to water resources.

UNCF Strategic Priority & NDP Pillar: UNSDCF Strategic Priority 4; NDP Pillar 4.	**UNCF Outcome(s):** Outcome 4.1
Project beneficiaries:	**SDG:** 
Project location:	**Project Duration:** 6 months **Anticipated start date:** **0**1/01/2025
Recipient UN Organizations: FAO (lead agency), IOM, UNDP	**Implementing partners:** Ministry of Energy and Water Resources
Total estimated budget: US$1,053,485.40 **Funded Budget:** US$0 **Unfunded budget**: US$1,053,485.40	**Sources of funded budget:** N/A
Project gender marker score: 1	**Project risk marker score:**
Related UN projects within/outside the SJF portfolio	

Project signatures

UN recipient organization(s)	National Authorities
Etienne Peterschmitt Food and Agriculture Organization (FAO) 11 May 2024	Name of government counterpart Signature Name of Institution Date & Seal
Prestage Murima International Organization for Migration (IOM) 11 May 2024	
Lionel Laurens United Nations Development Programme (UNDP) 11 May 2024	
DSRSG/RC/HC	
Name Signature Date & Seal	

The legal basis for the joint programme is the Legal Annex for the signed United Nations Sustainable Development Cooperation Framework (2021-2025). It refers to the cooperation or assistance agreements or other agreements that are the existing legal basis for the relationship between the Government of Somalia and each Participating UN Organization

Table of contents

Executive summary	4
Situational analysis	5
Project strategy	8
Alignment with the UNCF strategic priorities	11
Complementarity with existing programmes	12
Project management	14
Risk management	17
Monitoring, evaluation and reporting	19
Partnerships	20
Cross-cutting issues	21
Communication and visibility	22
Project budget	23
Annexes	24

- Project result framework
- Project risk management matrix
- Project budget
- Legal Annex

Executive Summary

Groundwater is a lifeline for many communities in Somalia, especially in the pastoral and agropastoral communities but existing groundwater resources are not drought resilient and experience very fast depletion, especially during prolonged periods of drought. The proposed project aims to conduct a study to determine the feasibility of exploiting very deep aquifers across Somalia that could significantly expand access to water, helping populations in urban and peri-urban areas cope with drought, and mitigate conflict over water resources.

The project will build on a study conducted by Ruden AS, a Norwegian company, which may provide the possibility for the first time in Somalia of identifying and developing an alternative to dwindling groundwater resources. The study identified very deep aquifers that are recharged over thousands of years as well as a rechargeable volume of water equivalent to 15 km^3 per year. While the study has already been published in scientific journals, it still needs a validation phase to address the socio-cultural dimension of drilling for this resource. This proposed SJF contribution will provide the environmental, technical, socio-cultural and financial background needed to sustainably implement drilling activities in the near future, enabling the Participating UN Organizations to conduct the feasibility study that will inform the pilot phase and subsequent roll out of a full drilling programme. The main outcome of the project is expected to be an agreement among key stakeholders on the best locations for the pilot drilling of very deep groundwater boreholes.

Prepared in close consultation and cooperation with the Ministry of Energy and Water Resources (MoEWR) of the Federal Government of Somalia, the project is fully aligned to the Ministry's objectives and various national strategies, including the Governance, Integrated Water Resource Management and Water Services of the National Water Resource Strategy (2021). The project will be implemented by FAO as lead agency, IOM, and UNDP under the overall leadership of MoEWR.

The objectives of the project are also aligned with Strategic Priority 4 ('Social Development'), Outcome 4.1 of the United Nations Sustainable Development Cooperation Framework (UNSDCF) and Pillar 4 of Somalia's Ninth National Development Plan (NDP-9). The project contributes to SDG 6 (Clean Water and Sanitation).

If implemented, the very deep groundwater drilling is ultimately expected to benefit a large number of communities living in urban and peri-urban areas of Somalia, including women, youth, IDPs and other vulnerable groups, that currently do not enjoy sufficiently secure access to water resources. SJF funding will enable the implementation of key preliminary steps needed to unlock further resources enabling a full-scale drilling programme for very deep groundwater resources that could significantly and materially impact the well-being of a large number of people.

1. Situational analysis

Overall context

The frequency of water-related natural hazards in Somalia has increased manyfold in the past three decades. Before the 2000s, the country suffered on average two flood and two drought events per decade. From the 2000s on, the frequency increased to up to 19 water extremes in the past 20 years. A recent FAO-led study showed that most of the people displacing from rural areas to urban centres do so due to lack of adequate access to natural resources, specifically water and pasture[1]. FAO SWALIM has initiated the first network of automatic groundwater level measurements in Somalia that has been instrumental in documenting the water crisis in Baidoa, Garowe, and other locations, during the last multi-year drought due to La Niña. Between 2021-2023 the country swung from the longest drought in history to the worst flood on record oscillating between extreme La Niña conditions to Super El Niño. Now, in 2024, the country faces yet again the threat of drought with La Niña conditions forecast again from as soon as June.

Against this backdrop, investment in transformative, climate-proof water solutions is more essential than ever. Groundwater is a lifeline for many communities in Somalia, especially in the rural pastoral and agropastoral communities but also for urban and IDP populations. For example, in Puntland groundwater accounts for 92% of all the water sources. However, the existing groundwater resources are not drought resilient, and they deplete very quickly, particularly during prolonged droughts. In turn this exacerbates the negative impacts of droughts on both humans and livestock and can be a major source of conflict, as well as trigger for displacement. One of the consequences of limited access to groundwater, due to its rapid drawdown, is the creation of growing IDP populations that tend to accumulate in the peri-urban areas of major cities. This in turn puts even more pressure on the groundwater resources of these urban centres that suffer from the same groundwater drawdown problem during droughts, as well as on already inadequate services and infrastructure.

For the first time in Somalia, the (very) deep groundwater study carried out by Ruden offers an alternative to dwindling shallow groundwater resources. This study has identified very deep aquifers that are recharged over thousands of years, buffering any drought that can hit the region in years and decades to come. Furthermore, the study has identified a rechargeable volume of water equivalent to 15 Km3 per year (usable water). 1 Km3 of water (or 1,000 billion litres) serves the needs of 5,000,000 people using about 500 litres per person per day. In Somalia the present water consumption is close to 25 litres per person per day. The availability of 15 Km3 of water per year opens up game changing possibilities for human consumption, livestock, supplemental irrigation as well as, eventually, industrial development and economic growth.

Geographical scope

The study conducted by Ruden is country wide and the exact locations of the suggested pilot drilling will be made available before the start of this Feasibility study[2]. Following initial stakeholder consultations, there is a consensus is to initially develop the feasibility study for pilot drilling in peri-urban areas. The choice of peri-urban areas can be justified as follows: (a) in peri-urban areas there is an established government and governance mechanisms which does not often exist in rural areas; (b) there generally better access and security compared to remote rural or hard-to-reach areas; (c) there are already existing (private sector) water providers which can also contribute to the establishment of a sustainable distribution network; (d) the urban and peri-urban population is accustomed to receiving water from a water provider; (e) in general, in times of natural stress the peri-urban areas are the ones suffering the most from the incoming additional population and therefore would benefit the most from the availability of a new water source with high volumes.

Theory of Change

This project is based on comprehensively unravelling the feasibility of establishing a framework and determinants for developing a very deep groundwater project in Somalia. This is underpinned on taking a deep dive on to the six critical areas and preconditions for implementing a full very deep groundwater exploration project identified during a workshop involving FAO Somalia, the Ministry of Energy and Water Resources (MoEWR) and other stakeholders, which are: (i) Environmental Assessment, (ii) Social and Political Economy Assessment, (iii) Financial Assessment, (iv) Governance and Legal Framework Assessment, (v) Technical Assessment, and (vi) Productive Sector Assessment. It will largely leverage existing data from FAO's SWALIM unit which already provides solid mapping and geo-referenced information on critical

[1] Rural Mobility Study, FAO, 2022

[2] Ruden has finalised the hydrogeological report, but it is yet to be cleared for public use. Partners expect to have access to the report prior to final selection of locations to be targeted, which will be decided in collaboration with Government.

entry points for a very deep groundwater initiative. It will also reinforce the understanding of different coordination mechanisms, community management structures, environment and social safeguards, economic feasibility and appropriate standards for a successful exploration of very deep aquifers.

The large amount of data generated by the project through consultations with different stakeholders and specialized studies including those supported by UNDP/GEF transboundary river basin studies will enhance existing water sector database hosted by the MOEWR, thereby presenting opportunities for mobilizing additional resources for the subsequent phases. In essence, this project is just laying the foundation for enhanced knowledge co-creation and learning to inform a series of initiatives aimed at full implementation of the very deep ground water project. Platforms will be established for extensive consultations and engagement with communities and other stakeholders to assess the risks, opportunities, and mitigation measures, with the intention of soliciting stakeholder agreement on the respective pilot drilling locations. This process will also identify entry points for ensuring the benefits from the very deep underground water resources do not necessarily expose communities to more conflict, hence the need to explore sustainable governance arrangements that fosters inclusive and equitable access to the new resource.

Linkages to relevant Somalia's strategic priorities

This project is fully endorsed by the Ministry of Energy and Water Resources (MoEWR) of the Federal Government of Somalia (FGS), as witnessed by their presentation in a variety of fora in the last months. The feasibility study will allow for a sustainable development of the Deep Groundwater resources of Somalia which in turn will allow achieving the objectives of Governance, Integrated Water Resource Management and Water Services of the National Water Resource Strategy of 2021. More specifically it will enhance all the Sub-strategies listed in the figure below, and especially Sub-strategies 1, 4, 5, 8, 9, 10, 16, 19.

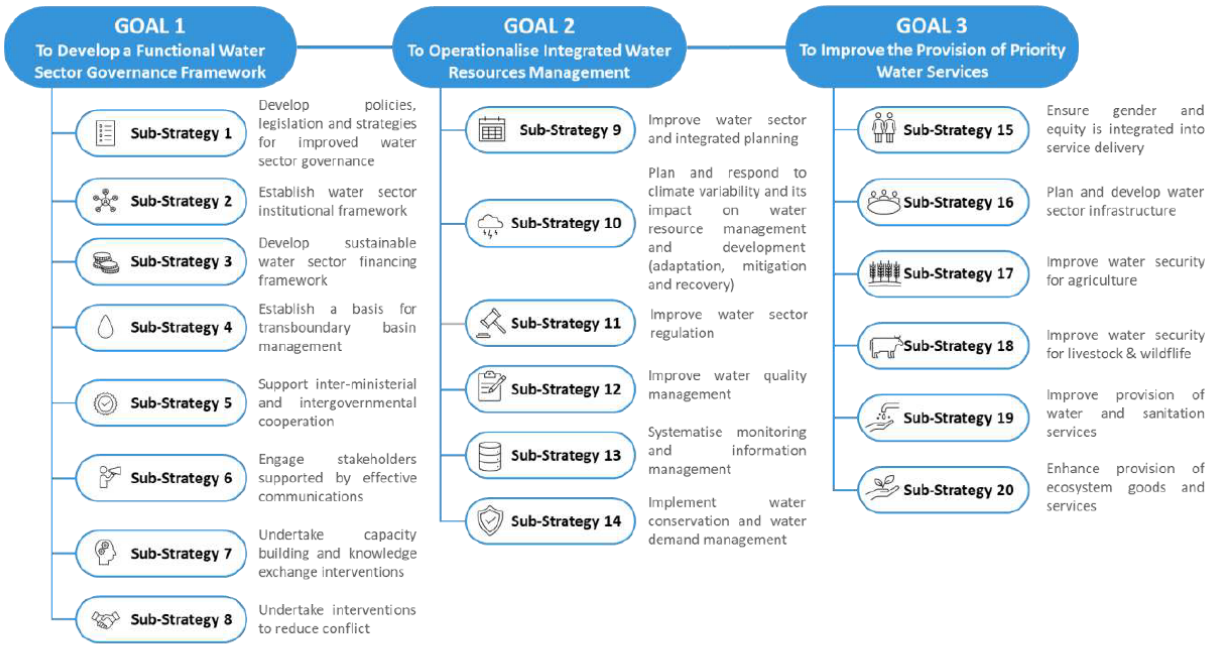


Figure 1-4: The NWRS Goals and supporting Strategies

Figure 2 – Substrategies of the National Water Resources Strategy of 2021 (source here)

The objectives and outcomes of this project will also fit within the objectives of the national NDP, specifically most of the Water Resource Adaptation measures contained in the National Adaptation Programme of Action on climate change (NAPA).

Complementarity and additionality

This project is a Feasibility study so in itself will not directly complement other projects as it supports the full development of the (very) deep groundwater project. However, the outcomes of the full development of the (very) deep groundwater will have complementarities and multiplying effects on almost all aspects of the livelihood in Somalia and therefore with

a number of other initiatives aiming at increasing resilience and improving the livelihood of the Somali population. In particular the very deep groundwater resources, once exploited sustainably, will enhance the use of clean water for humans, livestock, agriculture and food transformation industry. They will also impact positively on the health of both humans and livestock as these resources will provide water with lower salinity content than most of the boreholes do at present.

The Deep GroundWater project is complementary to, and can learn from, the World Bank-funded, and MoEWR-implemented, HOA-GW4R Project which includes a large community social safeguarding issues, including agreement with Ethiopia and Kenya on data sharing for transboundary aquifer, as well as the currently progress implementation cooperation on Merti aquifer with Kenya. The main point of difference is the depth of the aquifers, which are substantially deeper than any borehole currently in Somalia (between 600 m up to 2 km).

Intended stakeholders

As mentioned above the feasibility study will target primarily peri-urban centres but will extend the feasibility also to some selected rural spots to allow for the design of a series of mitigation measures during the full development of the project. Stakeholders will be the local population, private sector, government at various levels. The exact locations will be clear once the Ruden report is released.

2. Project strategy

A. Project content

Overall vision, objectives and expected results

Important note: As the number and specific locations to be targeted for pilot drilling are to be determined based on the upcoming report from Ruden, the level of community consultation in this feasibility study is yet to be finally determined. Thus, there will be some adjustment to the activity plan and budget allocation in the inception period to allow for the appropriate level of community consultation. Currently the budget does not allow for IOM and MoEWR to conduct community consultations, but during the inception phase it may be determined that the budget allocations and the workplan need to be adjusted to accommodate this process.

This project is a Feasibility study to understand the risks, opportunities and identify the mitigation measures for the drilling of very deep boreholes across the whole country of Somalia. It is grounded on the recent scientific study carried out by the Norwegian company Ruden, which was the first one of its kind in the Horn of Africa, investigating oil well data to identify the most promising very deep aquifers to drill and exploit. The study has been already published in scientific journals but it still needs a validation phase that can consider also the socio-cultural (and other) dimensions of drilling for water, a resource whose value in Somalia cannot be underestimated. This SJF project will provide the Environmental, Technical, Socio-Cultural and Financial background to allow for a smooth pilot and full implementation in the near future. This new (very) deep groundwater resource has the potential of being a game changer for the country as it involves exploitation of never seen before volumes of groundwater that can be used for human consumption, and productive uses. However given the fragile socio-cultural environment, such a game changing natural resource could become a threat if not studied and assessed properly. The major threat to the drilling of the very deep groundwater boreholes is represented by the socio-cultural dynamics of the sites identified as promising as well as ensuring inclusive and equitable resource access and sustainable governance and use.

This project aims at assessing key possible threats and opportunities linked to the development of the very deep groundwater resources, before even starting to import the drilling equipment into the country.

The project sees a partnership between:

- FAO: leading overall coordination and Government liaison, technical oversight and the assessment of productive use potential of selected points;
- UNDP: leading the water management and governance aspects, linked to a national project they will lead and that is already tackling water governance, they will also contribute to the technical assessment for the drilling;
- IOM: will contribute to the socio-cultural assessment of the development of this new resource;
- The Ministry of Energy and Water Resources: will contribute to all the different components especially in its institutional mandate of policy maker, in supporting the partners to liaise with the Federal Member States, and in the technical aspects of the development of such a resource.

The project will start by analyzing the hydro-geological report produced by Ruden, especially as concerns the most promising locations for the drilling and the water quality. It will then involve a large number of consultations with the communities where the most promising locations are situated, taking care of engaging with members of both genders in the communities, including elders and young people and representatives of different clans (including minorities) in order to establish a holistic dialogue. The consultations will then expand to the formal and informal governance structures existing in the different locations, and to the private sector.

The aim of these consultations will be to identify the interest and concerns of the local governments in relation to the proposed drilling sites, and to identify risks and mitigation measures in a participatory manner so that there will be a consensus-built definition and application of appropriate mitigation measures.

After this first round of local consultations, the technical team will initiate their assessments, from the technical, environmental, socio-cultural, productive and financial points of view.

The results of these studies will need to be divulgated back to the local governments consulted at the beginning of the Feasibility to obtain their endorsement. Multiple possible rounds of consultations may be required to reach a consensus amongst stakeholder groups.

During this project, due to the limited time and budget available, the community level consultations and rounds of feedback will not be possible. However, this feasibility study will provide rounds of consultation with local governing actors at FGS, FMS and District levels, and will design the roadmap to conduct in the future community consultations, once new funds are secured.

Past lessons-learnt

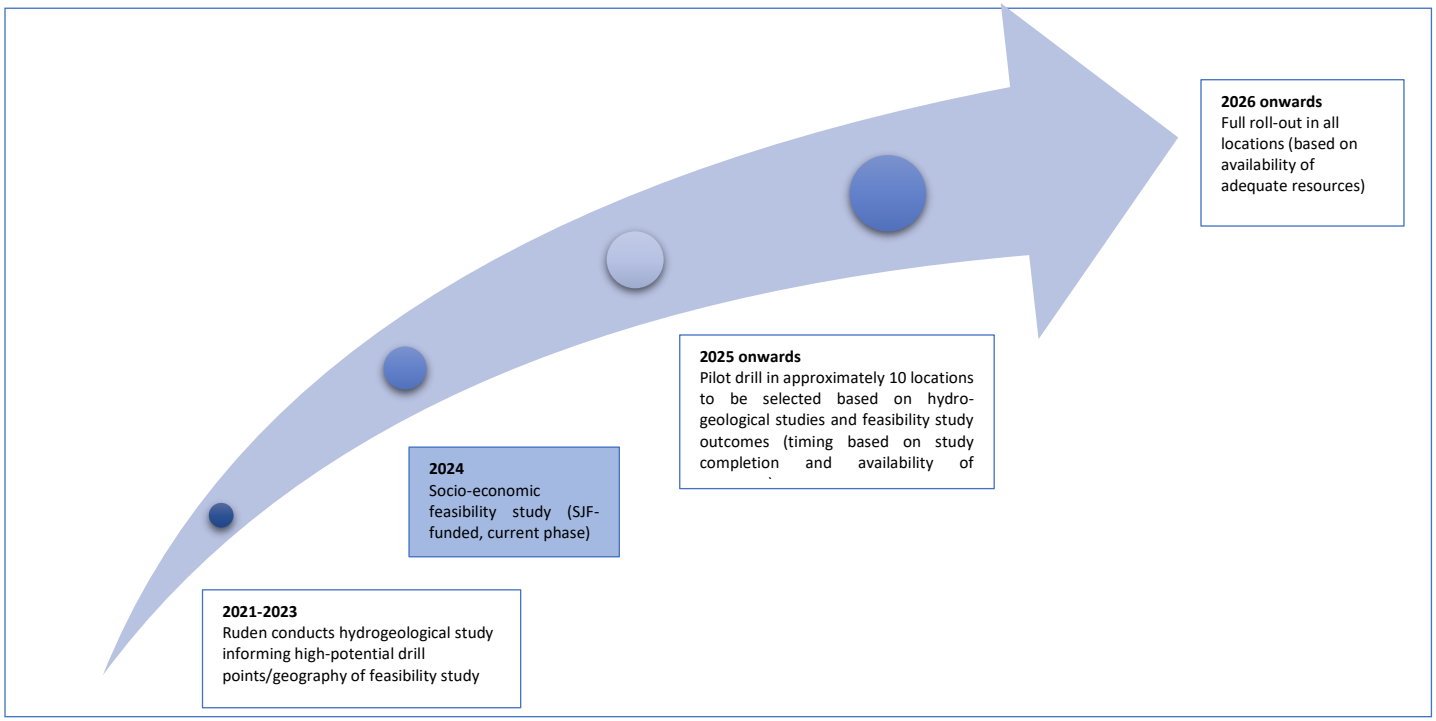
There is no similar project developed so far in the Region form which specific lessons learnt can be drawn. However, two large scale initiatives involving groundwater in the region are currently underway: i) a World Bank-funded initiative called GW4 Resilience; ii) and project implemented by the UNICEF on Deep groundwater (not as deep). This consortium will engage with both implementing agencies in a series of direct consultations as well as in consultation with the actual service providers working for them, to learn from their experience and adapt this learning to the best possible practices to follow in this project. A comparative analysis of the current groundwater projects will be done to assess similarities and differences and to identify possible mitigation measures in addition to the ones already identified in this proposal.

This project will also make use of and enhance the dashboard of water projects that is implemented by the Ministry of Energy and Water Resources and will complement it with all the information gathered during the consultation phases. The project will also support the Ministry objective of mobilizing additional resources for subsequent phases.

Outcome and outputs of the project

This project aims at producing **one major outcome** which is: a collaborative agreement on the best locations for the pilot drilling of very deep groundwater boreholes. The different outputs are listed below:

- Feasibility studies on the Technical, Environmental, Socio-Cultural, Financial and Productive use of this new resource.
- Identification, from a holistic point of view, emerging from the synthesis of all the above feasibility studies, of the best locations for test drilling.
- On-the-Job training of staff form MoEWR at FGS and FMS level.



B. Project implementation

Modalities of the project implementation

As a Feasibility study, the project has a relatively simple modality of implementation. It will start with a desk review of the Ruden report (at the time of writing has not yet been released), this will be studied and synthetized for non-experts in order to be used by the various professionals involved in this project. It will then involve an extended phase of consultation with different levels of government. This will then be followed by dedicated thematic feasibility studies. And finally, it will be followed by a synthesis of all of the above elements, with the aim of feeding back the local communities and government decision-makers (as well as other stakeholder groups such as development partners) to formulate a document on the way forward that will be accessible to technical teams as well as others.

Justifications

The justification for the geographic zones to be covered by the project will emerge from the Ruden report that will identify the most promising drilling locations. At the time of writing of this proposal these locations are not yet disclosed. The expected number of beneficiaries does not apply as this is a Feasibility study and not an implementation phase. However, one of the outputs of this study will also be the identification of the number of beneficiaries after the pilot drilling will be initiated.

Timing among various activities

This feasibility study is supposed to last 6 months and therefore the first rounds of local consultations will need to kick off as soon as the project starts to identify and reach a broad and representative cross-section of communities and to be sure to benefit from the dry season for field visits. After the local consultations, the technical feasibility studies will follow, and they will produce comprehensive reports that will be subsequently analyzed and synthesized in a final report including the final recommendations.

Coherence and connection between outcomes

Being the outcome of this project one, that is the collective agreement on the location for pilot drilling, there will be no issues of coherence and connections between different outcomes.

Difference from other projects

In Somali and in the Horn of Africa Region there are at present two large projects that address groundwater. One is the UNICEF study for deep groundwater which is looking at groundwater resources in the range of 400-600 meters of depth to complement what is traditionally drilled in Somalia as of now. The other World Bank funded project is the Groundwater for Resilience or GW4R which ’is aiming at increasing the number of ‘traditional' boreholes.

The scope of this Feasibility study is a new, never before studied, groundwater resources that sits under Somalia at depths of between 900 and 1,200 m below ground. The estimated time of recharge of these aquifers is in the order of 1,000 years, which means that it will be completely drought Even a long (ten years) drought will be buffered by the slow recharge time. Therefore this new groundwater resource is completely complementary to the existing ones and the ones studied by UNICEF. As UNICEF has called their study Deep Groundwater we suggest to call this one Very Deep Ground Water (VDGW)

C. Sustainability

Not applicable as this is a feasibility study. However, the outcome of the study will inform the development of a detailed sustainability plan to accompany the next phase of pilot drilling.

3. Alignment with the UNCF

The project is aligned with Strategic Priority 4 ('Social Development'), Outcome 4.1 ('By 2025, more people in Somalia, especially the most vulnerable and marginalized, benefit from equitable and affordable access to government-led and -regulated quality basic social services at different state levels'), of the United Nations Sustainable Development Cooperation Framework (UNSDCF) and Pillar 4 of Somalia's Ninth National Development Plan (NDP-9). The project mainly contributes to SDG 6 (Clean Water and Sanitation). As a joint programme, it also contributes to SDG 17 on partnerships.

4. Complementarity with existing programmes

Water is life in Somalia and is at the centre of an HDP nexus. As well as being a lifeline in the humanitarian context, it represents a critical resource for food security and economic growth in the long term. Somalia's recent climate extremes leading to large-scale crises can be loosely categorized as "too much water (flood)" or "not enough water (drought)". There is a collective recognition that the future lies in effective and sustainable water resource management. Globally too, 2023 saw the first UN Water Conference happening after 47 years from the first one held in 1976, and regionally there have been a series of symposia centred on water, culminating in November 2023 with a Ministerial Communique issued in the occasion of a AMCOW gathering at the African Union.

This proposal is for a Feasibility study to explore a resource that no other project is addressing, and not for implementation. Hence, it is unique in nature and there is no direct complementarity to existing or pipeline projects. The two closest projects that will benefit from this project are the Dashboard of the Ministry of Energy and Water Resources of Somalia and the regional GAFA project. Both these projects have knowledge management at their core and the development of this Feasibility Study will add to their knowledge base. For this reason, FAO and partners will enhance the existing strong data sharing between agencies and the two initiatives listed above.

Nevertheless, once the results of the Feasibility study are made available, this game-changing project will intersect with at least five different '*families of projects*' as described below. None of these '*families of projects'* listed below address the same water resource that this project intends to study. For this reason, this Very Deep Ground Water project will be complementary to all the ones listed below, and especially will come in support in times of drought, offering a more reliable and renewable water source than the ones used in the projects listed below.

Integrated Water Resources Management: The feasibility study will build on the two on-going capacity building projects of the MoEWR centred around integrated water resource management (IWRM) and supported by UNDP/GEF/Sida. These projects aim to enhance the capacity of federal and local authorities to strengthen coordination and promote sustainable, participatory, and efficient use of water resources management at the local level.

WASH: both UNICEF and IOM are implementing a range of WASH projects at different scales. Be it the upscaling of water distribution networks or the co-design of water master plans for specific towns in Somalia such as Kismayo and Baidoa. In both cases having access to a secure source of large volumes of clean water will contribute to the success of such projects across Somalia. Even if the main use of this new reliable and renewable water source will be for long term development and productive uses, in case of emergencies the new water sources can also be used for humanitarian purposes, alleviating the pressure on the more superficial aquifers that at present are overexploited in times of drought.

In this respect FAO, has signed an MoU with UNICEF for rural water supply and management, that will benefit immensely from the proper development of this new water source, this partnership also ensures strong coordination between the two implementing agencies on the modalities of use of the very deep groundwater. FAO and IOM are closely collaborating across various projects, benefitting from mutual technical expertise in the two agencies.

Productive uses: FAO, UNDP, UNIDO, IOM and WFP are concentrating their efforts on the productive sector in both rural and urban contexts. This extra availability of water will enhance potential productive uses such as supplemental irrigation in rainfed agriculture areas, or as a new input into the irrigation schemes where there is no other source of water available. Particularly for cash crops, this new water source will be a lifeline in times of drought, in both rural and urban contexts.

Private sector: water supply in Somalia is often handled by the private sector, particularly in urban and peri-urban contexts. All the major towns have large private or hybrid (Public-Private) water distribution companies that will be interested to use these new sources and likely also to invest in its partial development, at least in the last leg of the water distribution network. Water bottling companies will also benefit from this new source of water enhancing the availability of drinking water across the country.

Resilience: FAO, UNDP, IOM, WFP, UNICEF and other actors are all developing projects aiming at increasing the resilience of the Somali people. The availability of a reliable and renewable water source such as the very deep groundwater will greatly benefit these projects, particularly as concerns the sustainability of production in times of droughts.

Regional projects: at regional levels there are at least three complementary projects in the area of groundwater. The IGAD led, World Bank funded, and UNDP implemented project on Groundwater Access Facility (GAFA) that is looking at

enhancing the evidence on the groundwater resources in the African borderlands, with the goal to make a sustainable use of this largely untapped resource. The Very Deep Groundwater, if well developed with continuous monitoring of its evolution, will clearly become part of the GAFA knowledge centre. The German-funded and UNICEF-led Managed Aquifer Recharge (MAR) project, is looking at enhancing recharge transboundary aquifers of shallower depth than the very deep groundwater project. Nevertheless, the possibility to access the resources in the very deep aquifers will inevitably release pressure on the exploitation of the more superficial aquifers. Finally, the Groundwater for Resilience (GW4R) project of the World Bank is also complementary to this Very Deep Ground Water project as it offers the possibility to diversify the availability of groundwater resources in the region and in Somalia too.

Summary of existing interventions in the proposal's sector

N/A.

5. Project Management

A. Recipient organizations and implementing partners

The project is implemented by a consortium of United Nations agencies with substantial experience and established capacities in Somalia. These agencies include the Food and Agriculture Organization (FAO), the International Organization for Migration (IOM), and the United Nations Development Programme (UNDP). FAO has been designated as the leading Organization for the project, leveraging its extensive expertise in rural development and natural resource management to coordinate project efforts, and having been engaged since conceptualization in the Deep Groundwater Programme with Ruden and MoEWR.

The Programme will be co-led by MoEWR at FGS level, which will co-lead the overall governance structure for programme management. The Ministries, UN Agencies and other downstream partners will each have clear and specific designated responsibilities and deliverables to ensure joint accountability and national ownership of the Programme outcomes and outputs.

FAO, as the lead agency, has a mandate to improve food security and sustainable agro-pastoralism, and provides constant technical advisory to different ministries in the FGS, from Agriculture, to Livestock to Fisheries, Water, and SODMA, amongst others, which makes it well-suited to lead the coordination of this multi-agency effort. IOM contributes its experience in migration management, analysis of conflict dynamics, and community engagement and mobilization, crucial for addressing displacement caused by environmental changes. UNDP contributes its experience in sustainable development in different areas, and governance at country level, as well as in its technical advisory role.

The PUNOs will collaborate closely with government bodies such as the Ministry of Energy and Water Resources (MoEWR), alongside Civil Society Organizations (CSOs) and Non-Governmental Organizations (NGOs). The identifications of CSOs and NGOs will be possible once we will know the locations of the potential sites where the feasibility will be conducted.
These partnerships are structured to leverage each entity's unique capabilities and insights to ensure comprehensive and inclusive project implementation.

Organization	Annual Program Delivery (USD)	Staff in Country	Expertise Area	Role in Project
FAO	130 million	400	Food Security, Agriculture, Natural Resource Management, Hydro-meteorological data acquisition and analysis (SWALIM)	Project Coordination, Productive uses of water, Environmental and Technical Assessment
IOM	72.2 million	274	Migration, Emergency Response, Environmental Peacebuilding	Solutions for Socio-Cultural conflict, mitigation and monitoring, Displacement Affected Communities
UNDP	80 million	150	Sustainable Development, Governance, Climate Change and Resilience, Integrated Water Resource management, Rule of Law, Stabilization, Inclusive Politics	Environmental Sustainable development and governance, Environmental Assessment, Social and Political Economy Assessment, Financial Assessment for Sustainable development, legal framework assessment and technical assessment (all divided with other agencies)

B. Governance arrangements and coordination

Project coordination and oversight arrangements

This is a very short project lasting 6 months which is only focusing on Feasibility studies to pave the way for the implementation of the Very Deep Groundwater. Nevertheless, the project has a holistic and multidisciplinary approach, that needs a smooth integration of the different partners and a strong leadership able to summarize all the individual thematic studies into a holistic document. FAO will ensure partners have adequate technical capacity on board in good time and that the proposed workplan is implemented as planned barring unforeseen delays.

Project board and project implementation team

The implementation team comprises various key positions funded by the project, including a Project Manager, Sector Specialists (water for productive uses, water governance, environmental and technical assessment and conflict mitigation), and Community Engagement Specialists. Each team member is crucial for the specialized components of the project, ensuring that activities across different sectors are well-integrated and aligned with the overall project goals. The project also foresees support to ensure adequate Government participation in project activities.

Organigram

The organigram is very simple in this 6-month project. FAO and MoEWR will co-lead the Study, with different agencies developing specific thematic feasibility studies. The MoEWR will also manage with IOM the community consultation processes, if the project is adapted in the inception period to include such consultations. Jointly, all 4 agencies led by FAO and in close consultation with the Ministry, will synthesise the outcomes and prepare a final report on the best practices to implement the very deep groundwater project.

Organogram



This is a multidisciplinary project that will be implemented through a strong coordination mechanism to produce tangible and synthetic results. The coordination of the project will be led **jointly by the MoEWR, UNDP, FAO and IOM** so that the findings will be endorsed from the beginning by the appropriate ministries. Different agencies will take care of sectorial studies according to their expertise and experience in these areas. This will allow for a coordination of efforts among all actors guided by the Coordination committee.

As this a feasibility study project there is no implementation phase so the coordination will mostly deal with the following activities:

1. **Inception phase** to jointly design the community consultations (2 weeks)
2. Conduct the government **consultations** (1 month) and community consultations if there is a budget realignment in inception phase
3. **Synthesis** of the community consultations (1 week)
4. Start of the **Thematic feasibility studies** (2 months)
5. Joint formulation of **draft guidelines** for the integration of different thematic studies. (2 weeks)
6. **Feedback to the consulted local governments** to receive feedback on the guidelines (2 week)
7. **Review the final findings** of the studies (2 week)
8. Co-creation of a **final guiding report** for the full and sustainable development of the deep groundwater resources, containing a synthesis of all the findings and their interlinkages (3 weeks)

			Weeks																							
Activity	*Field-/Desk-work*	*Partner*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*
1. Inception phase	D	All																								
2. Government consultattions	F	MoEWR – IOM																								
3. Synthesis of consultations	D	All																								
4. Thematic studies	F	All																								
5. Draft Guidelines	D	All																								
6. Feedback to local governments	F	MoEWR																								
7. Review	D	All																								
8. Final report	D	All																								

The coordination activities will happen by means of workshops, in person and online meetings, according to an agreed schedule at the inception of the project. An online folder structure will be created to share relevant documents and an online time tracking system will be created to support partners in their activities. A final workshop with all parties and stakeholders will be organized to disseminate the findings of the studies.

6. Risk management

Although this is a short feasibility study and not an implementation project a number of risks have been identified that are listed below in six categories; these will be factored in during the study. These risks do not impact on the Feasibility study directly (except for access/security) but can potentially impact on the subsequent drilling phase. The Feasibility study will elaborate on each of them in detail so that the mitigation measures will be clearly outlined before drilling. The full list of the preliminary risks and mitigation measures is listed in detail in Annex II. Here below the six categories of risks are only outlined.

Environmental Risks

From the environmental point of view, the drilling of boreholes poses the risk of pollution of the surroundings of the drilling site, during and after the drilling, and can potentially exacerbate soil erosion. Furthermore, the development of the borehole and its use can incentivize the concentration of people and livestock which in turn can exacerbate environmental degradation. And finally, the over exploitation of the aquifer can lead to its depletion although in the case of these very deep aquifers this would only take place over a very extended period of time. Proposed mitigation measures are detailed in the annex below.

Socio-Cultural

This category is considered the most significant for this kind of project in the Somali context. In a water scarce environment striking a huge amount of water can potentially have the effect of creating conflict over its use if the needed agreements and social contracts are not very well defined beforehand. Conflict dynamics around contested resources represent a significant risk. Clear mapping of conflict dynamics, and inclusive engagement with all stakeholders in target areas around an adapted free and prior informed consent (FPIC) plan would represent best practice to mitigate potential conflict. IOM will develop adapted best practices for this process to inform programming around pilot drilling.

This Feasibility study will pay close attention to these aspects, cognizant of the fact that lack of social or cultural acceptance of the drilling will jeopardize the whole project. The risk of conflict over the use of new water resources if not adequately managed, is also substantial. This can be linked to the absence of clear land tenure system or cadastre. Additionally, risks can arise from inequitable access to this new resource by different user groups, community consultation must identify, map and engage these groups to ensure inclusivity in design and implementation. Finally, there is a moderate risk linked to sexual and gender-based violence or protection around water points. For each of these risks we have identified mitigation measures listed in Annex II

Financial

The development of new water sources in Somalia is often linked to private investments or to Public- Private Partnership models (PPP). The financial risks that identified for this type of project are divided in external dynamics, such as the loss of investments due to global dynamics, and internal, such the loss of investment due to technical failure and subsequent loss of trust, or inability to strike an effective PPP deal, or the lack of identification of sustainable financing linked to bad water pricing for example. For each of these risks we have identified mitigation measures listed in Annex II.

Technical

An innovative project of this kind in the context of Somalia can pose also technical challenges. Two main types were identified: i) on one hand the lack of standards used in the drilling and in the quality of materials used; and ii) on the other hand the lack of Government capacity to maintain and operate this kind of water supply sources.

Accessibility

In the context of Somalia, characterized by high volatility in its security, the incapacity to access the drilling sites will pose a risk. Mitigation measures have been identified emerging from FAO's extensive experience operating in rural and hard-to-reach parts of Somalia.

Diversion

There are two primary considerations for this category of risk: i) during the feasibility study there is no involvement of goods or services from the communities so there is no exposure to diversion; ii) during the drilling there could be limited

risks of diversion as there is no cash transfer involved but there will be contracting of drilling companies. FAO will engage its rigorous competitive procedures for procurement of all goods and services as well as activating its robust Accountability to Affected Population (AAP) systems to minimize any risk of diversion or ensure reporting and follow up in case of allegations. As the study will be handled directly by the participating agencies, this will be particularly relevant to the subsequent phase where contractors are engaged for pilot drilling.

Prevention of corruption

Due to the nature of the project, the risk of corruption is considered low. The project does not involve the distribution of resources directly to communities or individuals and is not likely to have an impact on power relationships among different communities and actors through either beneficiary targeting, partner selection, communications, or monitoring and evaluation. Nonetheless, FAO has developed robust mitigation measures and compliance mechanisms to avert the diversion of project resources through corruption. All suppliers (of goods or services) are registered through the United Nations Global Marketplace website, which allows an initial check of the vendors' capacity, legal status, past performance, and potential affiliation with illegal entities (e.g., terrorist organizations). FAO also generally implements through delivery modalities that reduce exposure to taxation and involves authorities at all stages of implementation to fight corruption and Aid Diversion.

7. Monitoring, Evaluation and Reporting

Monitoring & Evaluation

As the project involves only a six-month feasibility study, this section is considered inapplicable.

Reporting

Type of report	Date of submission
Inception Report	1 month after start
End of project report covering entire project duration	6 months after start
Financial reporting	6 months after start

8. Partnerships

This Feasibility study is by definition a multi-agency endeavour, as it touches upon the six major areas described above. For this reason, there is a need to co-develop these studies in a multi-disciplinary approach, which needs to be synthesized in one coherent document at the end of the feasibility study phase. The MoEWR will be accompanying all these studies.

The table below highlights the roles of each agencies in this Feasibility study.

What	Who
1. Coordination	FAO & MoEWR
2. Environmental Assessment	FAO, UNDP & MoEWR
3. Social and Political Economy Assessment	IOM UNDP & MoEWR
4. Financial Assessment for sustainable development	All three agencies
5. Legal framework Assessment	UNDP & MoEWR
6. Technical Assessment	UNDP, FAO & MoEWR
7. Productive Sector	FAO

The feasibility study will involve an in-depth analysis focusing specifically on the pilot drilling locations indicated in the Ruden report. However, a more general feasibility study will also be conducted for the rest of the locations where there is high possibility to strike groundwater. These studies will be co-designed with the Ministry of Energy and Water Resources and, where needed, will be done with an on-the-job training modality (i.e. hand-in-hand with Ministry personnel). This point is of critical importance, as the bearers of the impacts of the mitigation strategies will be the local and federal government. It is believed that a co-design from inception phase is the only way to ensure full endorsement of the final results.

9. Cross-cutting issues

As a Feasibility study the cross-cutting issues do not fully apply although the study will cater for some degree of analysis of social dynamics and composition in and around the locations being assessed. Nevertheless, partners have identified some preliminary cross-cutting issues that will be part of the feasibility study and will inform the development of these new water resources. The full list of cross-cutting issues and their implications on the implementation phase will be one of the outputs of the feasibility study and will be integral part of the final report.

To promote gender equality and women's empowerment

The intersection of water and gender is an issues that has received a lot of attention recently, especially due to the role that women play in the collection and transport of water especially in rural areas, but not only. Partners will address the promotion of gender equality and women empowerement from the initial phase of the feasibility study, during the government consultation, which will form the baseline to understand existing gender and age dynamics in target communities and how these need to be addressed prior to and during implementation. Given the fact that District commissioners, FMS and FGS ministry of water staff will be main partners will allow us to address the issue and to jointly design initiatives aiming at promoting gender equality and women and youth empowerement.

To promote human rights and protection of vulnerable groups

Access to water sources can be a challenge for vulnerable groups especially if physically unable to reach and use the water sources. In the Technical feasibility study we will make sure that there will be provision for the elimination of architectonic barries in the access and use of these new water sources. Furthermore, the feasibility study will include a mapping of clan dynamics and different interest groups in each area base, to ensure that the implementation phase is able to ensure inclusive and equitable access to new resources by different groups. The consultations foreseen in the feasibility study phase will allow partners to identify potential social issues and identify appropriate mitigation measures.

To reduce exclusion (Leave no one behind)

The project aims to improve access to water sources for all, irrespective of clan affiliation or socio-cultural position. The consultations to be conducted under the project will help assess the risks of exclusion for certain groups, especially the most vulnerable, and inform mitigation measures that will specifically aim to ensure that this access will be available without discrimination, including for the most vulnerable, thus leaving no one behind.

To address root causes of climate fragility and climate-related conflict dynamics in target areas

This feasibility aims at a sustainable development of climate resilience new water sources that will be ewnewable and drought resilient. This is one of the major strong points of this new water resource. In general in Somalia climate-related conflicts emerge when one specific natural resource is becoming more scarce or less accessibile. This project aims at inverting this trend for what regards water resources, allowing also populations living in the most arid parts of the country to benefit from a sustainable and renewable water supply.

To implement the humanitarian-development-peace nexus

The HDP in Somalia can be facilitated through increasing equitable access to Natural Resources that can serve both for long term development and emergency like during a prolonged drought. This is the major objective of of this project.

10. Communication and visibility

The communication and visibility strategy for the Deep Ground Water project is designed to amplify awareness of the key issues addressed by the project, showcase the impact of interventions, and acknowledge the contributions of donors. This strategy is essential for building support among stakeholders, enhancing community engagement, and ensuring transparency and accountability in project implementation. Given the short duration and nature of the project, some minimal communication deliverables are proposed.

Methodology:

The communication methodology integrates a mix of traditional and digital media platforms to reach a broad audience, including local communities, regional stakeholders, international donors, and the global public. The approach is based on the principles of clarity, consistency, and cultural sensitivity, ensuring that all communications are tailored to the needs and preferences of different target audiences.

1. **Message Development:** Key messages will be crafted to highlight the project's goals, the challenges it addresses, and the expected outcomes. These messages will be adapted to suit different platforms and audiences, ensuring they are clear and engaging.

2. **Content Creation:** Diverse content formats such as press releases, feature stories, video documentaries, infographics, and social media posts will be developed. This content will focus on telling compelling stories about the project's impact on communities, the innovative approaches employed, and the roles of various partners.

Implementation Strategies:

The communication strategy will be implemented through several key activities:

1. **Regular Updates:** Regular updates on project progress and milestones will be shared through newsletters, website posts, and press briefings. These updates will provide ongoing visibility for the project's achievements and challenges.

2. **Visibility for Donors:** Donor logos will be included in all communication materials, and specific donor-related events or milestones will be highlighted through dedicated media pieces. Special reports showcasing the impact of donor contributions will be developed and shared with both the donors and the public.

3. **Social Media Campaigns:** Targeted social media campaigns will be run to reach a broader audience, engage with the public and stakeholders, and provide real-time updates about the project. Interactive elements such as live Q&A sessions, polls, and community stories will be included to increase engagement.

By highlighting the importance of climate adaptation and the transformative impact of the project, the communication and visibility strategy aims to foster a supportive environment for project activities, enhance the engagement of beneficiaries and stakeholders, and ensure the recognition of donor contributions, thus amplifying the project's overall success.

11. Project budget

For this feasibility study it is understood that the ceiling is of about 1M USD. The distribution of funds is therefore done on an equal basis per activity with the understanding that for all 7 activities listed here below there will be the following foreseen five components:

1) Co-design of the methodology, with government officials.
2) Field work for data collection with government officials (both qualitative and quantitative).
3) Data analysis and presentation of the results.
4) External consultancies.
5) Collaborative workshops.

Therefore the draft distribution of the budget can be foreseen as follows:

UNDG Categories	FAO	UNDP	IOM	TOTAL
1. Staff and other personnel costs	53,000.00	90,000.00	30,000.00	173,000.00
2. Supplies, Commodities and Materials	10,000.00	10,000.00	10,000.00	30,000.00
3. Equipment, Vehicles and Furniture, including Depreciation	20,000.00	25,000.00	10,000.00	55,000.00
4. Contractual Services	175,000.00	222,196.00	40,000.00	437,196.00
5. Travel	10,000.00	10,000.00	5,000.00	25,000.00
6. Transfers and Grants to Counterparts	50,000.00		30,000.00	80,000.00
7. General Operating Expenses and Other Direct Costs	92,220.00	52,149.79	40,000.00	184,369.79
Sub-total	**410,220.00**	**409,345.79**	**165,000.00**	**984,565.79**
8. Indirect Support Costs*	28,715.40	28,654.21	11,550.00	68,919.61
TOTAL	**438,935.40**	**438,000.00**	**176,550.00**	**1,053,485.40**

Annex I: Project Results Framework

NDP PRIORITY • Sustainable Development and Economic Diversification • Environmental Sustainability and Resilience				
UNCF STRATEGIC OUTCOME **Improved management of natural resource and resilience to climate impacts**				
PROJECT OUTCOME: A collaborative and multidisciplinary agreement on the best locations for the pilot drilling of very deep groundwater boreholes is reached.				
Outcome indicators, baselines, targets	**Outputs**	**Output indicators, baselines and targets**	**Partner contributions**	**Indicative resources**
A consolidated agreement framework on best locations for drilling of very deep groundwater boreholes by end of Q2 of 2025 Technical capacity of government staff enhanced by end of Q2 of 2025	Output 1.1: Feasibility studies on the Technical, Environmental, Socio-Cultural, Financial and Productive use of this new resource	Indicators: Number of detailed feasibility studies reports produced by the end of project. Baseline: none Targets: Six reports namely 1. Environmental Assessment, 2. Social and Political Economy Assessment, 3. Financial Assessment for sustainable development, 4. Legal framework Assessment, 5. Technical Assessment, 6. Productive Sector Assessment)	FAO: Overall Coordination FAO, UNDP & MoEWR: Environmental Assessment IOM, UNDP & MoEWR: Social and Political Economy Assessment; best practices roadmap for community consultations and adapted FPIC for drilling locations. All partners: Financial Assessment UNDP & MoEWR: Legal Framework Assessment UNDP, FAO & MoEWR: Technical Assessment FAO: Productive Sector Assessment	
	Output 1.2 Identification, from an holistic and multidisciplinary point of view, emerging from the synthesis of Output 1.1., of the best locations for test drilling	Indicators: A synthetic report with the listing on best locations for test drilling of boreholes produced by end of project, Baseline: none Targets: 1 report and at least 5 geocoordinates of the best sites where to conduct the test drilling.	All agencies and MoEWR. FAO coordinates	

	Output 1.3 On-the-Job training of Govt staff at FGS and FMS level	Indicators: Number of staff completing different on-the-job training courses at FGS and FMS level. Baseline: none Targets: 2 of MOEWR staff	All Agencies and MoEWR. FAO Coordinates	

Annex II: Project risk management matrix

This project has no risks in itself, being a Feasibility study. Nevertheless the Consortium has identified some preliminary risks that could occur in the phase subsequent to the end of this feasibility study, when the test drilling will start. Here below is this **preliminary risk matrix which will be fully developed and refined during the feasibility study**.

RISK ASSESSMENT						MONITORING PLAN			TREATMENT OPTIONS	
Risk	**Risk drivers**	**Risk outcome**	**Likelihood**	**Impact**	**Risk Level &Trajectory**	**Responsibility**	**Regularity**	**Sources**	**Mitigation**	**Adaptation**
Potential for a defined adverse event or outcome to occur	Factors that influence the realization of a risk	Effects the risk would have on fund objectives and operations	Estimated chance of a risk occurring	Estimated severity of the risk outcome	Risk level = Likelihood x Impact Trajectory = Direction of risk level since last assessment	The party responsible for monitoring the risk (individual or team)	The frequency at which a risk should be monitored (e.g., weekly, monthly, quarterly)	The sources of information used for monitoring	Measures taken to reduce the impact and/or probability of a risk before it is realized	Identified contingency measures to reduce the impact of a risk after it is realized
Environmental										
Pollution during and after drilling as well as soil erosion or other degradation around pipeline network	Operations below standards	Need for remediation	Medium	High		Drilling site designers, and Site Supervisor	Daily during the drilling operations	Daily Field Reports, photos, samples analysis	Comprehensive environmental and social impact assessment for each site prior to drilling	Stop of the drilling, and review of the SOPs with the drilling companies. In extreme case, change the drilling company

Pollution around sites with accumulation of population	Operations below standards	Need for remediation	Medium	Medium		Drilling site designers, and Site Supervisor	Daily during the drilling operations	Daily Field Reports, photos, samples analysis	Adequate site and waste management planning	Stop of the drilling, and review of the SOPs with the drilling companies. In extreme case, change the drilling company
Over-grazing around the newly established water point	Pulling of unsustainable numbers of livestock in the vicinity of the new water source.	Land degradation and soil erosion	Medium	Medium		Natural Resource Manager, Site Engineer	Monthly after the drilling	Monthly reports, geolocated photos, maps from remote sensing	Land use mapping and regulation and adequate design of water points for all user groups. Fencing of the area, social contracts between the community living near the new water source and the incoming population	Implementation of Nature Based Solutions for land degradation remediation. New social contract between hosting community and nomadic incoming population. Fencing off the area around the new water source.
Depletion of aquifer or deep groundwater resources	Overexploitation without an adequate monitoring of the water levels and water quality	The aquifers become not drought resilient	Very Low	High		MoEWR and partners agencies (SWALIM)	Daily after boreholes enter in production	Dashboard with hourly water levels and water quality (Salinity)	Transboundary recharge monitoring and groundwater level (in	Interruption of supply from the depleted boreholes to allow for

									country) monitoring	an adequate recharge
Socio-cultural										
Risk of new/increased conflict over water resources	Clan dynamic over the new water source	The new water sources becomes unusable or usable not in an equitable manner	Low	High		MoEWR, District, Communities, Clan leaders	Monthly	Conflict monitoring tools (developed by other agencies)	Conflict and clan dynamic analysis in each potential site (long-list); putting in place effective water mgt structures and regulation at local level. Social contracts, Water diplomacy mechanisms and engagement since the beginning of the project with all the communities involved	(Temporary) Unavailability of this new water sources
Land Tenure disputes	Lack of well defined land property titles, demarcation, and laws	There could be dispute over the revenue generated by the explotation of this new	Medium	High		MoEWR, District, Communities, Clan leaders, Private sector	Before the starting of drilling	Mediation agreements	Adequate prior assessment of sites (i.e. private vs. public or communal land) and community engagement and local	(Temporary) Unavailability of this new water sources

		water source							(elders, authorities etc.).	
Equitable access not assured at local level by private sector service providers	Neglected access to marginalised groups	Marginalised groups not accessing the new water source	Medium	Medium		MoEWR, District, Communities, Clan leaders, Private sector, NGOs	During the service provision	Reporting by NGOs and self reporting by marginalised groups, and anonymous hot line	Community mgt committees to be established; regulation by govt of access and continuous monitoring by govt authorities and/or third party particualrly for access for minority groups; community feedback and complaint mechanisms established (hotline, spotchecks etc.)	Temporary unavailability of the water source to the marginalized groups
Sexual and Gender-Based Violence or protection risks around water points	Cultural drivers	Women do not have access to the water resources and as a consequence many households do not have access	Low	Medium		MoEWR, District, Communities, Clan leaders, Private sector, NGOs	During the service provision	Reporting by NGOs and anonymous hot line	Affirmative gender action built into programme design; infrastructure and site design take into account specific needs of different	Women access to other water source

									groups and risk of SGBV	
Risk of population movement/aggreggation around new water points	Pulling factor of a new vital resource	Urban expansion, land degradation	High	Medium		MoEWR, District, Communities, Clan leaders	During the service provision	Official government reporting and mapping by means of remote sensing and field surveys	Urban planning (waste and sanitation mgt, site planning) and land use regulation built into programme design; enough sites to deter excessive population migration	Proper urban planning
Financial										
Loss of investment due to global dynamics	Global financial dynamics like new conflicts or shift of interest by donors	Slow pace of development of the drilling	Low	High		MoEWR, FMS, UN agencies	During the development of the test drilling	Global intelligence and UN reports	Advocacy at country and international levels to ensure prioritization and timely investment	Waiting for the access to the new water source
Loss of investment due to failure to strike water or infrastructure failure and subsequent loss of trust	Inaccurate groundwater modelling	Stop of financing	Low	High		MoEWR, UN Agencies	During the initial test drilling	Drilling reports	Accurate data and sourcing of adequate technical capacity for drilling	Better studies are developed
Inability to strike effective PPP	Conflict between private sector and social groups	Slowing or halting of the water distribution development	Low	Medium		MoEWR, District, Private sector	Before the development of the new resources	Effective capacity development reports	Capacity development on PPP for local and Federal Government	Waiting for the access to the new water source

Sustainable financing not identified	Conflict between private sector and social groups	Slowing or halting of the water distribution development	Medium	High		MoEWR, District, Private sector	Before the development of the new resources	Effective financial strategy developed before the implementation	Sustainable financing strategy to be developed prior to implementation - e.g. PPP	Search for better financing sources also in non traditional channels
Technical										
Inadequate quality of material used for pipelines	Lack of supply, bad design of the development of the new sources	Bad development of the boreholes and water distribution network	Low	Medium		UN Agencies, MoEWR	In the borehole drilling planning phase and in the drilling phase	Quality control of the drilling plan, and site supervision	Adequate standards in procurement (details tech specs)	External support to proper sourcing of adequate materials
Maintenance & operational capacity and supply of spare parts	Lack of human capacity and/or of financial capacity. Global unavailability of proper spare	Reducing the lifespan of the boreholes	Low	Medium		UN Agencies, MoEWR, Private Sector	In the borehole drilling planning phase, in the drilling phase, and in the production phase	Quality control of the drilling plan, and site supervision	Technical capacity development on O&M and adequate staffing for continued O&M (ideally built into PPP agreements)	External support to put in place proper M&O and supplies
Accessibility										
Difficult to access certain communities that need to be consulted	Conflict	Need to find an alternative location	Low	Medium		MoEWR, District, Communities, Clan leaders	All the phases	Continuous monitoring of conflict around the new water sources	Invite the community leaders to an easy to reach location nearby the community.	Deviation from the original plans and identification of new locations

Annex III: Project budget

See the Project Budget under section 11. As this is a 6-month feasibility study the SJF Excel budget form is not considered applicable, as all the budget lines are already included in the table under Section 11.