



TETRA TECH
International Development



Tetra Tech International Development

DJ-01 Fiche Djibouti Stormwater Drainage System with Integrated Devices for Intercepting Solid Waste

Mini Fiche

March 2022





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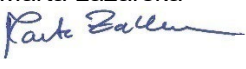








Name of Client: European Investment Bank (EIB)

Project name: Clean Oceans Identification and Preparation Programme for Sub-Saharan Africa (COPIP)

Contract number:

Partners:



Review	01	02
Date	12.03.2022	29.03.22
Detail	Draft for submission to EIB	Second draft following EIB comments
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March 2022

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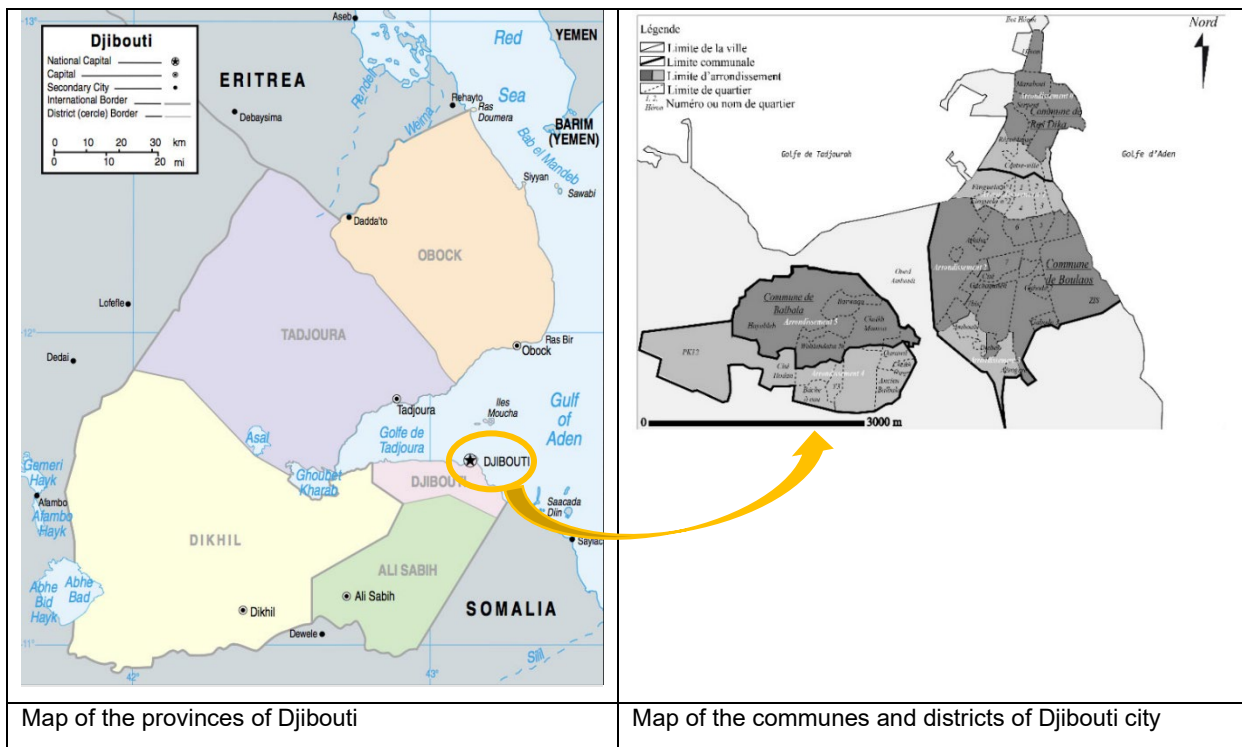
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1. Introduction

Project summary information

Name of the project	Djibouti Storm water drainage system with integrated devices for intercepting solid waste
Location	Djibouti, Djibouti
Promoter	Office National de l'Eau et de l'Assainissement de Djibouti (ONEAD)
Sectors concerned	Storm water drainage
Main components of the project	Creation of solid waste interception structures on the storm water drainage network and rehabilitation of this network
Estimated budget	EUR 85.5 million
Current population	The project will take place in the capital Djibouti-ville (or Djibouti district), which has a population of 576 157 (<i>World Bank, 2020</i>) or about 58% of the country's population. With a population growth of 1,9%/year (period 2010-2015, Djibouti EN.pdf (africancleancities.org)) the city's population will reach about 795,100 by the end of 2040.
Contact persons	enquiries@copip.eu

Figure 1: Project Location



2. Key Institutions and Planning Framework

Key institutions	<p>The project promoter is the Office National de l'Eau et de l'Assainissement de Djibouti (ONEAD).</p> <p>ONEAD is mainly responsible for the planning and design of drinking water supply and sanitation projects- and also for the storm water drainage system. It is under the supervision of the Ministry of Agriculture. ONEAD is a parastatal agency with financial autonomy.</p> <p>Law n°145/AN/06/5ème L of 1st June 2006 creating the National Water and Sanitation Office of Djibouti specifies the responsibilities and operating mode of the Office.</p>
Planning framework (key policies, strategies, plans)	<p>The main planning documents applicable to storm water management are:</p> <ul style="list-style-type: none"> • Djibouti Sanitation Master Plan 2018; • Diagnosis and recommendations for an integrated flood risk management in the Djibouti agglomeration (2021).

3. Assessment of the current situation and needs

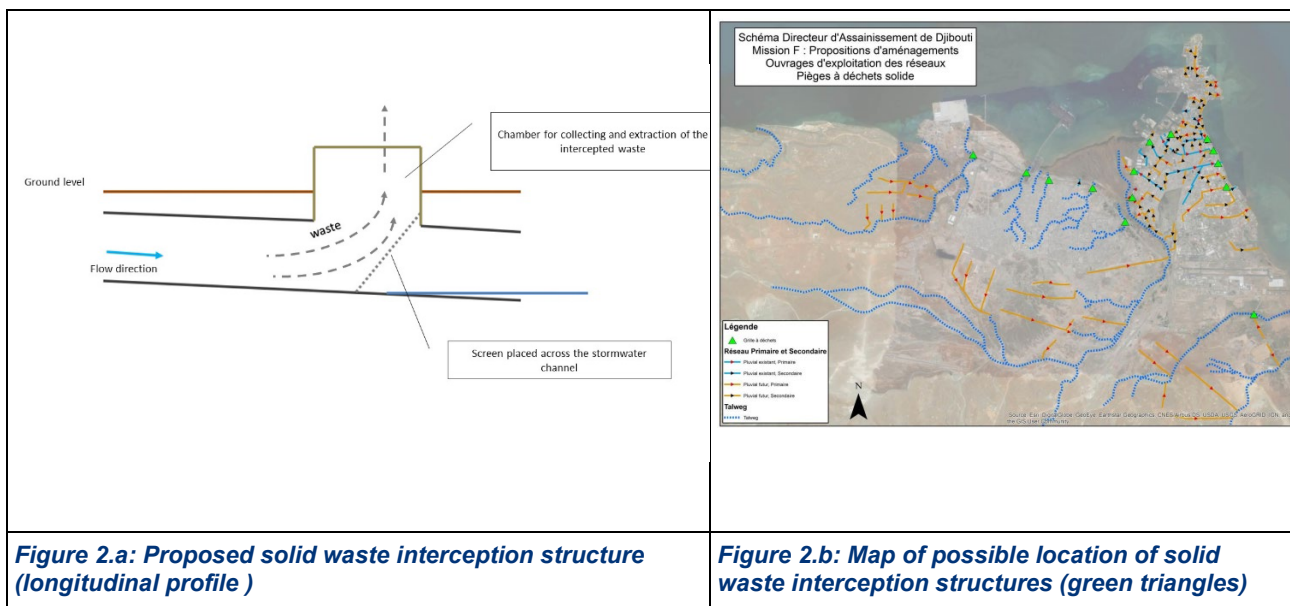
Surface water (stormwater) drainage network	<ul style="list-style-type: none"> • The surface water drainage network in the city of Djibouti is not very dense (15 km in total). Several catchment areas are not equipped with drainage networks, which leads to run-off on roads, water stagnation in depressions in the natural terrain and damage to crossing structures; • The geographical context (topography, tidal impact) is not very favourable for the surface water drainage. In addition, many characteristics of the stormwater networks (dimensions, connections, overflows) are not fully known (i.e. not well documented); • Currently there is accumulation of solid waste along the drainage network. This impacts the functioning of the network and is a source of solid waste discharge into the sea; • During periods of heavy rainfall, the network is no longer able to drain the water efficiently, which leads to more local overflows, sometimes with dramatic consequences, such as the floods observed in November 2019; • The lack of a separate networks for wastewater and surface water also leads to the pollution of the water table in the neighbouring residential areas along the drainage routes. <p>There is therefore a major issue related to the management of solid waste accumulated in the storm drainage system which includes plastic pollution, and reduction in the drainage system capacity due to blockages etc.</p> <p>Following discussions with ONEAD, it is clear that there is a great need for investment in the rehabilitation of the drainage network.</p>
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4. Scope of the project and type of investment measures to be implemented

4.1 Scope and estimated cost of the project

4.1.1 Project scope

The 2018 Sanitation Master Plan presents the necessary investments for the rehabilitation of the stormwater drainage network and integrating the solution for intercepting solid waste before discharge into the sea. The operating principle of these devices and their location are illustrated in the diagram below:



The solution proposed in the sanitation master plan integrates a chamber placed above the last manhole upstream of the sea outfall and a transverse metal screen placed along the channel, in the flow direction. The screen traps the floating solid waste before its discharge to the sea and the waste is then brought up and evacuated manually through the manhole. It should be noted that this solution requires significant operating effort, given the risk of grate clogging and possible overflow during heavy rainfall if the grate is not cleaned in time.

The proposed solid waste interception scheme is a good starting point and could be studied in more detail and improved in the COPIP project at Pre-FS stage. The stormwater management scheme should be developed in a holistic approach integrating the following measures:

- Stormwater infrastructure works: Creation of waste interception structures downstream of the main storm drains (e.g. the 14-unit areas provided for in the document submitted by the promoter);
- Recalibration and restoration work on the upstream stormwater drains to limit the risk of blockage of the existing culverts and crossings;
- Lightweight equipment to collect waste at accumulation points upstream of the network and in natural slopes;
- Communication and awareness-raising tools for local residents and inhabitants;
- Integration of recovered waste into the existing and future solid waste management model, with the priority given to the plastic recycling rather to landfilling.

- Management tools to optimise the collection of waste from the stormwater network and to measure the efficiency of the system for future improvements.

4.1.2 Summary of proposed investment measures

Ref. Number	Measure	Indicative cost (EUR)*
1	- Rehabilitation / extension of the stormwater drainage network in Djibouti-ville (central district)	
2	- integration of solid waste interception devices (estimated cost for 14 units)	
3	Awareness raising component	
Total		85 500 000

* Costs based on investment programme proposed in the Sanitation Master Plan 2018

4.2 Assessment of project scope and alternative/complementary options

The solid waste interception devices proposed in the Sanitation Master Plan may be adapted according to the nature of the four possible solid waste interception areas:

- Sector 1: Upstream at the level of the deposit area before discharge into the wet drains;
- Sector 2: At storm drains: Underground or overhead;
- Sector 3: At natural river drains: Talwegs, streams, water bodies;
- Sector 4: In the marine environment.

The devices, in the form of equipped slow-down zones, fences or nets etc., to be proposed according to the specification of the area to be treated (solid waste collection issues, topography etc.), will make it possible to create controlled waste accumulation and recovery zones and will improve the efficiency of waste recovery and cleaning operations.

The 2018 Sanitation Master Plan diagnosis will also be updated with the new data available and feedback from the recent rainfall events that has affected Djibouti.

The investment programme is accompanied by a strategy to reduce vulnerability in times of crisis with:

- Implementation of protective devices to limit damage during the crisis: cofferdams, raising of doorsteps or pavements, drainage pumps, etc.
- Proposal of preventive measures to limit damage before the crisis: Identification of low points and flooded sectors, de-limitation of refuge areas, awareness-raising among local residents, etc.

The "retention" of waste in the network (at the neighbourhood level) could also support awareness-raising activities among the population with the installation of informative signs, for example.

5. Contribution to the Objectives of the Clean Oceans Initiative

Stormwater component	Improving stormwater management while improving the management of solid waste accumulated and transported by the drainage system
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6. Approach to project funding

6.1 Current funding

Wastewater and stormwater management in Djibouti City is provided by ONEAD and financed by its own funds and is subsidised primarily from intergovernmental revenue transfers.

6.2 Estimated cost

EUR 85.5 million (see details in table chapter 4.1.2).

6.3 Potential for income generation and project sustainability

ONEAD does not apply cost recovery tariffs to stormwater management and there are currently no plans of implementing such mechanisms in the foreseeable future. It does seem possible however that revenues could be realized from recyclables if the policy enabling framework is set up. In case there are no plans to market recyclables, then the absence of any positive service-related revenues would render a financial analysis to determine project sustainability redundant (in traditional cost recovery cash flow terms).

Since the COPIP proposed investments cannot be justified in accordance with cost recovery and market related cash flows it will not be possible to estimate financial performance comparators based on willingness of service receivers to pay, nor from sales in the market for recyclables. It would probably be worthwhile investigating the interest of the private sector in exploiting the market for recyclables. In which case it may be possible for ONEAD to realize some of these gains through taxation. If not, then justifications for the investments will need to be based on the balance of quantifiable environmental and social net benefits or externalities. If these are quantified in economic terms the relevant project related performance comparators would be an Economic Internal Rate of Return (EIRR) and an Economic Net Present Value (ENPV). Financial rates of return resulting from the project investments would not be relevant.

At the PFS stage the financial analysis would therefore be limited to a preliminary assessment of ONEAD's financial status in the context of intergovernmental revenue transfers including any loans and grants subsumed in these. However, since ONEAD is reliant on such transfers from the National Government any loans would need to be subject to a creditworthiness analysis carried out on the latter post FS stage. This would most likely be initiated by the EIB, possibly supported by COPIP. Grants covering investment costs and possibly even O&M costs could also be considered but it would seem unwise to provide these in the absence of commitments to improve cost recovery and to ensure that assets are managed in the most cost-effective way. In this context it would be relevant to consider the potential competitive advantages of leveraging the private sector in PPP mode.

6.4 Potential sources of funding

From the above and without an evident change in cost recovery policy it seems clear that sources of funding will likely be limited to intergovernmental revenue transfers potentially supported by loans and grants from interested International Finance Institutions (IFI)'s like, for example, the EU.

7. Key aspects to consider for the pre-feasibility study

The pre-feasibility study would be carried out within six months after approval by the EIB of the project fiche and the ToR for the pre-feasibility study. The main issues to be addressed in the pre-feasibility would include the following,

- Determine extension, status and Operation and Maintenance (O&M) costs of existing stormwater assets;
- Evaluate options for expanding and improving the storm water management system, including options for the solid waste interception components, and first estimate of capacities, with associated costs;
- Evaluate budget allocations for existing stormwater assets;
- Identify current sources of funds – covering intergovernmental revenue transfers including loans and grants from IFI's;
- Estimate the potential shortfall of funds compared to requirements if any;
- Identify any potential economic, environmental and social benefits of the project that could be used to justify closing the funding gap (if applicable);
- Carry out a cost-benefit analysis of potential economic, environmental and social impacts (quantifying them to the extent possible);
- Identify funding and co-financing arrangements for the COPIP project (grant/loan/loan conditions) to fill the estimated funding gap;
- Identify technical assistance needs to determine beneficial institutional delegations and responsibilities;
- Identify opportunities to improve efficiency, reduce costs, optimise resources and mobilise private funding by engaging the private sector in PPP mode;
- Evaluate potential strategies for improving efficiencies, reducing costs, and enhancing cost recovery, if any.

8. Social and environmental aspects

An environmental and social analysis will be initiated in the pre-feasibility phase. The objective of this analysis will be to identify the environmental and social issues in the project area, to examine the potential positive and negative impacts expected from the project and to propose, if necessary, mitigation measures for negative impacts. Without prejudging the results of these analyses, the project will have to be examined in relation to the following environmental and social aspects.

Key social and environmental aspects	<ul style="list-style-type: none"> • Improving health and safety conditions for the population of Djibouti; • Reduction of pollution of the natural environment generated by solid waste with a particularly positive impact on the aquatic environment (especially the marine environment); • Improvement of solid waste management, with the recovery of waste from the storm drainage system depending on the existing waste recycling and recovery opportunities; • Flood risk reduction. • Indirect improvement of the quality of the coastal environment and indirect positive impacts on the economic sectors drawing resources from the natural environment.
Key issues to be included in the environmental and social impact assessment	The environmental and social analysis initiated in the pre-feasibility study phase, in addition to identifying impacts and mitigation measures, will address the following aspects:

	<ol style="list-style-type: none"> 1. Integration of eco-design solutions in the project to reduce the impact of the project on all environmental components (biodiversity, water resources, air quality, circular economy). 2. Analysis of the vulnerability of the project to climate risk and identification of possible adaptation measures. 3. Rapid analysis of the project's impact on climate change in terms of GHG emissions. 4. Measures to involve the local population, all categories, in the design of the project through a participatory approach to consultation and awareness raising. 5. The gender dimension of the project and, in particular, the possible impacts on gender equality conditions.
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9. Recommendations

Based on the findings of the Djibouti fiche, the fiche has been ranked and is summarised below.

Ranking measure	COPIP ranking (1-3)
EUD Priority	2
EIB Priority	2
Promoter Priority	2
Impact	2
Likelihood to proceed	1
Sub Total A	9
Institutional capacities (at National & Local/project levels)	3
Regulatory compatibility (at National & Local levels)	unknown at fiche stage
Financial Capacity at National & Local levels (including measures of creditworthiness)	1
Sub Total B	4

Note priority ranking scale 1 = low ranking 2 = medium ranking 3 = high ranking

With **Sub Total A** having a score of nine (9) it is recommended this COPIP project does not progress to Pre-Feasibility Stage within the current COPIP programme as the scoring is much lower than for other projects considered for a Pre-Feasibility Study.