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STAGE FOUR

Yemen Water Sector

Yemen Water Sector - Damage Assessment Report of the Urban Water Supply and Sanitation Situation in Yemen – Stage IV

Part 2: Situational Assessment Report

Annex 1 Technical Assessment Report for Ataq

Imprint

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Abbreviations

ABR	Anaerobic Baffled Reactor
BMZ	German Ministry of Economic Cooperation and Development
BoD	Board of Directors
BoQ	Bills of Quantities
CAC	Cooperative Agricultural Credit (Bank)
CBO	Community Based Organization
COCA	Central Organization for Control and Auditing
DAS	Damage Assessment Study
DCI	Ductile Cast Iron
DI	Ductile Iron
EM	Electro-mechanical
EUR	Euro
FC	Financial Cooperation
GI	Galvanized Iron
GDP	Gross Domestic Product
GIZ	Gesellschaft für Internationale Zusammenarbeit GmbH
GoY	Government of Yemen
HR	Human Resources
HRDU	Human Resource Development Unit
INGO	International Non-Governmental Organisation
ICRC	International Committee of the Red Cross
IDP	Internally Displaced People
IT	Information Technology
JAR	Joint Annual Review
KfW	Kreditanstalt für Wiederaufbau
LAC	Local Advisory Committee
LC	Local Corporations
MoCS	Ministry of Civil Service
MoF	Ministry of Finance
MoM	Minutes of Meeting
MWE	Ministry of Water and Environment
NRC	Norwegian Refugee Council
NRW	Non revenue water
NWRA	National Water Resource Authority
NWSA	National Water and Sanitation Authority
NWSSIP	National Water Sector Strategy and Investment Plan
OMS	Operation Management Support
O&M	Operation and Maintenance
PIIS	Performance Indicator Information System
PVC	Polyvinylchloride
QF	Questionnaire forms (DAS Stage III)
St, ST	Steel
TA	Technical Assistance
TFPM	Task Force on Population Movement
UN	United Nations
USD, U$	American Dollar
WASH	Water, Sanitation and Hygiene
WFP	World Food Programme
WSP	Water Sector Programme in the Republic of Yemen
WSLC	Water and Sanitation Local Corporation
WU	Water Utilities
WWTP	Wastewater Treatment Plant
YER, YR	Yemen Rial

Units

LS	lump sum
m	meter
Mio	million
masl	meter above sea level
mg/l	Milligram per litre
m^3/d	Cubic meters per day
lpcd	litre per capita per day
no, nos	number (numerical figure)

Executive Summary

Ataq NWSA is responsible on the water and sanitation services in Ataq area. The NWSA has three main directorates; financial, water, and sanitation. Currently, there is no sanitation system in place only few collection lines in Ataq city where collected wastewater is discharged without treatment to wadi.

As per the 2022 collected data the total population in Ataq area is around 200,000. The served population is around 80%. The assessment results for the NWSA institutional and technical parts are listed below;

A. Institutional Assessment and Recommended Technical Assistance Measures (TA Plan)

From the institutional part the NWSA has three main directorates; financial, water and sanitation. The total number of employees is in total 118 employees as per year 2022 figures. The NWSA governance and management needs to address the following issues to improve work efficiency;

Department	Challenge	Action	Priority
Governance / Management / Organisational structure / Resilience	No local committee involved in decision making	Form local committee to participate in the decision making process.	Moderate
	Organisational structure needs update to reflect new sections for Women and	Update organizational structure as per the real situation	High
	No contingency plan for emergency	Prepare contingency and risk management plan including drought management plan	High
	Convert the NWSA to local corporation will facilitate communication with central authorities and international organizations and will improve work efficiency.	Prepare concept report for importance of having local corporation to ministry	Moderate
	No capacity building plans to NWSA staff according to directorates needs	Prepare capacity building plan to NWSA staff according to directorates needs	High
Human resource and capacity building management	No Job description for staff	Prepare job description for staff	Moderate
	Low qualification or skills of some employees	Carry out regular training for all staff as per directorates needs.	High

Finance management	Lack of standardized procedure and reporting	Prepare standards work and work flow procedures to minimize time	Moderate
	Lack of qualified accounting auditor and reviewer	Appoint accounting auditor	High
	Financial and accounting computer programs need update	Purchase new license	Moderate
Customer service and relation management	Considerable domestic customers without meters	Install more meters	High
	Lack office equipment, computers, printers, data network	Purchase of more computers, printers for customers services	High
	No workshop for meter maintenance	Construct workshop for maintenance of meters and other fittings	High
	Improve customers collection efficiency	Provide incentives to encourage customers to pay bills	Moderate
IT	Lack of integrated local network	Install local area networks for all offices	High
	Lack of computers and servers	Purchase of computers and printers	Moderate
Gender	No women employees.	Hire women in suitable jobs like secretary, finance, and IT	Moderate

B. Infrastructure Assessment and Recommended Rehabilitation Measures (Investment Plan)

From the technical part the NWSA provides water and sanitation services to Ataq city and areas around it. The NWSA is serving 160,000 out of total population of 200,000. Currently, around 80% of the population are covered by water supply service while around 20% rely on the water tankers. The NWSA obtains the water from the currently 11 operating wells under Ataq responsibility while the remained amount are from wells outside NWSA responsibility. The total production capacity is 1,126,000 m^3. There are 4 pumping stations, 60 km of main water supply lines and 100 km of water distribution network. There are 5 ground reservoirs and one elevated tank.

The water per capita in 2022 is very low around 18.5 litres per person per day compared to WHO standard 150 litres per day. This is mainly due to lack in water resources and infrastructure. The sanitation services is very limited, no sewerage collection network, or treatment plants.

The NWSA needs to address the following issues to improve the water services.

Department	Challenge	Action	Priority
Water Production and Supply	Low per capita around 18.5 l/p/day And 20% of the population without water supply	Drill new wells and rehabilitate exiting ones	High
Water Pumping	No spare pumps and no spare parts	Purchase stand by pumps and pumps spare parts	High
Water storage and distribution	No enough storage to increase supply duration	Construct new reservoirs to increase storage capacity	Moderate
Water Distribution	Still 20% of the population without water supply network	Expand water distribution network to cover the remaining 20% of population	High
Water quality monitoring and testing	No water lab, no water quality monitoring	Construct water lab and hire qualified staff for water testing and monitoring	High
Operation and maintenance	The lack of maintenance equipment, electricity generators for the O&M of the pumps, and water network	Procurement of electricity generators and transformers for sustainable water supply	Moderate
	Lack of spare parts	Carry out regular preventive maintenance of the facilities and equipment.	High
	No qualified staff for operation and maintenance	Carry out regular training for O&M staff	Moderate
Energy	Cost of diesel to run the electricity generators is high and no enough funds for it	Procurement and installation of solar systems to reduce dependency on diesel and to reduce high cost of diesel	Moderate
Wastewater	Only limited parts in the city have sanitation service	Construct wastewater collection network for all areas	Low

Based on the assessment results and NWSA needs the investment pan is categorized into three stages;

- Urgent
- Short term
- Long term

The estimated cost for the technical needed measures is as follows;

Package	Measures	Urgent $	Short-term $	Long-term $	Total $
1	Civil works on buildings and structures		290,000		290,000
2	Well rehabilitation and new construction		134,000		134,000
3	Water pumping station		1,110,000		1,110,000
4	Water network rehabilitation and extension, water meters and valves			5,955,000	5,955,000
5	Generators	72,000			72,000
6	Submersible and lifting pumps	325,000			325,000
7	Vehicles, machines, tools		154,000		154,000
8	Solar energy systems		320,000		320,000
	Laboratory Building	40,000			40,000
11	Laboratory equipment	30,000	5000		35,000
Total investment	467,000	1,539,000	5,955,000	7,961,000	

The required estimated budget is as follows:

- Urgent measures: 467,000 $
- Short-term measures: 1,539,000 $
- Long-term measure: 5,955,000 $

The total needed amount for the rehabilitation, restoration and extension of the water and sanitation system, provision of solar systems and supply of required operation and maintenance materials has been estimated to about million $ 7,961,000.

1. Background

Ataq city is the capital of the Governorate of Shabwah. The governorate is located in the southeastern part of the Republic of Yemen, along the Arabian Sea coast between Abyan and Hadhramaut as shown in Figure 1.1. The governorate has 17 districts, Ataq district is the fourth biggest one.

Figure 1.1 Location Map.

Ataq city is inland district and almost flat with only 70 m difference in topography. The city elevation varies from 1120 to 1190 m above sea level.

The population growth through period from 2017 to 2022 in Ataq city the governorate districts is shown in Table 1.1. The annual growth rate during the period from 2017 to 2022 is constant and high around 7%. This mainly due to high migration rate affected by war.

Year	2022	2021	2020	2019	2018	2017
Population	200000	180000	170000	165000	155000	145000
Immigrants	87000	77000	67000	56000	48000	40000

Table 1: 1. Population Growth in Ataq City

The water and sanitation authority NWSA is responsible on the water and sanitation services in Ataq city. Ataq NWSA administratively belongs to the general water and sanitation corporation. The main objectives of the situational assessment report for NWSA in Ataq city are as follows;

- Assessment of the current water and sanitation services; this covers both technical (water and sanitation infrastructure) and institutional (offices, staffing and equipment) aspects.
- Prepare list of actions to improve the water and sanitation services with cost estimate
- Prepare investment plan for GIZ and other donors

For this purpose two questionnaires were prepared based on DAS III list of required information; Questionnaire A for technical issues while questionnaire B for institutional issues. In addition, the field team prepared checklist for the problems and challenges faced the LC.

The questionnaires were prepared with close coordination with GIZ and the NWSA representatives through the carried out workshops in Yemen. The questionnaires were distributed to LC's and NWSA for filling the requested data and the consultant field team is working with LC and NWSA representatives on filling gaps and getting the LC and NWSA certification for collected data.

Part A is covering all institutional subjects: management, governance, human resources, customer management, financial management, and IT management while Part B covers water supply, water and wastewater infrastructure, and managements. The questionnaires were distributed in March 2023. Interviews were conducted with the General Manager, Deputy General Manager for technical affairs, the Financial Manager, the Human Resource Manager, the Technical Manager, the Customer Manager and IT Manager. The field team verified and certified the questionnaires from LC and NWSA in August 2023.

In addition, the field team held several telephone conferences with the responsible members of the LC and NWSA respectively to ask for clarification of data. All provided data were analysed and respective results incorporated in this report. The final version of the filled questionnaire forms was translated into English and are listed in Annex xxx.

The sections below summarises the assessment outcomes of the water and sanitation services and LC and NWSA management capacity. The report sections are based on Hodeida report. The outcomes are summarised into an investment plan which include actions and measures to improve the services with cost estimate.

2. Assessment of Organization and Management

The LC's in Yemen were established based on Republican Decree no. (02) for the year 2001. The legal procedures and laws are still in operation during the conflict; the LC is following the financial and civil service laws, law for procurement and water law.

The LC provides the BoD with its plans and reports for discussion in the regular meetings. Obviously, the BoD was conducting its regular meetings on monthly basis before the crisis. Due to insecure condition, they stopped the recurrent meetings. The BoD should resume the meetings to insure regular monitoring and assessment of the LC

performance. Decisions and instructions taken by the BoD are followed up through:

- Authorization of the LC General Manager to prepare the progress report of the agreed actions in the current meeting and present it for discussion in the next meeting.
- Authorization of the Governor Deputy to follow up the LC management to implement certain agreed actions.
- Authorization of the competent BoD members to check, review and provide their feedback on the discussed LC performance reports and plans.

The LC emphasizes on the good interaction of the Ministry of Water and Environment, the Board of Director and the Local Council cooperation during the crisis.

2.1 Organization Structure and Governance

Ataq LC organizational structure is shown in Figure 2.1. The LC has an administrative procedure which was prepared for the water sector in year 2000. The LC has the following directorates and sections;

- Administrative directorate which includes HR and employee's affairs sections
- Financial directorate which includes accounting, funds, loans, assets sections
- Water directorate which includes water production, water distribution, water connections, operation and maintenance, quality, laboratory, wells and pumping stations sections.
- Sanitation Directorate which includes plants, collection network, connections, lifting stations, operation and maintenance, and laboratory sections.
- Customers directorate which includes customers services, relations and accounts sections
- Planning and Projects directorate
- Procurement and warehouse directorate
- Internal audit directorate
- IT directorate

The structure review indicated that there are some challenges to be addressed such as;

- Organizational structure needs update to incudes new sections
- Internal rules and regulations need to be updated with relation to complains, promotions and speciality areas
- LC buildings not enough to accommodate all directorates and sections
- Lack of equipment, computers, printers, cameras and inspection tools.

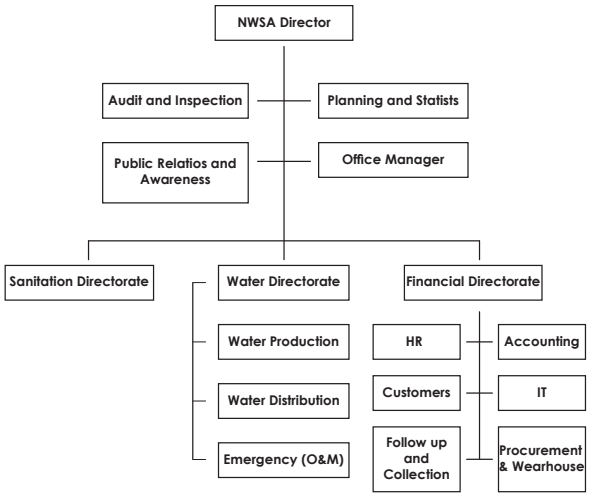


Figure 2.1 Organizational Structure

2.2 Governance and Management

In the governance side Ataq NWSA mange the water and sanitation services through the various directorates and higher management team (NWSA manager and his assistants). The directorate of technical affairs coordinate the water supply and sanitation services with the management team. There is no written procedures or standard procedures (SOP's) to be followed in each directorate including the operation and maintenance ones. In order to improve the governance and management within Ataq NWSA the following issues need to be addressed;

Form a local committee to participate in the decision making process

Convert the NWSA to local corporation will facilitate communication with central authorities and international organizations and will improve work efficiency.

Involve more women to increase women participation in the NWSA activities

Development of capacity building plans to NWSA staff according to directorates needs

Development of job descriptions for staffing

2.3 Assessment of Staffing Needs

There are 118 staff member in Ataq NWSA 88 are civil employees while 30 are on contract basis as shown in Table 2.1 There are no female staff members in Ataq NWSA. The table below summarizes the staff according to gender, working condition. According to the NWSA all employees are currently working.

Staff situation	2017	2019	2022
Total no. of permanent staff	88	88	88
Total nos. of contracting staff	7	14	30
Total nos. of day workers (temporary worker)	0	0	0
Total no. of staff	95	102	118
Total nos. of staff male actual working	95	102	118
Total nos. of staff male not actual working	0	0	0
Total nos. of staff female actual working	0	0	0
Total nos. of staff female not actual working	0	0	0
% of female to total	0%	0%	0%

Table 2.3 Staff Situational Summary

There is no data on number of staff per each directorate. The qualification is considered as important indicator for the employee performance. The collected data on qualifications showed only the qualifications of the managers in some directorates where 3 has university degree one diploma and 3 high school. Figure

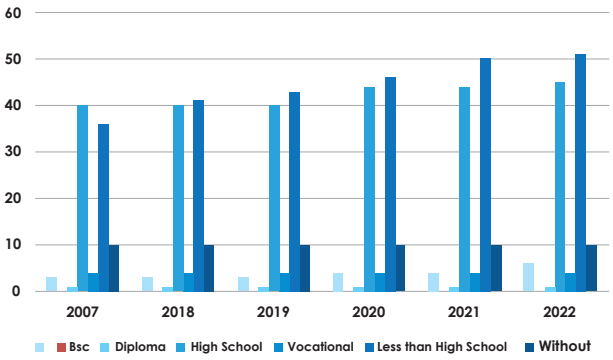


Figure 2.2 Qualification Distribution

2.4 Capacity Building Plan

The NWSA prepared a plan for staff training needs, the plan was submitted to the ministry to get funded and implemented. In the meantime the NWSA staff participated in several training in Aden, Al-Mukalla and Shabwah through period from 2017 to 2022 such as;

- Maintenance of Solar energy systems
- Early warning
- Crises management
- Preparation of budgets

The training was mainly organised by UNICEF and ministry. The number of the participants in the training was 9 staff members, all are males and no females. The following areas listed in Table 2.2 were listed in the plan for staffing training needs;

Short Term Training	Directorate	No Trainees	Training days
Wearhouse Management	Wearhouse and Accounting	5	5
Design of solar energy system	Technical Affairs	10	5
O&M for electricity generators	Technical Affairs	10	5
Mapping (GIS)	Technical Affairs	2	10
Design of tariff structure	Higher Administration	3	5

Long Term Training	Higher Administration	No Trainees	Training days
Strategic Planning	Higher Administration	5	5
Jobs structure and description	Higher Administration	5	5
Projects management	Higher Administration	5	5
Customers services	Customers Directorate	4	5
Unified accounting system	Financial Directorate	4	90
Oracle Database programming	IT section	2	180
Electrical network	Technical Affairs	3	90
Field survey	Technical Affairs	2	180
Design of water supply and sanitation networks	Technical Affairs	6	30
Design of RO systems	Technical Affairs	6	7
Maintenance of generators	Technical Affairs	6	30
Maintenance of solar systems	Technical Affairs	6	30
Chlorination	Technical Affairs	6	7
Water and sanitation treatment	Technical Affairs	6	7

Table 2.5 Training Needs

2.5 HR Procedures and Reporting

Ataq LC follows the general procedure of public civil law and national salary scheme for employment and salary payment. Nonetheless, there are no job descriptions available for the different positions, which indicate that the employees may not be always aware of their tasks and responsibilities. Furthermore, there is no cooperation with other LCs in terms of HR support or exchange of staff.

The workflow procedures of human resource department are not documented in any way, but the annual vacation and attendance and payroll is reported monthly. The LC applies the shiftwork for the technicians in order to minimize the operation cost during the crisis such as overtime and overnight allowances.

3. Assessment of Financial Capacity

3.1 Financial Data, Procedures and Reporting

Ataq NWSA organizational structure shows the financial directorate as one of the key directorates. It includes several sections such as accounting, HR, Audit, IT, and projects. The financial directorate is responsible on all

financial issues from staff salaries to projects funds and all related expenses.

The financial directorate prepare a semi-annual financial report. The report includes costs, expenses, balance, and assets. The report shared with several organization such as central water and sanitation corporation and the central audit bureau. The financial directorate uses accounting, assets and inventory software for financial analysis and for the preparation of the financial report.

The collected financial data in questionnaire A covers the followings;

- Recurrent annual budget;
- Revenues , expenses and liabilities;
- Financial efficiency and support
- Financial subsides
- Bank account data and cashflow
- Cashflow requirements

3.2 Recurrent Budget

The annual total recurrent budget overview is used as monitoring tool to identify the NWSA performance in utilizing the allocated and received budget. In addition, the deviations of the expenses to the approved or received budget from the funding sources - recurrent or investment budget – are identified. Table 3.1 below provides an overview of the recurrent requested budget and received amounts from the government.

Recurrent budget (Yemen Riyal)	2017	2019	2022
Total recurrent budget requested	231,740,000	239,209,884	382,050,000
Total recurrent budget approved in YER	231,740,000	239,209,884	382,050,000
Total recurrent budget disbursed in YER	231,740,000	239,209,884	382,050,000

Table 3.1 Recurrent Budget in (Yemen Riyals)

3.3 Revenues, Expenses and Liabilities

The table below (Table 3.2) presents an overview of the annual amount of operation and maintenance cost for Ataq NWSA according to different categories for period from 2017 to 2022.

Revenues / Expenses (Yemen Riyal)	2017	2019	2022
Total revenue in YER	33,268,344	109,927,532	216,333,526
Total expenses in YER	119,601,183	187,464,658	348,845,372
% expenses versus revenue	360%	170%	160%
Salaries, allowances, incentives and others in YER	69,827,896	90,914,127	101,628,861
% Salaries, etc. of total revenue	209%	83%	47%
% Salaries, etc. of total expenses	58%	48%	29%
Fuel, oil in YER	12,577,467	16,641,809	39,009,734
% Fuel, oil, of total revenue	38%	15%	18%
% Fuel, oil, of total expenses	11%	9%	11%
Electricity in YER	11,385,967	18,783,637	107,507,200
% Electricity total revenue	34%	17%	50%
% Electricity of total expenses	10%	10%	30%
Maintenance, spare parts, other O&M expenses in YER	1,383,603	1,453,570	17,621,917
% Maintenance, other O&M of total revenue	4%	1%	8%
% Maintenance, other O&M of total expenses	1%	0.7%	5%
Other expenses in YER	3,340,512	6,696,982	7,575,760
% Other expenses of total revenue	10%	6%	3.5%
% Other expenses of total expenses	2.8%	3.5%	2.2%
Depreciation in YER	21,085,738	40,161,707	75,501,900
% Depreciation of total revenue	63%	37%	35%
% Depreciation of total expenses	18%	21%	22%

Table 3.2 Revenues, Recurrent Costs and Depreciation

Revenues:

Total annual revenue increased significantly from year 2017 to 2022 by 6.5 times. However, the annual expenses are much higher than annual revenues. In year 2017 the ratio was 360% then decreased with time to 170% in year 2019 then to 160% in year 2022.

Expenses:

The expenses increased from year 2017 to year 2022 by 3 times due to an increase of the salaries, fuel prices and operation and maintenance cost. The salaries formed around 58% of total expenses in year 2017 however it drooped with time to 29 % in year 2022.

The power (fuel and electricity) formed around 21% in year 2017, it increased to 41 % in year 2022.

The O&M cost formed small part of the expenses 4% in year 2017 increased to 8% in year 2022.

The depreciation represents 18% to 22% between year 2017 to year 2022. The total expenses which indicates a reasonable portion compared to the number of electromechanical facilities either for water or for sanitation infrastructures.

Revenues versus Expenses

The revenues compared to expenses indicated that Ataq NWAS faces high challenge in the financial capacity as the expenses still much higher than revenues (ratio 160%).

Liability

The financial liability of Ataq NWSA is shown in Table 3.3 through the following indicators; The total liable amount accumulated to 195,058,062 Riyal in year 2022. The highest portion is for electricity which represents 55%.

Financial liability	2020 (YER)	% of total
Salaries and wages	29,196,918	15%
Other dues for employee	11,326,150	5.8%
Indebtedness of electricity	107,507,200	55%
Fuel and oil	39,009,734	20%
Insurance	780,650	0.4%
Taxes	1,818,672	0.4%
Local councils	5,418,738	0.9%
Other financial obligation	-	2.8%
Total	195,058,062	100%

Table 3.3 Financial liabilities in Year 2022

Looking at the huge figures of liabilities it is evident that the NWSA is not even able to cover the operation and maintenance cost, as there are still payable amounts to insurance organization, local council and for taxes.

3.4 Financial Efficiency and Support

The financial revenue increased from 33,268,344 Riyal in year 2017 to 216,333,526 Riyal in year 2022 (around 6.5 times). This an indicator for improvement in the financial efficiency. The table below (Table 3.4) summarizes the financial overview of the LC since 2022.

Description	2022 (YER)
Total revenue	216,333,526
Total expenses	348,845,372
Depreciation	75,501,900
Total expenses plus depreciation	424,347,272
Deficit / savings with depreciation	-208,013,746
Deficit / savings without depreciation	-132,511,846

Table 3.4 Financial Overview for the last two years

It is clear that there is big deficit (-132,511,846 Riyal) regardless of the depreciation, this makes the NWSA unable to cover the operation and maintenance cost which affects the quality of water supply services.

3.5 Financial Subsidies

The deficits increased with time from 86,332,839 Riyal in year 2017 to 132,511,846 Riyal in 2022. The deficit requires financial support or subsides from the ministry and other organization. Table 3.5 below presents an overview of the received funding subsidies in the past three years.

Funding	Year 2017	Year 2019	Year 2022
Government	52,578,549	90,041,679	53,557,431
Donors			215,000
Total	52,578,549	90,041,679	53,772,431
Deficit	-86,332,839	-77,537,126	-132,511,846

Table 3.5 Financial subsidies

The government provided in year 2022 53,557,41 Riyal as subsides while the donor provided only 215,000 Riyals. The total support still small compared to the deficit in year 20222 with total amount of 132,511,846 Riyals.

The donor's contribution was mainly from the UNICEF and was used to provide fuel to electricity generators and purchase pumps and spare parts. Other non-governmental organizations such as international immigration NGO, family protection NGO, Humanity Support NGO provided electricity generators, pumps, cars, operational and maintenance equipment.

3.6 Bank Account Data and Cash Flow

The table below (Table 3.6) presents an overview of the accounts for 2015 and 2016. The connection account is the income the LC received for new connections. Respective amounts are utilized for investments. The income account represents the revenues from the water sale. The LC uses these revenues to cover the running cost (O&M) of the LC. The depreciation account is for depositing the collected revenue for the required amount to cover the operation and maintenance cost and is utilized for replacing spares and materials of the water or sanitation facilities.

Account Type	Connections Account	Income Account	Expenditure Account	Depreciation Account
2017	first period balance (YER)	11,220.00	133,812.00	1,800,919.00
	Total Deposits (YER)		9,425,341.00	14,421,769.00
	Total withdrawals and transfers (YER)		9,454,954.00	16,227,159.00
	end period balance (YER)		13,199.00	4,470.00
2019	Total Deposits (YER)		34,731,776.00	41,286,871.00
	Total withdrawals and transfers (YER)		34,702,739.00	41,287,766.00

	end period balance (YER)		45,818.00	6,589.00
2021	Total Deposits (YER)		113,135,591.00	110,989,923.00
	Total withdrawals and transfers (YER)		109,337,569.00	110,835,259.00
	end period balance (YER)		3,889,897.00	218,695.00

Table 3.6 Bank Account Details

The total cash deposit from connections and income is around 145,032.0 Riyals in year 2017. The average monthly cashflow is around 12086 Riyals. There is no depreciation amount in the bank due to the crisis. Subsequently, there is no budget for investment or major maintenance available.

3.7 Cash Flow Requirements

The NWSA did not provide data on the cash flow requirements. The financial support has been calculated according to the financial capacity of the utility. To cover the monthly recurrent minimum expenses for salary and fuel, and electricity the NWSA needs about;

- Salaries 8469071.75 Riyals
- Fuel 3250811.167 Riyals
- Electricity 8958933.333 Riyals

In total, 20678816.25 Riyals are needed for basic issues. The fuel cost may vary during the course of time in dependence on the exchange rate, price per litre of fuel and availability of electricity from public grid. Support in this regard can be provided for 12 months during conflict in terms of improving the intuitional and financial capacity and the interim assessment. The unexpected and unreasonable fluctuation of the economic situation and unpredictable end of crisis does not allow providing reliable cash flow figures for the post-conflict era. Once post-conflict condition applies, the actual situation (particular regarding physical damage) of the NWSA has to be reviewed and the cash flow requirements updated respectively. In addition, the financial support has to be controlled through the MoF and in accordance with their regulations.

3.8 Financial Actions

According to the collected information in questionnaire B, Ataq NWSA implemented the following actions to improve the financial management.

- Increased water tariff in 2020
- Increased water connection fees by 100% in 2022
- Provided promotion up to 15 % of collected revenue to NWSA collection staff to increase revenue collection
- Provided customers with significant discount up to 40 % from bill amount to improve revenue collection
- Increased the use of solar energy in water production to reduce the production cost
- Increased the promotions for staff working in the field
- Adopted monthly sanitation budget
- Retirement plan for old staff to reduce expenses
- Facilitated customers debit payment
- Reduced water losses from water networks

In addition, the NWSA implemented several measures to improve the financial management such as;

- Allocate operational budget
- Conduct financial and administrative training to improve staff working efficiency
- Provide financial and administrative staff with needed computers and facilities to analysis financial data and prepare financial reports.
- Payment of insurance debit

4. Assessment of Customer Management

4.1 Customer Management Procedures and Reporting

Ataq NWSA has customers management system which is used for updating the network and customers data. The customer service centre applies the following procedures in this regard;

- Customer application for new customer connection, added water meters, change of meter location and change of customer name;
- House connection and meter installation;
- Meter reading and bills distribution;
- Collection;
- Inspection and follow up of connections.
- Customer Complains follow-up

For the readings of the functional water meters, the NWSA uses GIS based reading routes. The bills are distributed manually. The customers pay either directly at the NWSA Customer service centre, or to the NWSA account at the post office or to the staff when they visit their houses.

The NWSA uses a Maintenance Management System application for the customer complaint procedure. Thus, any complaints from customers are reported and addressed and documented.

4.2 Customer and Connection Data

The table below (Table 4.1) summarizes the number of connections per customer category for the water system. The total number of water connections in 2017 is 3233 connections, increased to 4300 in year 2022 most of which are in the domestic sector (domestic formed 87% from total in year 2022).

Connections	2017	2019	2022

Domestic connections	2822	3164	3743
Government connections	188	195	210
Commercial connections	223	263	334
Total connections	3233	3622	4300
%installed water meter to total connection	100%	100%	100%
No of functional water meters	3233	3622	4300
% of functional water meter to total	100%	100%	100%
No of nonfunctional with zero reading	1114	588	957
% of zero Reading water meter to total	34%	16%	22%

Table 4.1 Water connections per customer category

The total number of installed water meters in year 2022 is 4300 meters all of which is functional. water meters are charged for either an estimated consumption or a fixed amount per month.

In year 2022 there is 957 meters with zero reading water meters, representing 22% of the total connections which indicates that the respective customers are charged only for the minimum consumption of 5 m per month. This means the NWSA charges only 78% of the customers for the consumption from the actual water meter readings while the remained 22% pay the minimum charges.

There are only 856 sewerage connections in Ataq city, there is sewerage connections in all other areas. The collected sewer water is discharged to wadis without treatment.

4.3 Billing & Collection

Ataq NWSA takes monthly water readings and issue water bills every two months. The domestic sector is the largest sector in water consumption (in year 2022 domestic water formed 87% of the total connections). Table 4.2 shows the billing amounts and percentage from total for all sectors.

	2017	2019	2022
Total Produced Amount (m3)	184,440	500,000	1,126,000
Total Billed Amount (m3)	79,899	362,474	503,085
Percentage of Billed against Produced	43 %	73%	45%
Billed Domestic Amount (m3)	40,255	222,078	328,533
Billed Governmental Amount (m3)	35,903	114,892	130,264
Billed Commercial Amount (m3)	3,741	25,504	44,288

Table 4.2 Billing Amounts

The billed domestic water represents around 50% of the total amount billed in year 2022 while the government water represents 45% and commercial represents around 5%. Similarly, the revenues from domestic water represents around 51% in year 2022 while the revenues from government is around 43% and from commercial is around 6%.

The details for the billing and collection are shown in Table 4.3.

	2017	2019	2022
Total Water Revenues (Riyals)	36,370,725	94,807,460	220,860,400
Revenues Domestic (Riyals)	18,368,165	40,533,670	114,467,100
Percentage from Total	52%	43%	51%
Revenues Governmental (Riyals)	15,791,490	47,465,440	78,508,500
Percentage from Total	35%	50%	43%
Revenues Commercial (Riyals)	2,211,070	6,808,350	27,884,800
Percentage from Total	13%	7%	6%

Table 4.3 Revenues from Water Services

In Ataq the sanitation services is limited to certain parts where the NWSA is responsible on collection only. There is no treatment pants or reuse schemes. The served customers with wastewater collection pay fees for this service. Table 4.4 shows the revenues collected from sanitation service for various sectors.

	2017	2019	2022
Total Wastewater Revenues (Riyals)	3,822,832	8,069,277	9,715,515
Revenues Domestic (Riyals)	1,079,401	2,341,339	5,107,110
Revenues Governmental (Riyals)	2,685,606	5,449,367	3,816,870
Revenues Commercial (Riyals)	57,825	278,571	791,535

Table 4.4 Revenues from Sanitation Services

The collection efficiency is extremely low in all sectors. For example, the collection efficiency in year 2017 was 1.2 increased to 17.5 in year 2022. This reflected in high debit in all sectors. The total debit in year 2017 was306,225,318 Riyals increased to 713,433,250 Riyals in year 2022 almost doubled. Table 4.5 lists the issued and collected bills and debit for years from 2017 to 2022. The NWSA needs to improve the collection efficiency to reduce debit through several measures. Some of the measures are listed in the financial management section.

	2017	2019	2022						
	Number of bills	Water and wastewater	coll. Eff.	Number of bills	Water and wastewater	coll. Eff.	Number of bills	Water and wastewater	coll. Eff.
	No	YER	%	No	YER	%	No	YER	%
No of Domestic issued bills	1395	4,932,370	1.2%	1683	25,447,699	13%	2273	95017257	20%
No of Domestic collected bills	18			217			461		
Domestic debit		102,005,647			133,476,288			212,126,916	
No of Governmental issued bills	107	535,810	1%	108	935,573	3.7%	113	9519631	3.5%
No of Governmental collected bills	1			4			4		
Governmental debit		191,322,780			264,510,169			468,787,210	
No of Commercial issued bills	70	952,280	0%	99	4,737,977	18%	172	22508471	17%
No of Commercial collected bills	0			18			29		
Commercial debit		12,896,891			15,276,484			32,519,124	
Total number of issued bills	1572	6,420,460	1.2%	1890	31,121,249	18%	2558	127,045,359	17.5%
Total number of collected bills	19			339			449		
Total debit		306,225,318			413,262,941			713,433,250	

Table 4.5 Billing and collection amount per customer category

4.4 Tariff Structure

The tariff as shown in the table below (Table 4.6) was approved in 2010. This approval took into account the poor customers or rationalization of consumption in the tariff of the domestic sector and mosques. The sewerage tariff services are calculated as 80% of the water tariff and applies for customers connected to the sanitation system.

As shown in the table below the tariff is structured in different subcategories for each category of customer and presents the monthly fee per m3 water consumed.

Customer category	Amount of Consumption in m3/year	Water Tariff (YER/m3)	Sewerage Tariff (YER/ m3)	Total Tariff YER
Domestic & Mosques	(0 -5)	50	40	90
	(6 - 10)	60	48	108
	(11 - 15)	85	68	153
	(16-20)	100	80	180
	(21- 30)	140	112	252
	(over 30)	180	144	324
	Total:			
Government,& Schools	(0 - 10)	300	240	540
	(Over 10)	300	240	540
	Total:			
Commercial & Other	(0 - 10)	265	212	477
	(Over 10)	265	212	477
	Total:			

Table 4.6 Approved tariff structure

Obviously, the current tariff is insufficient to cover the total operation cost as stated hereinafter. The water and sanitation sectors need governmental subsidy to improve service efficiency. The NWSA should aim to increase its revenues and therefore improve their financial capacity through:

- Gradual increase of tariff structure;
- Increase number of connections;
- Minimize the Non-revenue water;
- Increase the collection efficiency from all customers and collected bills of domestic customers.

4.5 Quality of Customers Services

The NWSA has customers care centre for complaints and service quality. The percentage of resolved complains is high with 30 days for example 100% for bills and other complains. Table 4.7 list the number of complains and resolved time for each.

	2017	2019	2022
No of received bills complains	80	100	40
No of resolved complains	70	100	40
Average Response time (days)	30	30	30
No of other complains	20	18	20
No of resolved complains	202	18	20
Average Response time (days)	10	10	10

Table 4.7 List of number of complains and response time

5. Assessment of IT and Office Resources

Ataq NWSA has an IT department/section under the financial directorate. The IT section is responsible on the following;

Management of data/maps storage and transfer

Installation, operation and management of networks, servers, computers, printers etc.

The data includes administrative, financial, HR, customers and technical. There is GIS unit within the IT section responsible on preparation of GIS maps for water and sanitation infrastructure. The billing system is under the IT section and it forms significant part of the IT activities.

Currently, there is a local network in the main building connecting the IT with financial and NWSA office Manager. There is only one server, the server specifications are listed in the Annex of Questionnaire A. The server is in moderate condition and requires regular maintenance.

There are 5 desktops in moderate condition serving various sections mainly used for billing and accounting. There are 3 printers connected to desktops through local network. The printers used mainly for printing bills. The international organizations provided support to IT section in terms of printers, laptops, desktops, projector and external hard desks.

The software applications are mainly windows applications and special programs for billing, accounting, inventory control, Performance Information Indicator system (PIIS) and payroll (salaries). The GIS application is used for mapping for water and sanitation infrastructure.

Regarding the data backup, the IT department makes and keeps two copies of backup data in two separate locations as manual backup once a day. Two staff members are in charge of the backup procedure.

During the crisis and due to lacking power supply form the public grid, the IT department is only 4 hours functional at normal working hours per day from the power station within NWSA area. Power saving devices such as UPS or voltage regulators are available.

The IT needs office needs, computers, network, electricity chargers, and various software are

listed in Annex of questionnaire A. Table 5.1 lists the main computer needs.

Section	NO	IT Item
IT section	1	Main Server
IT section, Customers office	10	Desktops
IT section	5	Laptops
IT section, Customers office	2	Printer for bills
IT section, customers office	2	Desktop Printers
IT section	2	Cameras
IT section	2	UPS
		IT Training

Table 17: 5.1 Computer needs

6. 6. Assessment of Gender Cross Cutting Issues

Ataq city total population in year 2022 is 210,000. The women form around 55% Ataq population. However, there is no female employees in Ataq NWSA.

Women's empowerment in both public and private sectors is fundamental to ensure human empowerment equality and sustainable development. In Yemen, the women involvement is low and in some cases like Ataq NWSA is nil. This requires significant efforts to open the door for females by expanding economic opportunities, promoting community leadership, and partnering for greater access to education, essential health services, water, and sanitation services, leading to positive change in their communities.

The international organizations like USAID and GIZ and UN organizations helped through special programs to engage women in the public and private sectors. In 2022, USAID helped nearly 300 Yemeni women get jobs in healthcare, education, and manufacturing. USAID initiatives provide women with better access to loans and other financial products to support women-owned SMEs; USAID provided more than $2 million in loans to women in the last year. USAID training and technical assistance in the agricultural and fisheries sectors is creating viable and sustainable livelihoods for women. In 2022, USAID provided training on agricultural productivity and food security to more than 1,700 women.

The current crisis has exacerbated the pre-conflict lack of access to clean water and led to an unprecedented cholera outbreak. The international organizations helped in rehabilitates WASH infrastructure to help provide access to safe water and sanitation facilities for women and girls, which in turn improves their access to education, health services, and economic opportunities as well as providing more safety, privacy and dignity. Women traditionally collect water, a responsibility that interferes with school and work and is often a dangerous task. Upgrades to water and sanitation facilities, and household latrines free up

time for studies and employment, while reducing their exposure to gender-based violence along the trail to the water source.

To promote women engagement in the public and private sectors specifically in the LC's and NWSA activities including decision there is a need to organizes women-specific community outreach events; and encourages men to advocate for women's rights. In addition, there is a need to through financial support (small grants) to carry out initiatives in the coming years to increase participation of women in WASH programs. Public awareness for women on efficient uses of water or hygiene at house can be clear example on women engagement.

The gender information in Questionnaire A in the Annex lists the available information on women and potential women involvement in the NWSA activities.

7. Assessment of Water Supply and Management

Ataq city Local Corporation is responsible on the water and sanitation services within Ataq city. This covers the old and new parts of Ataq city. The new parts expanded rapidly due to migration and most of it not covered with water supply services. There is no sanitation collection system or wastewater treatment plant in the city. The served population with water supply from distribution networks in the city is around 160,000. The average per capita increased from 3.2 in year 2017 to 18.2 in year 2022. Table 7.1 lists the changes in population served and coverage percentage through period from 2017 to 2022.

Year	2017	2019	2022
Total Population	145000	165000	200000
Served population with water network	116000	132000	160000
Population Coverage%	0.8	0.8	0.8
Per capita (liter/person/day)	3.2	7.2	13.2
Server population with tankers	10,000	15000	30000
Area within NWSA responsibility km2	20	25	30
Area served with water supply km2	15	20	22

Table 7.1: Number and percentage of served population with water supply

Around 20 % of the population in Ataq city and rural areas rely on water supply from tankers or they fill their plastic containers with water from standalone water supply points as shown in Figure 7.1

Figure 3: 7.1 Water Supply Point for Rural Areas.

The cost of a tank of water (18,000-28,000 litres) ranges from 12,000 to 15,000 Yemeni Rials ($50-$60). The only other option, particularly for people in the local community who could not afford water trucking, was to rely on seasonal rainfalls and attempt to collect and safely store rainwater.

However, there are houses in the rural areas around Ataq city which are connected to a public water network, pumping water from Ataq, which is around 26 km away.

The number of water connections increased from 2822 in year 2017 to 3743 in year 2022 as shown below (Table 7.2).

Year	2017	2019	2022
Water Connections	2822	3164	3743

Table 7.2 Number of water connections

7.1 Water Production and Distribution

There are several wellfields for Ataq water supply; Al Osheh (21 wells) only 10 wells are currently working, Al Shbeikah (29 wells) only 10 wells are working, Al Woja'a (21 wells) none of the wells in this wellfield is working. There are only 11 well in year 2022 under the Ataq responsibility the remaining are outside Ataq. The average production capacity in cubic meters per day from all wells (working and not working) from wells within Ataq responsibility are shown in Table 7.3.

2022	2019	2017	
4356	4356	3960	Production Capacity m^3/day

Table 7.3 Wells water production capacity in cubic meters per day

Year	2017	2019	2022
Water Production m^3 per year	184,440	500,000	1,126,000

Table 7.3 Annual water production in cubic meters

Production data overall was consistent in the way it was provided in part B of the questionnaire forms. It does not reflect any effect caused by the crisis. On the contrary, there are significant increase in water production as shown in Table 7.3. The water produced quantity increased in 2022 increased 6 times to 1,126,000 m3 compared to 184,440 m3 in year 2017.

The NWSA listed the following needs to improve water production from wells with estimated cost in $;

- Drilling 4 new wells in Al Shbeikha wellfield (estimated cost 1.1 million)
- Drilling 2 new wells in Al Osheh wellfield (estimated cost 200,000)
- Procurement of 4 submersible pumps for Al Osheh wells (estimated cost 200000)
- Procurement of 7 submersible pumps for Al Shbeikah wells (estimated cost 470000)

- Procurement of 6 submersible pumps for Al Waja'a wells (estimated cost 360000)
- Procurement of 4 lifting station for Al Swda'a and Al Shbeikah station (estimated cost 80000)
- Rehabilitation of 2 wells in Al Osheh wellfield (estimated cost 40000)

7.2 Water Quality

The water quality from all production wells I good as per the information in the technical questionnaire. The LC keeps regular records on water quality tests. There is no water laboratory available for the testing and control of water. Due to lack of monitoring water and testing water quality from production wells, reservoirs and distribution network, most of the city population is not drinking from tap water, they buy drinking water from private water desalination plants or they use bottled water.

7.3 Water Supply System

The water supply network at Ataq city consists of two main parts the main supply lines from well fields with total length of 60 km and distribution network with total length of 100 km. Layout maps of the water distribution network and the transmission line are presented in Appendix A-2 There are only four main pumping and booster stations with capacity of 250 m3/hr (Al Shbeika, Al Osheh and Al Sawda). The pumping station work in average around 10 hours per day. There are 31 main valves to control and manage the water distribution. There are 20 water meters 15 on reservoirs and lines and 5 for wells. Only 10 water meters are currently functioning while the remining are out of service. For households there are 2000 water meters in good condition.

The water supply system in Ataq includes 5 ground reservoirs with total areal area of 3800 m2. There is one elevated reservoir with total storage capacity of 300 m3. Most reservoirs requires maintenance. Table 7.4 shows the existing reservoirs and its condition.

No.	Location	Capacity (m3)	Type	Current Condition	Operational Status
1	Al Jahwa	200	Ground/Collection	Intact	Operational
2	Al Sawda 1	400	Ground/Distribution	Intact	Operational
3	Al Swadah 2	1000	Ground/Distribution	Intact	Operational
4	Al Shubeika	1000	Ground/Distribution	Intact	Operational
5	Ataq 1	1000	Ground/Distribution	Intact	Operational
6	Ataq 2	500	Ground/Distribution	Intact	Operational
7	Al Waja'a	500	Ground/Distribution	Intact	Operational

Table 7.4: Reservoirs Condition

The number of customers in Ataq increased from 3223 in year 2017 to 4300 in year 2022. The water supply rounds or days per month increased from 12 in year 2017 to 15 in year 2022. The number of supply hours stayed the same around 8 hours per day or round. The NWSA listed the following needs to improve water supply system with estimated cost in $;

- Construction of 2 collection reservoirs in Al Osheh and Al Shbeikah area with total capacity 1,000 m^3 for each. The estimated cost is 160,000 per each.
- Construction of distribution reservoir in Ataq city with total capacity of 1, 000 m^3. The estimated cost is around 160,000.
- Rehabilitation of Al Waja'a reservoir with estimated cost 20,000.
- Maintenance of Al Sawda'a, Ataq, Al Shbeikah reservoirs with estimated cost of 47,000.

With respect to water distribution network there are the following lines;

- Water main Al Osheh – Ataq 10 inch diameter from asbestos with total length 40 km in good condition.
- Water main Al Osheh – Ataq 8 inch diameter from ductile with total length 20 km in good condition.
- Main distribution lines 110 to 150 mm iron and PVC with total length 44 km
- Branch distribution lines 63 to 90 mm iron and PVC with total length 43 km
- Water connection lines 25 mm PVC with total length 3 km

Ataq NWSA listed the following needs (Table 7.5) to improve the water distribution network with cost estimate in $;

Description / Facility	Length (km)	Number	Cost ($)
Replacement of Al Osheh-Ataq line (315 mm polyethylene),	44	-	2.7 M
Construct main distribution line (150 mm, polyethylene)	30	-	300,000
Construct main distribution network (50 mm, polyethylene)	10	-	10,00
Construct main line from Al Waja'a wells to Ataq (12 inch polyethylene	33	-	2.2 M
Valves 10 inch	-	20	20,000
Valves 8 inch	-	20	20,000
Valves 6 inch	-	50	50,000
Valves 3 inch	-	50	30,000d
Main Water Meters	-	20	20,000
Water meters for network	-	50	50,000
Water meters for wells	-	100	10,000
Household meters	-	5000	100,000
Flow control, and pressure release valves	-	-	80,000

Table 7.5: Water Distribution Needs

With respect to the needs from generators and various types of pumps, NWSA listed the needs as follows;

Electricity generators (quantity 8) with estimated cost 325000

Pumps (quantity 24) with estimated cost 72000

7.4 Non-Revenue Water

Ataq NWSA keeps regular records on water production, consumption and losses. Several water meters are installed at the wells and reservoirs. The average water consumption in year 2022 is around 18 lpcd under normal supply condition compared to the average consumption in Yemen which is around 49 lpcd.

Based on the available figures on the production and consumption, the estimated none revenue water ranges from 35 to 55%. This figure is considered high and requires more efforts to reduce it and save the lost water for water supply. This can be achieved through improvement in the water networks, and water meters and control of illegal connections.

7.5 Operation and Maintenance

Ataq NWSA mange water production and supply infrastructure. For sustainable water production and distribution there is high need to carry out regular maintenance for the water production and distribution infrastructure. This include well, main transmission lines pumping stations, electricity generators, and distribution network. The NWSA has no standard operation and maintenance procedures. It also lack regular maintenance, monitoring plan and documentation system for maintenance. The NWSA do maintenance once there is failure or one of the equipment or pumps, or generators stop working.

The main challenges facing NWSA in operation and maintenance of water supply facilities can be summarized as follows:

Continuous electricity supply to operate the wells and pumping stations.

High prices of diesel and other operation and maintenance cost.

The difficulties to implement the contingency plan in case of crisis escalation since all the wells are far away.

Operating the generator and pumps 24 hours per day in hot and humid climate; this decreases the life span of the generators by 3 to 5 years.

Frequent pipeline blockage due to high content of dissolved salt.

There is no laboratory for water quality monitoring and testing.

The NWSA listed the following needs (Table 7.6) to support the operation and maintenance;

Description / Facility	Capacity (kw)	Number	Cost ($)
Trucks for water and wastewater	-	3	30,000
Lifting truck	-	1	30,000
Sanitation sucking truck	-	1	20,000
Diesel tank truc	-	1	30,000
Water Laboratory (building and equipment)	-	1	70,000
Training	-	1	5000

Table 7.6: Equipment Needs

7.6 Energy Supply

Ataq NWSA has in year 2022 14 pump for all activities from water pumping to lifting or boasting. The pumps capacity is 661 KW and total electrical needs for all activities in year 2022 is 900 KW as per the technical questionnaire. The NWSA has 4 electricity generators with total capacity of 1030 KW, all 4 generators are working with working time 1590 hour.

`The 4 electricity generators are diesel generators consume around 175000 litres of diesel with an estimated cost 175 million Riyal. This is high running cost, to reduce it the NWSA invested in solar energy by installing 7 solar systems mainly for wells and submersible pumps with total production capacity of 440 KW. This is still very low

compared to the needed capacity (942 KW). The table below (Table 7.7) summarizes the available electricity equipment and related materials for year 2022.

Description / Facility	Unit	2022
Total electrical capacity required	kW	900
Total electrical capacity provided by public grid	kW	468
Total number of existing diesel generators	Nos	4
Generator set installed for water supply	Nos	4
Generator set in operation for water supply	Nos	4
fuel consumption for water system	l	175000

Table 7.7 Electrical capacities and available equipment

The public electricity grid provided more than 50% % in 2022 and the remaining is covered from diesel generators and solar energy. The NWSA has in total 4 diesel generators. The NWSA receives subsidy from the government and from the international organization to cover diesel cost. Ataq NWSA listed the following needs to improve energy production from solar systems (Table 7.8);

Description / Facility	Capacity (kw)	Number	Cost ($)
Solar unit for Al Swada'a lifting station	100 kW	1	20,000
Solar units for Al Osheh wells 3 and 4	70 kW	2	50,000
Solar units for Al Shbeikah wells 4 and 5	100 kw	2	80,000
Generator for Al Sawda'a station	120 kw	1	30,000
Transformer	150 kva	1	10,000
fuel consumption for water system	l		175000

Table 7.8 Energy Needs

8. Technical Assessment (TA) and Investment Plan

The technical assessment and proposed investment plan are based on the assessment results and listed NWSA needs for both institutional and technical needs. For the institutional needs the NWSA needs to address the following issues to improve the governance and management of the water and sanitation services;

Department/Section	Challenge	Action	Priority
Governance / Management / Organisational structure / Resilience	No local committee involved in decision making	Form local committee to participate in the decision making process.	Moderate
	Organisational structure needs update to reflect new sections for Women and	Update organizational structure as per the real situation	High
	No contingency plan for emergency	Prepare contingency and risk management plan including drought management plan	High
	Convert the NWSA to local corporation will facilitate communication with central authorities and international organizations and will improve work efficiency.	Prepare concept report for importance of having local corporation to ministry	Moderate
	No capacity building plans to NWSA staff according to directorates needs	Prepare capacity building plan to NWSA staff according to directorates needs	High
Human resource and capacity building management	No Job description for staff	Prepare job description for staff	Moderate
	Low qualification or skills of some employees	Carry out regular training for all staff as per directorates needs.	High
Finance management	Lack of standardized procedure and reporting	Prepare standards work and work flow procedures to minimize time	Moderate
	Lack of qualified accounting auditor and reviewer	Appoint accounting auditor	High
	Financial and accounting computer programs need update	Purchase new license	Moderate
Customer service and relation management	Considerable domestic customers without meters	Install more meters	High
	Lack office equipment, computers, printers, data network	Purchase of more computers, printers for customers services	High
	No workshop for meter maintenance	Construct workshop for maintenance of meters and other fittings	
	Improve customers collection efficiency	Provide incentives to encourage customers to pay bills	High
			Moderate
IT	Lack of integrated local network	Install local area networks for all offices	High
	Lack of computers and servers	Purchase of computers and printers	Moderate
Gender	No women employees.	Hire women in suitable jobs like secretary, finance, and IT	Moderate

There is no cost estimate for those areas prepared by NWSA. For the technical needs the NWSA need to address the followings to improve the water and sanitation services;

Department	Challenge	Action	Priority
Water Production and Supply	Low per capita around 18.5 l/p/day And 20% of the population without water supply	Drill new wells and rehabilitate exiting ones	High
Water Pumping	No spare pumps and no spare parts	Purchase stand by pumps and pumps spare parts	High
Water storage and distribution	No enough storage to increase supply duration	Construct new reservoirs to increase storage capacity	Moderate
Water Distribution	Still 20% of the population without water supply network	Expand water distribution network to cover the remaining 20% of population	High
Water quality monitoring and testing	No water lab, no water quality monitoring	Construct water lab and hire qualified staff for water testing and monitoring	High
Operation and maintenance	The lack of maintenance equipment, electricity generators for the O&M of the pumps, and water network Lack of spare parts No qualified staff for operation and maintenance	Procurement of electricity generators and transformers for sustainable water supply Carry out regular preventive maintenance of the facilities and equipment. Carry out regular training for O&M staff	Moderate High Moderate
Energy	Cost of diesel to run the electricity generators is high and no enough funds for it	Procurement and installation of solar systems to reduce dependency on diesel and to reduce high cost of diesel	Moderate
Wastewater	Only limited parts in the city have sanitation service	Construct wastewater collection network for all areas	Low

Due to the ongoing crisis the international donor organizations suspended their support on awareness campaigns. In order to resume the training and education activities on water and sanitation issues, it is important to establish awareness committees. The awareness interventions shall be discussed with the NWSA, the local council and possibly donor organizations involved in such activities. The campaigns shall be in form of media announcement / publication, distribution of brochures and leaflets and workshop meetings at public institutions. The training and information brochures should cover the following subjects:

- Importance of rain water harvesting
- Water saving in households;
- Considered use of sanitation facilities regarding water saving and pollution;
- Personal hygiene, food and household hygiene, health issues;
- Education of children (for mothers) with regards to hygiene, considered water use, sanitation;
- Safe waste and wastewater disposal.
- Importance of water and sanitation service and related subjects

Individual campaigns shall be held for schools, women

and marginalized families with respective visits to inform them on above themes. The committee shall consult the attendees obtain their opinion about the quality of water and sanitation services and how improvements can be achieved. The feedback of such campaigns has to be compiled and discussed with the NWSA and donor organization.

The performance of this committee shall be observed and evaluated by the Consultant. The impact of the awareness campaigns should be assessed according to the goals set to enable the identification of further additional or amended awareness measures.

Table 8.1 below presents the summary of recommended measures with respect to priority, implementation / procurement category and related cost estimates

Package	Measures	Urgent $	Short-term $	Long-term $	Total $
1	Civil works on buildings and structures		290,000		290,000
2	Well rehabilitation and new construction		134,000		134,000
3	Water pumping station		1,110,000		1,110,000
4	Water network rehabilitation and extension, water meters and valves			5,955,000	5,955,000
5	Generators	72,000			72,000
6	Submersible and lifting pumps	325,000			325,000
7	Vehicles, machines, tools		154,000		154,000
8	Solar energy systems		320,000		320,000
	Laboratory Building	40,000			40,000
11	Laboratory equipment	30,000	5000		35,000
Total investment	467,000	1,539,000	5,955,000	7,961,000	

Table 8.1: Cost estimate for prioritized investment measures

The required estimated budget is as follows:

- Urgent measures: 467,000 $
- Short-term measures: 1,539,000 $
- Long-term measure: 5,955,000 $

The total needed amount for the rehabilitation, restoration and extension of the water and sanitation system, provision of solar systems and supply of required operation and maintenance materials has been estimated to about million $ 7,961,000.

Appendix:

Technical Assistance Plan for LC Ataq

Appendix A-1:
Pictures ofWater Infrastructures

Administrve Building of Ataq NWSA Branch

Electricity Generaon Staon

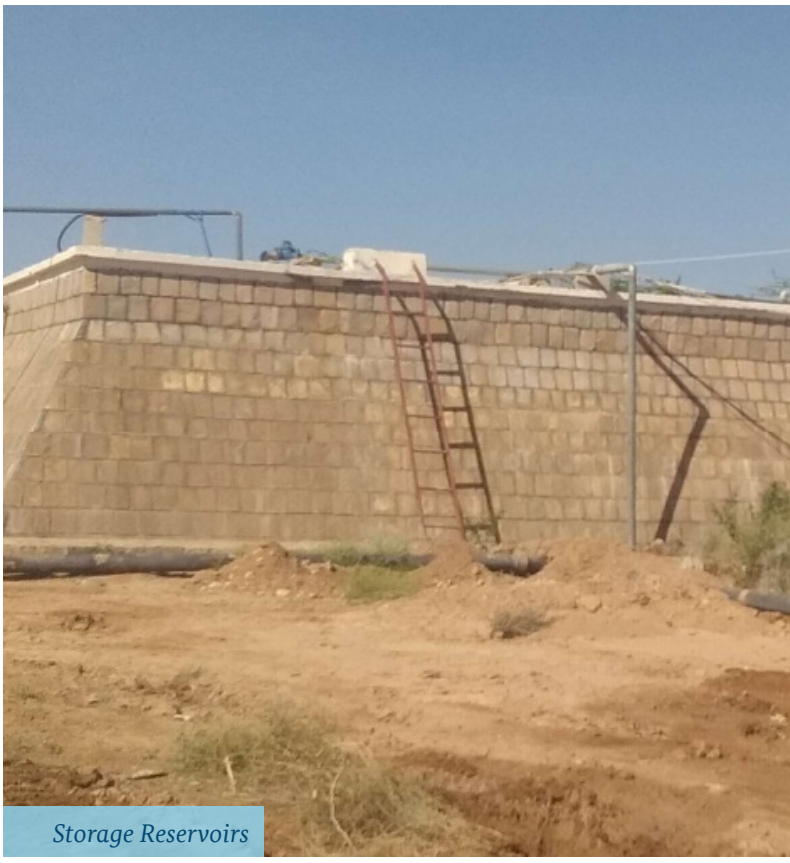
Electricity Generaon Staon

Electricity Generaon Staon

Storage Reservoirs

Storage Reservoirs

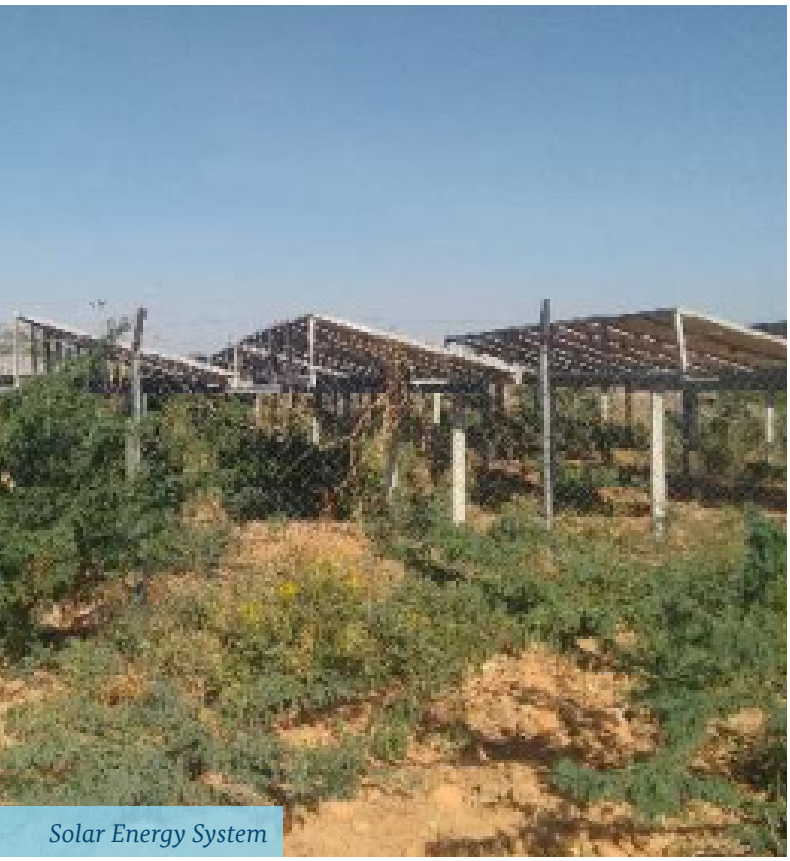
Storage Reservoirs



Storage Reservoirs

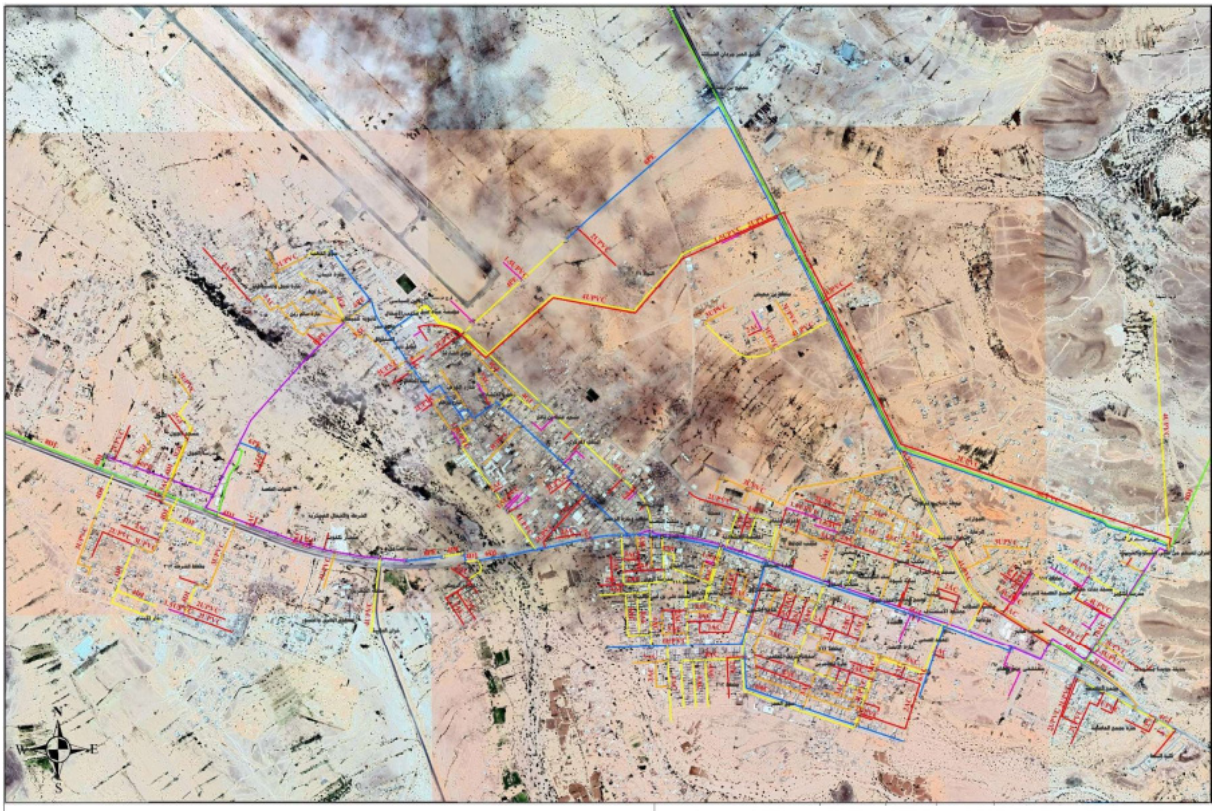
Solar Energy System


Solar Energy System

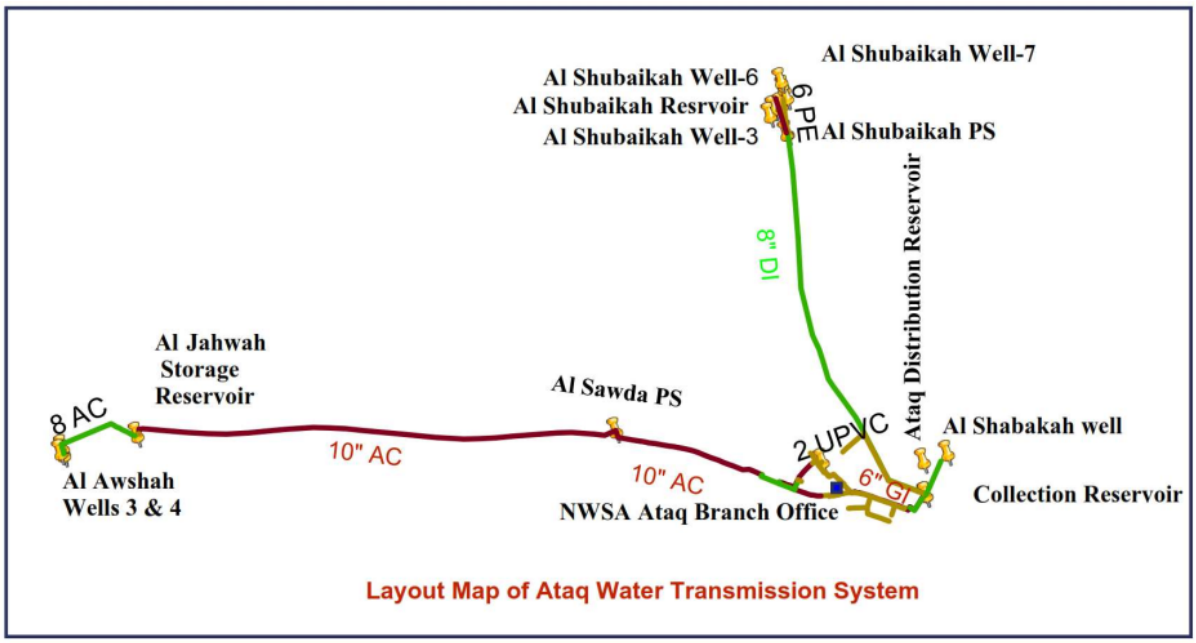

Solar Energy System


Solar Energy System

Appendix A-2:
Distribution System and Transmission Map



Layout Map of Ataq Water Distribution Network



Layout Map of Ataq Water Transmission System