

8.2. COMMUNITY SYSTEMS WITHIN THE EXISTING UTILITY SYSTEMS

Only three towns had community maintained systems within their supply area. Western Province, unlike any other province visited, has enjoyed massive support of community projects through Finnish Aid. Phase 1 of the KIFINCO project initiated and financed between 1981 and 1995 almost 4000 community projects. The current Phase 2 has now 4 main components under the overall objective of "increasing access to safe water for improved health and well being of the communities in Western Province, by increasing community management skills for maintenance, operation, improvement and replication of water facilities and for the protection of water resources":

- Monitoring and evaluation whether systems are functioning
- Support to those communities that approach the project and are prepared to contribute
- Provincial/District capacity building
- Water Resource Management

Implementation of new or rehabilitation projects are done through external contractors, while MENR staff is involved in the technical supervision. During Phase 1 all work was done through external staff, which led to frictions between MENR staff and those employed from outside.

Phase 2 concentrated at the onset on awareness creation amongst all District and Divisional Offices, using the ToT approach (Train the Trainer), and then involved other leaders and representatives of communities, to disseminate the new approach.

8.2.1. Makindu

There are four operational and functioning community systems within the Makindu water supply area, but information could only be obtained from three.

Kikumbuli Community took over 136 accounts in 1992, because they received water from Umani Springs. No information could be obtained on how it is managed, but community members are receiving water.

Amref financed 2 additional projects, the Kai Water Project and the Nzumi Water Project. Both systems serve approximately 7.400 people. Amref conditions were the involvement of the community in trenching and laying of the pipes and construction of the tanks. Community members were trained in the technical field and bookkeeping, and training included formulation of the By-laws.

Both systems operate smoothly and the Makindu WS system receives payment of bills promptly. Maintenance of the line is the responsibility of the community. Artisans and Kiosk attendants are from within the community and receive a salary for the work they do. The Community plans to use the money on the account for maintenance and expansion of the line.

The Mulili Water Project was financed by German Agro Action and started its operation just recently. It serves approximately 3.700 people. The approach for the project was similar to Amref's, whereby the community is actively involved in

the work during and after the completion.

Bulk supply from Makindu WSS to all communities at Kshs 15,00/cbm and no problems have been experienced so far.

8.2.2. Migori

The Nyasare Water Supply community project is registered under the Society Act and has been in operation since 1994. The project was financed by the Austrian Government and serves the rural and part of the urban population of Migori town. The community has 989 paid up members.

The management and operation of the system is paid for work done and O&M cost incurred monthly are covered out of the collected revenue. The management comprises of the Chairman, Vice chairman, Secretary, Ass. Secretary, Treasurer and Ass. Treasurer.

Since 1997, the organisation has been operating without donor funds. Even though the community faces problems in revenue collection, there are efforts to increase the tariff. The organisation works closely with the District Water Officer Migori.

The community intends to come up with a phase 2 project, to develop other water sources and the Institute for International Co-operation (Austrian Aid) is willing to assist. They have also applied to take over Migori Water Supply under the Ministry.

8.2.3. Webuye

Webuye has one community project for which no information could be obtained. The Muchi Milo Community project, initially financed by KIFINCO, is non-operational since 1995. Electrical fittings were vandalised twice, now the project seems completely stalled. KIFINCO in Kakamega had information that chairman of the project has political ambitions and is therefore suspected to have political enemies, who could be responsible for the vandalism. The new approach of KIFINCO is the "demand driven approach", i.e. communities can come for help, if they are prepared to contribute 50% into the cost.

Muchi Milo treasurer did not seem to know, neither did the Divisional Water Officer, even though KIFINCO had informed all Districts and Divisions creating awareness down to the communities through leaders and representatives. Consumers are now neither receiving water from the mains nor through the community project.

8.3. PROBLEMS AND SHORTCOMINGS OF THE EXISTING SYSTEMS:

All systems visited suffer from a number of problems which in turn lead to more shortcomings, ultimately translating into:

- Low efficiency on production,

- Limited supply situation,
- Billing below expectation, and
- Revenue collection, which cannot sustain the operation.

An assessment of the problems seen and experienced in the various systems visited, is represented in the Problem-Symptom-Cause Matrix under Appendix K 3 – ST 8.3. To various degrees the systems show that neither the Head Quarter nor the water systems do know what they produce, what is in place, what is outstanding, what are the actual cost for the water production and/or what is the financial position they are in.

Community systems established with the involvement and / or contribution of the community, combined with training into the management and operation, seems more successful, than those systems that have been simply handed over to the people. This equally reflects in the second phase approach of the KIFINCO project, which is demand driven and with financial involvement of the community.

8.3.1. Division Specific Problems:

Divisions operate under the District offices. The systems visited operate under even more difficult circumstances. All problems are similar to the problems experienced in the Districts, because whatever is a problem for the District results in an even bigger problem or longer delay for the Division.

The criteria for category Division or District does not relate to the population served. While Mumias is a Divisional office, with less than a decent office and the necessary skilled staff, it serves a population of 110,400 people, Wundanyi is a well equipped District office and serves a population of 7,600 people. The same applies to Webuye Division office, serving approximately 73,000 people and lacking the absolute basics.

The Division is run with no imprest at all and the most basic requirement like making a photocopy or using public transport to visit the District office, expects the staff member to pre-finance the expense and claim it from the District in due course. Refund procedures can take weeks, even months.

8.3.2. Districts Specific Problems:

The biggest problem seen at District level is the A.I.E. funding and procurement procedure. While the District Administration is involved throughout the lengthy procedures, the District Administration has to cater for all the Government Departments and does not necessarily give the Water Department priority over other Departments. Special efforts in revenue collection may result in Nil A.I.E. received, as was the case in Narok, where the approved A.I.E. came just before the end of the Financial Year and lacking liquidity at the District Administration office resulted in an approved A.I.E. but no funds. Un-utilised A.I.E can then not be carried forward into the new FY.

8.3.3. NWC&PC Area Office Specific Problems:

The area office is totally dependant on the Regional Office and faces the same problems as the Division Offices under the Districts. Decision making does not take place on the ground and any requirement has to be organised through the

Regional Office.

Recent changes turned a small imprest previously available into a NIL cash flow. The 50% of re-connection and labour charges do not seem to come forward. Even the smallest operational requirement becomes a problem. A further problem is, that billing and consumer related issues face considerable delays as they cannot be dealt with immediately. They have to be forwarded to the Regional office and reply has to be awaited. Disputes are decided by a committee at the regional level, while the recommendation of the area manager seems to be given lesser or often no consideration.

8.4. MENR HEADQUARTER PROCEDURES, SHORTCOMINGS AND IMPEDIMENTS

Every utility system visited had the feeling that the Head Quarter receives monthly forms and returns only to file the same away. No reaction is received. Considering the meaning of reporting, facts and figures should be used for planning, control and management decisions.

As the majority of the information reflects discrepancies or plain gaps and no reaction comes from the Headquarter, it means that either the information is not used for decision making, or the discrepancies are not seen and plans are based on wrong information.

Procedures and tangible details are more difficult to obtain at Head Quarter level than at the District. Efforts by the consultant to get clear and substantiated information, were fruitless in most cases. Similar to the record keeping at District or Division level, information is available somewhere and somehow, but the magnitude of data handled at the Head Quarter makes the search even more complicated.

8.4.1. Personnel Issues and Procedures

All Division, District and Province staff salary matters are dealt with at Head Quarter. The structure seems to be such that within the personnel department at the Head Quarter, one officer is allocated a certain number of staff numbers. Following up several personnel issues for the District, can result in having to see several officers for the same problem relating to several staff members. The attempt to obtain comprehensive remuneration details for the towns visited, failed.

8.4.2. Power

Payment of power bills from the District has been changed during the last Financial Year. The processing procedure at District level had caused a number of power accounts being cut. Current practice is, that power bills for all water systems operated by the MENR, are paid for from the Head Quarter. If the bills are received at District level, they are passed on to Nairobi for settlement. As many bills are paid for many Districts with one payment, to find and obtain details for any particular WS System, requires lengthy searches. The question as to whether credits are correctly reflected on the following power bills, could not be established.

8.4.3. Chemicals

Sourcing and procurement for chemicals is done centrally for all the WS systems operated by MENR. The procedure involves an annual open tender, approved by the MTB (Ministerial Tender Board), followed by the CTB (Central Tender Board). While the District gave the information that chemicals have to be collected from the Nairobi Central store, the information at the Head Quarter was, that chemicals are delivered to the Districts and only additional requirements over and above the planned quantity have to be collected. It is to be analysed, whether the centralised procurement bears any price advantages over the system level procurement, as the existing system does not reflect any other advantages.

As chemical requirements are planned from the Head Quarter and information of chemicals from the Districts is in most cases based on estimated past experience, the question arises also, whether there is a realistic basis for actual chemical requirements, relating to actual production?

8.4.4. A.I.E. Issues and Procedures

The A.I.E. procedure originates from the District and has to be processed through MENR Head Quarter and Ministry of Finance/Treasury, before it can go back for further processes to the District. Appendix K 3 – Figure 8.2. and Figure 8.3. reflect the whole process, which is lengthy and complicated.

8.4.5. Planning and Control

Planning is based on information about the performance of a water supply system. Indices like production-, consumption-, billing- and revenue collection-efficiency or system compiled cost, are necessary tools to control the use of chemicals, calculate a cost covering tariff or determine the right transport requirements or staffing levels. As reported information from the water supply systems lack the correct information or if availed, are not translated into an efficient Management Information System, the question arises as to: Which are the tools, that the Head Quarter plans with?

While the A.I.E. process and involved procedures are lengthy and complicated, the accounting for the money spent, is done by the District Administration to Treasury. The MENR receives only the printed information, against which votes the expenditure has been booked. The question is, whether GOK procurement procedures have been complied with, but not whether the three or five quotations obtained reflected a realistic market price, hence the whole system is more procedure than financial control.

8.5. PROVINCIAL WATER OFFICE FUNCTIONALITY

The functionality of the provincial water offices could not be clearly established. However, the schedule of duties for the Provincial Water Officer is giving the following duties and responsibilities:

- Development, maintenance, control and supervision of all Ministry's operations in the Province
- Any other duties as may be assigned.

Meetings with the district water officers, receiving donors and delegations and general co-ordination, were the comments received. While all technical and

financial returns are as well copied to the Provincial Office, reminders on performance and targets do originate from the MENR Head Quarter. It therefore remains to be explored further, what role the Provincial Office plays in the context of management support, control and/or assistance, when compared with the schedule of duties? Is the Provincial Office an information and control filter for the mass of operational and financial details that are sent to the Headquarter? Is the Provincial Office used as an information dissemination medium? How is the infrastructure, which is in place at the Provincial Office, utilised?

8.6. NWC&PC SHORTCOMINGS AND IMPEDIMENTS

NWC&PC has already a partly de-centralised reporting system, as the Regional Manager only reports filtered information to Nairobi. Decision making remains however an equally lengthy procedure (experienced as well, where commercialisation is involved). AS NWC&PC has to comply with the normal GOK procurement procedures, only slightly modified, problems are of similar nature.

8.7. COMMERCIALISED SYSTEMS IN KENYA

The number of commercialised systems, evolving from former Government operated systems, is limited. Malindi, Nyeri and Kitale were chosen. All systems visited and analysed are currently operated under an agency agreement. The difference in their structure is, that the agent in Malindi is a privately owned company, while the other two companies of Nyeri and Kitale are wholly owned by the former operator, with a Board of Directors representing the stakeholders of the water and sanitation system. Assets remained in all three cases with the former operator of the system.

8.7.1. Malindi: Management Contract (NWC&PC)

The Malindi Management Contract is actually an agency agreement between the National Water Conservation and Pipeline Corporation and H.P. Gauff in association with Gauff Utility Services Kenya Ltd. The Amendment to the State Corporation Act under which NWC&PC has been incorporated, gives NWC&PC the formal mandate to enter into agency agreements, which are accepted by the Attorney General.

The agreement was signed in March 2000, covering a period of 4.5 years. The company is given autonomy for the day to day operation and related decision making. The overall regulations guiding the NWC&PC do however relate as well to the agency agreement. This means that Government procurement regulations and procedures or writing off debt procedures have to be observed and complied with by the agent as well.

Appendix K 3-Q 8.6.1. reflects the interview with the representative(s) of the agent. While the Malindi agency agreement built on an earlier pilot project, where consumer account aspects, billing and revenue collection, Meter reading and O&M aspects had already been systematically taken up in the past, the new agency agreement took off with the experience gained before. The major task is to get procedures and schedules refreshed and close the information gap that was caused by a delay of almost two years between the old project and the new agreement.

As the project was only in operation for a period of 8 months by the time of the visit, comments on the self-sustainability could not be obtained yet. The initial setting up time required must be considered and self-sustainability should be looked at, at a later point in time.

8.7.2. Nyeri: NYEWASCO Private Water Company

Nyeri Water Company, NYEWASCO, operates under an agency agreement which was signed on 19th March, 1999 and amended on 7th April, 2000. The duration of the agency agreement is 20 years. The agreement is between the Municipal Council of Nyeri and the company.

A Core Management Team is in place and all other staff members were taken over. However it was said that the individual staff performance determines whether they will stay with the company. Salary increments of 15% and 7.5% have been effected since the operation started. An incentive scheme for the staff is being worked on.

Appendix K 3 – Q 8.6.2. reflects the interview with the Managing Director of NYEWASCO.

8.7.3. Kitale: KIWACO Private Water Company

The Kitale Water Company operates under an agency agreement drafted, but not yet finalised or signed. The agreement is between KIWACO, the new company and the Municipal Council of Kitale.

A new Core Management Team (CMT) has been recruited and is supported by a Financial Advisor, seconded by CIM (Centre for International Migration). All other staff members were taken over from the Council Water Department, pending finalisation of the agency agreement.

Day to day operation has been transferred to the agent at the beginning of the year 2000, while numerous financial issues have not yet been sorted out with the former operator and creditors of the former operator. Much of the manager's time is therefore spent on issues relating to the past and negotiation concerning the agency agreement. The day to day operation is independent.

Appendix K 3 – Q8.6.3. reflects the interview with the CMT and the Financial Advisor.

8.8. PROBLEMS AND SHORTCOMINGS OF EXISTING COMMERCIALISED SYSTEMS

The problems or impediments experienced in Malindi and adversely affecting the efficiency, can be summarised as follows:

- The line of command is too long and decision making processes take too much time and additional effort

- Government procurement procedures

The problems or impediments experienced in Nyeri seem very limited and reduced to staff related issues. All former problems, concerning interference of some Councillors with the Board, seem no longer applicable.

- Audited Accounts from the Council to start with the Opening Balance of the company are not yet available
- Not clear how consumer balances absorbed? (audited or not)
- Not clear how old creditors to be absorbed (audited or not)

The problems and impediments experienced in Kitale and adversely affecting the current operation of the company, can be summarised as follows:

- The agency agreement should be signed prior to the commencement of the new company
- Liabilities taken over from the previous operator should be reconciled and audited, to enable the company to start of with a clear picture of the Opening Balance situation
- Financial start up help should be available
- Amount or mode of lease for the assets not yet finalised
- Loan balance of assets not yet clear with the council
- Production affected, due to power on cut off, not for current but old KP&LC debt, carried forward
- Staff issues (transfer, provident fund etc) not finalised as agency agreement still pending

8.9. OPTIONS FOR VIABLE MANAGEMENT AND OPERATION

The approach for recommended changes has focussed on the intention to offer viable approaches that can be implemented within the shortest possible timeframe. Achievements should be possible, while more substantial changes touching on the institutional and legal framework are discussed, formalised or registered.

The various degrees of implementation carry the risk that other players involved in the changes do not agree to the recommended changes. To avoid this major risk, which has been experienced in the Kenyan environment, especially in the Water Sector, a gradual approach is recommended.

While the registration of a private company, Water User Association, Trust or Trust Corporation can be done within a few months, it is seen as a very time consuming and involving exercise, to prepare a detailed network condition plan, existing asset and liability information and clarify the position on the consumer accounts. The assessment, training, selection and repeat training of existing staff into a commercial environment requires "change management" in order to build capacity.

The problems caused by not having reconciled or audited data ready, when registering the "commercial" institution, can be learned from the commercialised

systems currently already in operation. The preparation of these details can fall into the operation of the "commercial" institution, provided the mode of establishing and confirming the figures has been agreed upon, prior to commencement of the 'commercial' operation.

Recommended changes have been worked out in Appendix K3 – ST 8.3 and are used as the basis for further analysis, leading to the phased options, reflected in the Action Plan. Refer to Appendix K3 – ST 8.4

8.9.1. Recommended Changes within the current Institutional Framework

Recommended changes for Phase I of the Action Plan are those changes that can be implemented immediately, with the assistance of a consultant and jointly with the client MENR. All recommended changes are vested within the powers of the client.

8.9.2. Recommended Changes for a De-centralised Framework

The analysis of the current situation reflects that the centralised system under which all water systems are managed and operated, accounts for many of the impediments listed. Phase II of the Action Plan indicates, which steps are recommended to be taken.

The decentralisation approach is as well seen as a step-by-step movement towards bringing the systems closer to the communities, pending a gradual approach towards Private Sector Participation. No lead model has been confirmed yet and a countrywide move can only be implemented by a gradual approach, as capacity building will be a lengthy process and not just a decision or declaration.

8.9.3. Recommended Changes for a Transition Approach

It is expected that recommended changes of Phase I will lead into and continue during Phase II and III. Any changes recommended under the institutional framework management, can build on the grass root work that has commenced with the preparatory measures of Phase I, as they are seen as a requirement for any kind of improvement or change towards a commercialised operation.

8.10. RECOMMENDED UTILITY MANAGEMENT PLAN

No.	Action	Narok	Meru	Muranga	Kabarnet	Makindu	Wundanyi	Migori	Lamu	Webuye	Mumias	Utility Management Plan
1.	Arrange for decent office space							X		X	X	
2.	Set up organisation charts with detailed job description and skill requirements.	X	X	X	X	X	X	X	X	X	X	
3.	Arrange for intensive management training for Engineers or recruit well-qualified managers.	X	X	X	X	X	X	X	X	X	X	
4.	Arrange for commercial and technical staff training	X	X	X	X	X	X	X	X	X	X	
5.	Set up positive and negative staff sanctioning system.	X	X	X	X	X	X	X	X	X	X	
6.	Limit recruitment to the system requirement, based on skill and merit.	X	X	X	X	X	X	X	X	X	X	
7.	Prepare criteria for transport requirements based on size of system coverage, pipe network, number of consumer e.t.c.	X	X	X	X	X	X	X	X	X	X	
8.	Redesign consumer recording and reporting formats	X	X	X	X	X	X	X	X	X	X	
9.	Computerise consumer data base and consider billing software	X	X	X		X	X	X	X	X	X	
10.	Obtain field information from all existing consumer using the re-designed application format	X	X	X	X	X	X	X	X	X	X	
11.	Prepare implementation guidelines related to gazette notices and relating procedures	X	X	X	X	X	X	X	X	X	X	
12.	Prepare consumer and connection management guidelines	X	X	X	X	X	X	X	X	X	X	
13.	Design consumer / connection – management guidelines	X	X	X	X	X	X	X	X	X	X	
14.	Design meter reading / servicing / disconnection schedules and guidelines.	X	X	X	X	X	X	X	X	X	X	
15.	Undertake analysis to substantiate and confirm old debts	X	X	X	X	X	X	X	X	X	X	
16.	Propose write off procedure for old debtors	X	X	X	X	X	X	X	X	X	X	
17.	Recommend commercial charges and penalties	X	X	X	X	X	X	X	X	X	X	
18.	Create staff, consumer and stake holder awareness on cost of production and distribution of water	X	X	X	X	X	X	X	X	X	X	
19.	Outsource the servicing for master meters and condition future supply / tenders to procurement with service backup	X	X	X	X	X	X	X	X	X	X	

No.	Action	Narok	Meru	Muranga	Kabarnet	Makindu	Wundanyi	Migori	Lamu	Webuye	Mumias	Utility Management Plan
20.	Decentralise AIE funding and procurement procedures to system level and transfer efficient and stringent control to the provincial / regional office level	x	x	x	x	x	x	x	x	x	x	
21.	Decentralise decision making process to station level	x	x	x	x	x	x	x	x	x	x	
22.	Decentralise planning and control of cost	x	x	x	x	x	x	x	x	x	x	
23.	Design efficient and stringent control system for the provincial / regional office level (Price analyst, independent external auditors, adequate use of chemicals)	x	x	x	x	x	x	x	x	x	x	
24.	Design MIS reporting system for Povincial to HQ reporting (investment planning, policy making)	x	x	x	x	x	x	x	x	x	x	
25.	Set up stock management system and controls	x	x	x	x	x	x	x	x	x	x	
26.	Set up consumer meter workshop (with volumetric test facilities)	x	x	x	x	x	x	x	x	x	x	
27.	Prepare / update O&M guidelines / manuals	x	x	x	x	x	x	x	x	x	x	
28.	Propose outsourcing criterias for pump maintenance depending on the pump capacity.											
29.	Include consumer lines into the planned network	x	x	x	x	x	x	x	x	x	x	
30.	Clarify and document water wayleafs	x	x	x	x	x	x	x	x	x	x	
31.	Introduce retainer security on contracted civil works and quality control	x	x	x	x	x	x	x	x	x	x	

8.10. RECOMMENDED UTILITY MANAGEMENT PLAN

No.	Action	Nairobi	Meru	Muranga	Kakamega	Malindi	Wundanyi	Vigori	Lamu	Webuye	Mombasa	Utility Management Plan
1	Arrange for branch office to be set up in areas with no need for distribution and no requirements.	X	X	X	X	X	X	X	X	X	X	
2	Arrange for intensive management training for employees on-site with transfer of papers.	X	X	X	X	X	X	X	X	X	X	X
3	Arrange for commercial and technical staff training.	X	X	X	X	X	X	X	X	X	X	X
4	Set up revenue and billing staff monitoring system.	X	X	X	X	X	X	X	X	X	X	X
5	Limit restriction on the water treatment treatment staff and water.	X	X	X	X	X	X	X	X	X	X	X
6	Prepare manual for treatment requirements based on size of town or village plus coverage with that of consumer and.	X	X	X	X	X	X	X	X	X	X	X
7	Prepare consumer connection and metering form.	X	X	X	X	X	X	X	X	X	X	X
8	Control release of water and metering software.	X	X	X	X	X	X	X	X	X	X	X
9	Set up a committee to monitor existing consumer and to set up a committee to monitor.	X	X	X	X	X	X	X	X	X	X	X
10	Prepare a report on the water supply and metering.	X	X	X	X	X	X	X	X	X	X	X
11	Prepare consumer and connection management guidelines.	X	X	X	X	X	X	X	X	X	X	X
12	Design consumer connection management guidelines.	X	X	X	X	X	X	X	X	X	X	X
13	Design meter reading, servicing, disconnection schedules and guidelines.	X	X	X	X	X	X	X	X	X	X	X
14	Conduct a survey of substations and water mains.	X	X	X	X	X	X	X	X	X	X	X
15	Propose write off procedure for old debts.	X	X	X	X	X	X	X	X	X	X	X
16	Recommend commercial charges and penalties.	X	X	X	X	X	X	X	X	X	X	X
17	Create staff consumer and utility bill and notices of metering and distribution of water.	X	X	X	X	X	X	X	X	X	X	X
18	Establish the system for metering and distribution of water.	X	X	X	X	X	X	X	X	X	X	X

8.11. RECOMMENDED PRIORITY PROJECTS

The final choice of priority projects is recommended to be made during or as a result of the stakeholders workshop. The utility indices and figures compiled in Annex K3 – ST8.2. allow however to draw conclusions and give a basis for good comparison. There are a number of criteria offered as a selection criteria, like:

- Which town promises the fastest results?
- In which town are the highest savings expected?
- Where is the intervention most urgently needed?
- Billing and Revenue Collection Efficiency highest or lowest? or
- Which town has shown the highest effort under the prevailing circumstances?

8.12. RECOMMENDED PRIORITY MEASURES:

The reduction of Un-accounted for Water (UfW) must be considered as the overall priority measure, necessary for all the systems analysed.

Un-accounted for Water is made up of:

- Physical losses in the transmission and distribution system
- Wrong meter reading and billing, and
- Water theft

For those towns where the calculation showed no UFW, the consultant is of the opinion that the information availed needs further confirmation and more detailed field investigation, because such a situation is unrealistic.

To reduce the said water losses it is therefore recommended to give the following priorities:

- 1) **Full rehabilitation of the existing distribution system, including standardised meter connections,**
- 2) **Replacement or repair of all faulty consumer meters,**
- 3) **Setting up of a consumer data base and a reliable billing program, and**
- 4) **Management- and Staff Training for the relevant staff members**

9. INSTITUTIONAL AND LEGAL ASPECTS OF LAMU URBAN WATER SUPPLY SERVICE

9.1 Institutional Set-Up of Lamu Urban Water Supply Service.

Lamu water project is operated by the Ministry of Environment and Water Development. Lamu urban water supply is under the responsibility of the District Water Office (DWO), Lamu District. This means that in addition to the operation and management of the Lamu Urban Water Supply, the DWO has the responsibility of operating and managing other water supply systems in Lamu District. The District Water Officer is supported by a Senior Inspector of Water Supply, in charge of operations and maintenance; and the Accountant. The project dates to 1952 and is characterized by old supply infrastructure. Supply is from 30 wells, of which only 25 are currently operational. Lamu (old town) is characterized by crowded Arabic type housing with open drainage systems. Many households have own dedicated wells from which they draw cleaning water.

The detailed organisational structure for Lamu District Water Management is presented in the utility management section of this report. The functional arrangement in the District water supply system includes the following sections:

- (a) Operations and maintenance.
- (b) Revenue and billing.
- (c) Accounts.
- (d) Administration.
- (e) Supplies.

The Lamu Municipal Council is responsible for sanitation and drainage system within Lamu town. The District Water Officer (a hydrologist) and 3 superintendents - water, electrical and mechanical - manage the Lamu water supply. In addition, there are 18 other members of staff working for the Lamu water project in various capacities.

The Lamu Municipal Council has not focussed on taking over the water supply operation from the Ministry. This would require a detailed feasibility study. In any case, Council has no technical or financial capacity to shoulder this responsibility

Lamu town has a limited sewerage system, which is operated and managed by the Lamu Municipal Council. Revenue collection on sewerage connections and user charges are tied to the water billings accounts. The Municipal Council, therefore, relies on the District Water Officer for sewerage services related revenue collection.

In recommending a viable institutional and legal framework for Lamu Urban Water Supply, it is necessary to provide details of the existing institutional and legal framework for the water sector in Kenya.

9.2 Existing Institutional Framework for the Water Sector

9.2.1 Organisations Concerned with Water Supply

Water is principally now being managed under the Ministry of Environment and Natural Resources. However, there are specific institutions responsible for the development, operation and maintenance, and regulation of water supply. These institutions are analyzed below.

(a) Department of Water Development

The Department of Water Development (WDD) is the GOK agency responsible for the development, conservation and control of water. In support of this, its mission statement is: "to ensure proper and orderly Water Resources Management, including assessment, conservation, development and protection of the environment from degradation from water development activities." In order to fulfill its mission, the functions of the department are stated as:

- Water development and water supply;
- Control of water catchments;
- Water resource management;
- Water quality and pollution control;
- Water conservation.

To execute these functions, the Director of Water Development is responsible for three branches, which together are responsible for ten Divisions, one additional Division, the Kenya Water Institute (KEWI), six provincial water offices and, through the provincial offices, 64 district offices throughout Kenya. WDD operates a total of 375 (309 rural)³ schemes through its network of Provincial, district and Divisional offices.

The Department of Water Development manages ground and surface water resources by hydrological observation, assessing water resources, controlling water quality, planning water projects, assessing environmental and other impact of water resource management practices. There are 500 observation stations around the country providing data for this unit. The branch also manages a division for water rights ad assessment, which issues, cancels and registers water permits and maintains water resources database.

The four branches of the department are:

- Water resource development

- Water resource management
- Water research
- Kenya Water Institute

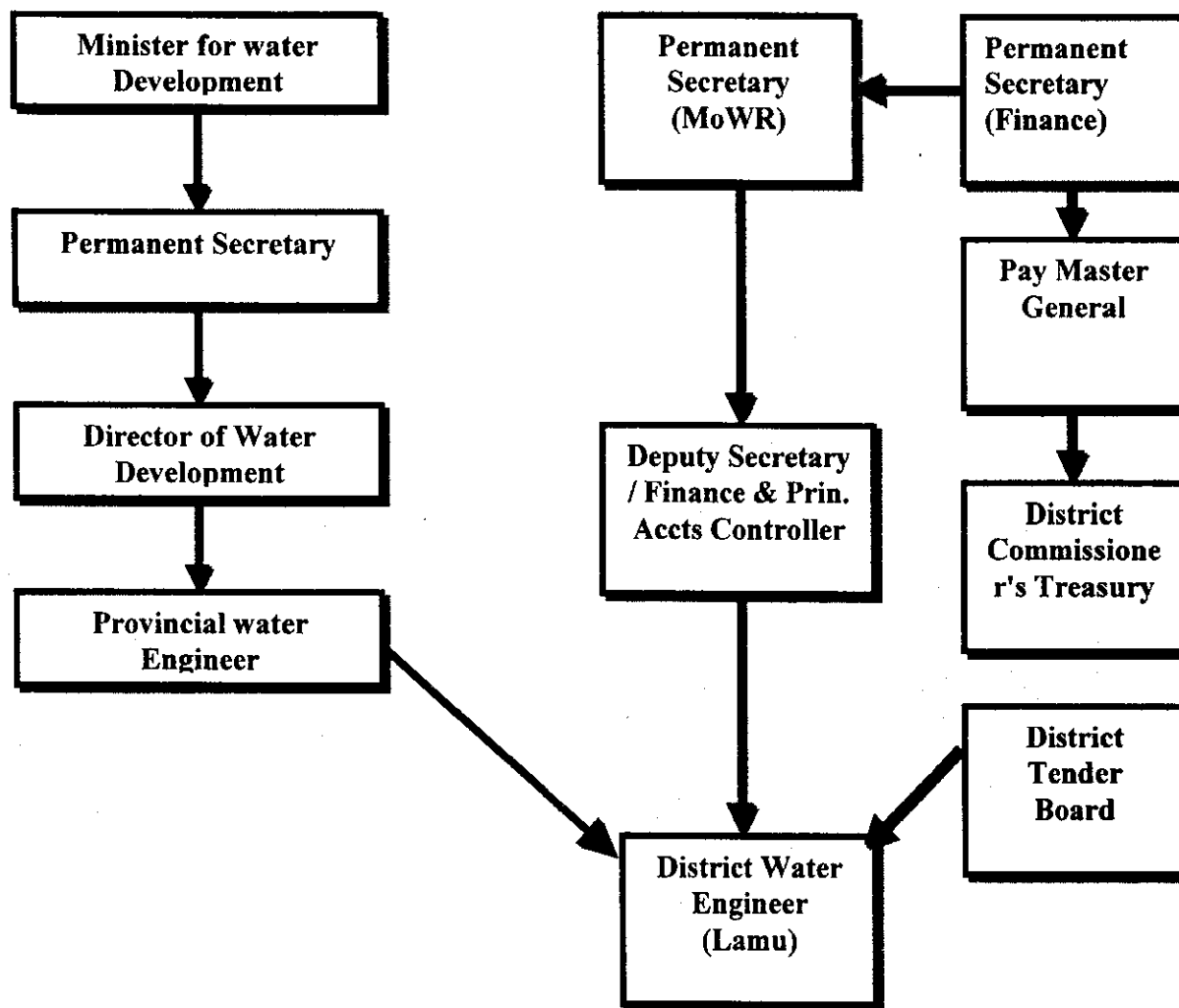
(b) Water Operations at District and Scheme Level

In Districts and scheme level, management is vested on the District Water Engineer. The District Water Engineer is also Secretary to the District Water Board and executes decisions as required by the DDC.

Chart 1: Management Structure for Water and Sewerage Services - Water Undertaker: Director of Water Development

ADMINISTRATIVE

FINANCIAL



9.2.2 Agencies Related to the Ministry of Environment and Natural Resources

There are various agencies operating in support of the mission of the Department of Water Development. These include:

(a) Water Appointment Board (WAB)

WAB reports to the Minister of Water. It, on behalf of the Minister, authorises, supervises and controls the use of water throughout Kenya. The function is discharged through Catchment Boards. There are six catchment Boards as follows: Tana, Rift Valley, Athi, Northern Ewaso Nyiro, Lake Victoria North, and Lake Victoria South.

(b) District Water Boards

District Water Board, established since 1991, in each district assist the planning and coordination of water related activities. The Boards are subcommittees of the DDC's. Their mandate includes:

- Protection, conservation and preservation of all catchment areas in the district;
- Partitioning, allocations and authorisation of al water bodies;
- Water quality and pollution control activities;
- Management and control of water use;
- Overseeing and coordinating all water related activities in the District;
- Assisting in the enforcement of the Water Act.

(c) National Water Conservation and Pipeline Corporation (NWPC)

The National Water Conservation and Pipeline Corporation (NWPC) was established under the State Corporations Act, Chapter 446 of the Laws of Kenya vide Legal Notice No. 270 of 24th June, 1988, as an autonomous agency reporting to the then Ministry of Water Development. The Corporation became operational on 1st July, 1989. The Corporation was created to meet the following objectives:

- To commercialize the water sector operations;
- To achieve financial autonomy in water operations;
- To improve performance of water supplies and
- To reduce dependence on public funding of water projects.

At the time of establishment, the Corporation was mandated to undertake the following in connection with water supplies and projects where it had been appointed water undertaker:

- (i) Under the general direction of the Minister for the time being responsible for water resources, manage and develop the specified water supplies and projects;
- (ii) Supply water in bulk to such water undertakers as the Minister may, after consultation with the Board of Directors, by notice in the Gazette, designate;
- (iii) Supply water in bulk or otherwise, to such persons or class of persons as the Minister may, after consultation with the Board, by notice in the Gazette, designate;

- (iv) Do all such things as may be necessary or advantageous for the management of the water projects and for securing an adequate supply of water;
- (v) Apply for and obtain all such licenses, permits and other authorities required under any written law or as may be desirable.

The Corporation was also mandated to assist the Government in the formulation and execution of a National Water Development Policy.

9.2.3 Other Institutions Related to Water

(a) Ministry of Local Government (MOLG) and Local Authorities

MOLG is the third institution with major responsibilities for the water supply and sanitation sector. The ministry's mission is to promote the development of Kenya through the establishment and existence of viable and well organised Local Authorities (LA's). MOLG currently oversees 164 LAs which are established by the Minister as provided for in Local Government Act. Among their many responsibilities is the provision of water and sanitation services in their areas as set out in the Act. Of the 164 LA's, 10 administer water and sewerage schemes, and the rest administer sewerage only or sanitation schemes, water being supplied by another water undertaker such as MENR or NWPC. The Water and Sewerage Department of the Nairobi City Council, although a local authority scheme, is really a special case because of its size and the degree of autonomy it enjoys.

Of the five MOLG departments reporting to the Permanent Secretary and which, together, are to execute the functions and fulfill the mission, the Urban Development Department has direct technical responsibility for water and sanitation (see Figure 2.1.2 for its organisation structure). It has a Planning Division and a Technical Division out of its functions of:

- Formulating, with LA's, urban development policies;
- Coordinating implementation of urban development policies, programmes and projects in LAs; monitoring and evaluating these;
- Providing technical assistance to LAs.

Water and Sanitation Section is one of four technical sections addressing different subsectors of LAs and providing technical assistance to them.

(b) Non-Governmental Organisations (NGOs) and Community Schemes

The impact of NGOs in the provision of water supplies appears to be considerable and to have operated over many years. It has been estimated that at least 60 of the more than 400 NGOs active in Kenya are engaged in the water sector. Most have water components in integrated rural development projects.

It appears that many NGO projects employ MENR staff as technical advisers during development, after which they are handed over to the communities with some ongoing help from the Ministry. However, other water projects which may form part of larger integrated development projects, are undertaken without MENR being notified. The district or divisional offices of the Ministry should be the contact point for all such schemes and a registration procedure should be mandatory.

In addition to the above, there are schemes operated by small informal groups which often collapse without financial or technical assistance. Those that do not fail are better managed, either with or without external help from, say, MENR field staff, with realistic fund raising arrangements. The Ministry of Culture and Social Services attempts to mobilise and assist groups like these, but is hampered by lack of funds and manpower in the field.

9.3 Legal Framework of the Water Sector

An appropriate legal and regulatory framework is necessary to monitor and control the water sector. The main objectives of the regulatory system are to: ensure compliance with standards of acceptable service, protect the ratepayer and create an environment that promotes stable and viable water institutions. The Kenyan Government has enacted laws related to water supply and sewage disposal including environmental legislation. The main laws include:

- (a) The Water Act (Cap 372)
- (b) The National Water Conservation and Pipeline Corporation Order (Legal Notice No.270, June 24, 1988)
- (c) The Local Government Act (Cap 265)
- (d) The Irrigation Act
- (e) The Tana and Athi Rivers Development Authority Act
- (f) The Keno Valley Development Authority Act and The Lake Basin Development Authority Act
- (g) The Agriculture Act (Cap 318)
- (h) The Public Health Act (Cap 242)
- (i) The Environmental Management and Co-ordination Act of 1999.
- (j) Wildlife (Conservation and Management) Act (Cap 376)

These laws are briefly described and assessed where relevant to the water sector.

9.3.1 The Water Act (Cap 372)

The Water Act, which is the most important law related to water, was first established in 1951 to make better provision for the conservation, control, apportionment and use of water resources. It was revised in 1972 and further subsidiary legislation was enacted in 1995.

(a) The objective of the Water Act

The purpose of the Water Act is to make provision for the conservation, control, apportionment and use of the water resources of Kenya, and for purposes incidental thereto and connected therewith. Except for waters which are wholly situated in a private land owner's domain, the Act vests the rights over all surface and ground water in the Government subject only to the rights which users may acquire under licence.¹ The overall power for the control of every body of water is exercised by the Minister,² who has the duty to promote the investigation, conservation and proper use of water resources of Kenya.³ Part III of the Act provides for the general powers of the Minister. He has power to purchase or acquire land by any other means for the conservation, improvement or use of water,⁴ to construct and maintain such works as may be necessary for the protection of the source or course of any body of water, the disposal or control of flood water, the conservation of water, and the distribution, apportionment or measurement of water;⁵ to impose water rates upon any person benefiting by such works;⁶ to impose water rates in connection with community water projects;⁷ to impose water rates on local authorities with respect to water projects in reserved areas;⁸ to order drainage of swamps;⁹ to establish protected catchment areas in cases where special measures are necessary for the protection of water resources;¹⁰ to expropriate, on payment of compensation, and operate or dispose of water works;¹¹ to enter upon, use, order the use of, maintain, vary, destroy or remove abandoned water works wherever situated;¹² and, in cases of emergency as a result of a serious deficiency of water for domestic purposes caused by reason of exceptional shortage of rain, accident, or other unforeseen circumstances, to direct that any person who has excess water supply for his domestic purposes does supply to such area or other person the excess quantity.¹³

¹ Supra, note 24, section 3.

² Ibid., section 4.

³ Ibid., section 7.

⁴ Ibid., section 8.

⁵ Ibid., section 9.

⁶ Ibid., section 10.

⁷ Ibid., section 11.

⁸ Ibid., section 12.

⁹ Ibid., section 13.

¹⁰ Ibid., section 14.

¹¹ Ibid., section 15.

¹² Ibid., section 16.

¹³ Ibid., section 17.

(b) Institutions under the Water Act

The Act then establishes two important institutions. The first is the Water Resources Authority, established under section 19, with the duties, *inter alia*, to investigate the water resources of the country and advise and make recommendations on the improvement, preservation, conservation, utilization and apportionment, to prepare estimates of the future water supply requirements of any area of the country, and to formulate proposals for meeting the existing and future water supply requirements of any area.¹⁴ The second is the Water Apportionment Board established under section 25, with the duty, to grant permits for proposed diversion, abstraction, obstruction, storage or use of water from a body of water or drainage of a swamp,¹⁵ and powers to prescribe measuring and controlling devices for water consumption,¹⁶ to require equitable use and to prohibit any practice that may cause undue reduction of water during drought and in the case of small watercourses,¹⁷ to determine all questions as to full, efficient, reasonable and beneficial utilization of water,¹⁸ and to declare various matters pertaining to bodies of water.¹⁹ Overall, the Water Apportionment Board works in an advisory capacity to the Minister and determines the apportionment of national waters according to user requests.

(c) Powers of the Minister under the Act

The Act then empowers the Minister to take a number of steps to ensure the protection of water catchment areas and ground water resources. He may declare an area to be a protected catchment area, a conservation area, or a protected area. Where the Minister is satisfied, after consultation with or on the advice of the Water Resources Authority, that special measures are necessary for the protection of water resources in or derived from any area, he may declare such area or any part thereof to be a protected catchment area.²⁰ By order, the Minister may require, regulate or prohibit any activities within such a protected catchment area which may be contrary to the requisite protection goals. Any person who fails to comply with such order shall be guilty of an offence.²¹ Under section 74 of the Act, the Minister has power to declare, after consultation with the Water Resources Authority, an area to be a conservation area if special measures for the conservation of ground water in the public interest whether for the protection of public water supplies or for the protection of water supplies used for industrial or other purposes are required. Any person who has been using ground water in an area so declared to be a conservation area and who desires to continue with the use must, within six months of the Minister's declaration, obtain a permit.²² Besides, no person may construct and use any well for the abstraction of ground water, extend any existing well for the abstraction of additional ground water, or abstract ground water by mechanical means from any

¹⁴ *Ibid.* section 20.

¹⁵ *Ibid.* sections 36, 78, & 79.

¹⁶ *Ibid.* section 28.

¹⁷ *Ibid.* section 29.

¹⁸ *Ibid.* section 30.

¹⁹ *Ibid.* section 31.

²⁰ *Ibid.* section 14.

²¹ *Ibid.*

²² *Ibid.* section 75.

well, within a conservation area without a permit.²³ Where the Minister has appointed an undertaker to be responsible for the control and distribution of water in a given area,²⁴ there is a corresponding duty to ensure an adequate supply. Accordingly, whenever the Minister is satisfied that special measures are necessary for the protection of a catchment area from which the water supply of an undertaker is obtained, he may declare such area to be a protected area.²⁵ By order, he may require, regulate or prohibit the carrying out of any activities in the area that may be inimical to the protection of the area or the water supply obtained therefrom. Such an order must be published in the Gazette and in a newspaper circulating in the district where the area is situated.²⁶

(d) Pollution control

The Water Act also addresses the issue of pollution of water resources, albeit in the part of the statute addressing miscellaneous issues.²⁷ One may be tempted to conclude that pollution, and the quality of water generally, is not given the priority that it deserves in the statute. There is comparatively more emphasis on ensuring that there is no diminution in the quantity and not quality of supplies. However, pollution of water used for human consumption is an offence under the Act.²⁸ The perpetrator of the pollution shall not be so liable if he was practising a lawful method of cultivation of land or the watering of stock which does not conflict with the principles of good husbandry.²⁹ Similarly, it is not an offence if the perpetrator is involved in reasonable use of oil, tar, or other substances on any highway or road and reasonable steps are taken to prevent pollution. Finally, the pollution does not constitute an offence where the perpetrator was involved in the disposal of wastes or effluent in any area that the Minister may have specified.³⁰

In any event, it is an offence for any person to willfully and without authority throw, convey, or cause or permit to be thrown or conveyed, any rubbish, dirt, refuse, effluent, trade waste or other offensive or unwholesome matter or thing into or near any body of water in such manner as to cause, or be likely to cause, pollution.³¹ Besides, under Rule 72 of the Water (General) Rules³², any person the effluent from whose works is returned to or discharged into a body of water not being "in such a degree of purity as will satisfy" the Water Apportionment Board or containing any matter "poisonous or otherwise likely to be injurious directly or indirectly to public health, to livestock or to crops, or to orchards or gardens irrigated with such water, or to any product for which such water is used in any process whatsoever," shall be guilty of an offence. Absent water quality and discharge standards as well as a

²³ Ibid., section 76.

²⁴ That is, under section 124 of the Act.

²⁵ Section 150(1)

²⁶ Section 150(2).

²⁷ Part XVI of the Act.

²⁸ Ibid., section 158(1).

²⁹ Ibid.

³⁰ Ibid.

³¹ Ibid., section 160(2)(b).

³² Ibid., L.N. 374 of 1964. See also Rules 77-80.

monitoring mechanism, these provisions have remained inoperable, although well-intentioned!

A further attempt to amend the Act is now in progress led by the Water Rights Section of the MOWR. It is intended that a second Water (Amendment) Bill be prepared, circulated to stakeholders and the Attorney General, and then submitted to Parliament.

9.3.2. The National Water Conservation and Pipeline Corporation Order, 1988

The National Water Conservation and Pipeline Corporation was established in 1988 by an Order,³³ and among its functions are the development and management of the water projects listed in the Schedule to the Order, as amended from time to time.³⁴ To that end, and in connection with the water projects in the Schedule, Regulation 5 provides that the Corporation shall (a) supply water in bulk to such water undertakers as may be designated by the Minister, (b) supply water, in bulk or otherwise, to such persons or class of persons as the Minister may designate, (c) do all such things as may be necessary or advantageous for the management and development of water projects and for securing an adequate supply of water, and (d) apply for and obtain such licences, permits and authorities required under any written law or as may be desirable. Further, the Regulation provides that the Corporation shall operate under the general direction of the Minister and shall assist the government in the formulation and implementation of a national water development policy.

It is noteworthy that the functions of the Corporation do not include addressing or dealing with factors or activities that may affect the availability of water or its quality. The supply with which the Corporation is concerned is dependent on the availability which, in turn, is dependent on conservation of catchment areas and drainage basins and ensuring that activities in these areas do not lead to diminution of the water in quantity and quality. The implication here is that the Corporation would be rendered functus officio if the supplies dried out!

A major weakness in the legislation establishing the Corporation is the absence of any statement indicating how it is to relate to other institutions, eg MOWR and local authorities, in the development and management of water supplies. This has caused considerable confusion among these other institutions and needs to be resolved.

9.3.3 The Local Government Act (Cap 265)

This Act was set up in 1963 to provide for the establishment of authorities for local government, to define their functions and to provide for "connected" and "incidental" matters. It was revised in 1986.

³³ Supra, note 37.

³⁴ As per the last amendment to the Schedule, effected vide L.N. 42 of 1989, the total number of water projects under the Corporation is now forty two.

In the context of this study, the Act provides that every local authority (municipal, town and urban council) may establish, maintain and regulate sewerage and drainage works within or outside its area. It may also compel the construction of private drains and their connection to public drains or sewers, and fix charges for the use of sewerage and drainage facilities.

In addition, a local authority (municipal, town, urban or area council) may undertake the supply of water within its area, and may establish, acquire and maintain works for this purpose. A local authority may make by-laws under this Act to the extent that a water undertaker may make regulations under the Water Act. However, it is not stated clearly that every local authority undertaking water supply is a water undertaker under the Water Act. For example, the Water (Water Undertakers) Rules apply only to gazetted water undertakers.

Many local authorities operate and manage water supply systems, not only as water undertakers but also pursuant to the provisions of the Local Government Act.³⁵ The water and sewerage department of every local authority is responsible for operation and maintenance of works for the supply systems. Augmentation and expansion of the systems are under the control of the parent ministry.

9.3.4 The Irrigation Act

Section 15(2)(a) of the Irrigation Act (Cap. 347) enjoins the Irrigation Board, in conjunction with the water Resource Authority, to formulate and be responsible for the execution of policy in relation to national irrigation schemes. One can only hope that such policy would take into account and be in consonance with the provisions of the Water Act.

This Act provides for the establishment, constitution and functions of the National Irrigation Board which is responsible for the development, control and improvement of national irrigation schemes in the areas designated by the Minister of Water Resources.

9.3.5 The Tana and Athi Rivers Development Authority Act

The Act provides for the establishment of an authority to advise on the institution and coordination of development projects in the two basins.

9.3.6 The Kerio Valley Development Authority Act and the Lake Basin Development Authority Act

These Acts each provide for the establishment of an Authority to:

(a) Plan and coordinate the implementation of development projects in the

³⁵ Chapter 65, Laws of Kenya, (Revised Edition, 1986), sections 178-180.

catchment area;

- (b) Establish a long range development plan for the area;
- (c) Coordinate the abstraction and use of natural resources, especially water, and to monitor this;
- (d) Maintain a database of all relevant statistics for the area.

The Acts do not state that the Authorities have sole or any responsibility for developing and distributing water supplies in bulk, either within the Area or outside it.

9.3.7 The Agriculture Act (Cap 318)

Section 201 of the Agriculture Act acknowledges the supremacy of the Water Act. It states -

“Nothing in this Act or any rules made thereunder shall prejudice or affect the provisions of the Water Act, and where anything in this Act or any rule is inconsistent with any such provision that provision shall prevail.” This provision should be included under other Acts as far as water is concerned.

The Act promotes agricultural development according to sound practices of good land management and stresses the need for conservation of soil and its fertility. Thereby, the Act indirectly emphasises the importance of preventing of soil erosion and the consequential deterioration of the quality of surface water.

9.3.8 The Public Health Act (Cap 242)

This Act requires local authorities to take all lawful measures to prevent and deal with the outbreak of disease. As there is a direct connection between certain diseases, sewage and water supply, every local authority, whether a water undertaker or not, has a statutory duty in water supply, water pollution and sewage disposal. For this purpose, the Act gives every local authority wide powers to deal with unsatisfactory water supplies, wastewater and sewage disposal and water pollution. For example, a local authority is mandated to prevent pollution of any supply of water used for drinking or domestic purposes, to purify it should it become polluted and to take action against those causing the pollution. Furthermore, the local authority is empowered to exercise its powers outside its area, if for example the source of water is outside its area.

Powers given to the Minister include: delegation of powers to local authorities and others to control the standard of purity of treated effluent and to control industries liable to pollute water courses; making rules for the protection of water supplies in defined areas; prohibition of insanitary irrigation within a town or its environs. There is

a fair amount of subsidiary legislation which includes detailed provisions for drainage and sewerage.

9.3.9 The Environmental Management and Co-ordination Act 1999

Management of water resources has also been addressed by legislation outside the sectoral confines. In particular, this has been addressed under the rubric of environmental protection and conservation by the newly enacted Environmental Management and Co-ordination Act.³⁶ The Act has detailed provisions on this matter. For instance, section 42 provides that no person shall, without the written approval of the Director General of the National Environment Management Authority, given after an environmental impact assessment in relation to a river, lake or wetland carry out a number of activities, namely, (i) erect, reconstruct, place, alter, extend, remove or demolish any structure or part of any structure in or under the river, lake or wetland; (ii) excavate, drill, tunnel or disturb the river, lake or wetland; (iii) introduce any, animal whether alien or indigenous, dead or alive, in any river, lake or wetland; (iv) introduce or plant any part of a plant specimen, whether alien or indigenous, dead or alive, in any river, lake or wetland; (v) deposit any substance in a lake, river or wetland or in, on, or under its bed if that substance would or is likely to have adverse environmental effects on such water body; (vi) direct or block any river, lake or wetland from its natural and normal course; or (vii) drain any lake, river or wetland. Besides, the Minister is empowered to declare a lake shore, wetland, coastal zone or river bank to be a protected area for purposes of conserving the environmental quality of such a body of water.³⁷ He may also issue general and specific orders, regulations or standards for the management of river banks, lake shores, wetlands, or coastal zones and for the protection and conservation of such areas if they face imminent risk of environmental degradation. Such orders may provide for, *inter alia*, the development of overall environmental management plans for the water bodies taking into account the relevant sectoral interests, the development of contingency plans for the prevention and control of all deliberate and accidental discharge of pollutants into the water bodies, as well as the development of plans for the protection of wetlands.³⁸

(a) Management of environment - lakes and rivers

The National Environment Management Authority is also under a duty to issue guidelines for the management of the environment of lakes and rivers.³⁹ It is also required to develop, issue and implement regulations, procedures, guidelines and measures for the sustainable use of hill sides, hilltops, mountain areas and forests and the control of the harvesting of forests and other natural resources so as to protect water catchment areas.⁴⁰

³⁶ Act No. 8 of 1999. The Act became operational effective January 14, 2000.

³⁷ *Ibid.* section 42(2).

³⁸ *Ibid.*, section 42(3).

³⁹ *Ibid.*, section 42(4).

⁴⁰ *Ibid.*, sections 44 & 47.

Further, the Minister is empowered to declare any area of land, sea, lake or river to be a protected natural environment area for the purpose of promoting and preserving specific ecological processes, natural environment systems, natural beauty or species of indigenous wildlife or the preservation of biological diversity in general. Once an area has been so declared, the National Environment Management Authority is empowered to issue guidelines and prescribe measures for the management and protection of such area.⁴¹

(b) Environmental impact assessment - water projects

Section 58 of the Act makes it mandatory for projects that are likely to have adverse environmental impacts on water to undergo environmental impact assessment. These projects are dams, rivers and water resources including storage dams, barrages and piers; river diversions and water transfer between catchments; flood control schemes; and drilling for the purpose of utilizing ground water resources including geothermal energy.⁴²

What is clear from the above is that the Environmental Management and Co-ordination Act is innovative in one fundamental way. Unlike the other legal instruments before it, it focuses the management strategy less on the resource (water) *per se* and more on the protection and conservation of the ecosystems that enhance and maintain both the quality and quantity of the resource available for use. By focussing more on the ecosystems, the Act adopts a holistic approach to water resource management which, in turn, enables the consideration of related factors such as deforestation, agricultural and animal husbandry and human settlements, all of which have direct implications on the availability and sustainable use of water.

(c) Water quality standards

As already noted above, the major problem with the prevention and control of water pollution is the absence of any water quality and discharge standards. With the Environmental Management and Co-ordination Act in force, this may soon become history. Water polluting activities and pollutants will be subjected to strict control measures under the Act. The Act establishes a Standards and Enforcement Review Committee whose functions are, *inter alia*, to advise the National Environment Management Authority on how to establish criteria and procedures for the measurement of water quality, to recommend to the Authority minimum water quality standards for uses such as drinking, industry, agriculture and recreation, and to analyse and submit to the Director General of the Authority conditions for discharge of effluents into the environment.⁴³ Implementation of the quality standards will be reinforced by penal sanctions, a factor that recognizes societal interest in water quality. Any person who discharges or applies any poison, toxic, noxious or

⁴¹ *Ibid.*, section 54.

⁴² *Ibid.*, section 58 and Second Schedule to the Act.

⁴³ *Ibid.*, sections 70 & 71.

obstructing matter, radioactive waste or other pollutants or permits any person to dump or discharge such matter into the aquatic environment in contravention of the established water pollution control standards shall be guilty of an offence and liable to imprisonment for a term not exceeding two years or to a fine not exceeding one million shillings or to both such imprisonment and fine.⁴⁴ In addition, the person shall be ordered to pay the cost of the removal of the pollutant(s), including the costs of restoration of the damaged environment and, also, to pay third parties reparation, cost of restoration, restitution or compensation as may be determined by the court on application by such third parties.⁴⁵

(d) Trade and industrial effluents

Trade and industrial effluents shall be discharged only into existing sewerage systems and only pursuant to an effluent discharge licence issued by the local authority operating or supervising such sewerage system.⁴⁶ The discharge licence may be cancelled by the Authority if (i) the holder contravenes any provision of the Act, (ii) the holder fails to comply with any condition specified in the licence, or (iii) the Authority considers it in the interest of the environment or in the public interest so to do.⁴⁷ Otherwise all licenses issued for effluent discharge shall be kept in a register to be maintained by the Authority as a public document that may be inspected by any person on payment of the prescribed fee.⁴⁸

An important provision of the Act is section 158 which provides that any written law in force before the commencement of the Act relating to the management of the environment shall have effect subject to such modifications as may be necessary to give effect to the Act. Further, where the provisions of such law conflict with those of the Act, the latter shall prevail. This provision is crucial in charting the future trends in legislative action with respect to the management of the environment generally and water in particular.

9.3.10 Wildlife (Conservation and Management) Act (Cap. 376).

Mention should also be made of the Wildlife (Conservation and Management) Act (Cap. 376). Under S.15 thereof, the Minister is empowered, upon certain conditions being satisfied, to prohibit, restrict or regulate any particular acts in any area adjacent to the Park, National Reserve or local sanctuary. In particular, he may declare an area to be a protection area and may also specify the acts which are prohibited or regulated and the extent or manner of such restriction or regulation. The Minister's action might well encroach upon water allocation and related matters. Should that happen, it would then become necessary to ensure that the Minister's actions are in conformity with the express provisions of the Water Act.

9.4 Concerns with the Current Institutional Framework

⁴⁴ Ibid., section 72.

⁴⁵ Ibid.

⁴⁶ Ibid., sections 74 & 75.

⁴⁷ Ibid., section 76.

⁴⁸ Ibid., section 77.

Past measures and policies have not effectively addressed the problems in the water supply and sanitation sector. The water delivery systems continue being ineffective and inefficient. The main reasons for these are:

- (a) The politics of water - Water has been regarded as a social good. It is therefore part of a political culture that water provision and sanitation is the obligation of the state. Citizens, administrators and politicians regard water utilities as naturally existing to fulfill that social role. Moreover, water utilities are significant employers and instruments of political patronage.
- (b) Uncertainty over the policy regime and regulatory framework has been a major constraint in the water supply and sanitation sector management. It is held that rules which are clear, sound and stable, and institutions which enforce those rules in a fair and predictable manner, are the linchpin to efficient institutions.
- (c) The role of private capital and management in the water supply and sanitation sector and the pricing of services have not been clarified. Lack of detailed information on the sector and its potential as a business is a major reason why entrepreneurial resources have yet to be mobilized on a scale consistent with the potential of the sector.
- (d) There are no performance standards for water utilities in Kenya currently. This means that managers cannot be sanctioned for poor performance. This extends to the fact that there are no effective sanctioning system for wayward and dishonest employees as well.
- (e) The centralized system of managing water utilities particularly those under the MENR and NWCP makes efficient operations difficult.
- (f) Water services are provided by centrally managed monopolistic public enterprises or government departments. Those charged with the responsibility for delivery of water services are rarely given the managerial and financial autonomy they need to do their job properly.
- (g) Users of these services both actual and potential are not well positioned to make their demands felt.

In addition to the above there are specific constraints arising from the administrative and financial over water. These are:

- (h) The Ministry is responsible for all features of water development and management. This includes policy formulation, water sector regulation and is also the main water undertaker. This leads to over centralized decision making processes leading to slowness in project implementation and capacity responsiveness.

- (i) The financial management aspects of water schemes is governed by Treasury Regulations. Revenues, especially for those schemes operated by the Ministry of Water Resources, revert to District Treasuries with little reference to the dynamic needs of the water schemes. This affects operation of water schemes in that there is absence of financial control at the District level. This results in:
- Lack of attention in even a minor leakage problem as repair financing decisions lies elsewhere.
 - In excess financing charges for the water sector.
 - Lack of accountability and transparent with respect to the finances raised and utilized by the water schemes.
- (j) There exists Parallel authority systems in the implementation of projects, particular at the District and Provincial Water Engineers level.
- (k) The Water Act, which is the operative Act for the water sector does not formally recognize the position of the Permanent Secretary in the management of water resources.
- (l) Water resource management responsibilities are often fragmented among sector agencies and this becomes a major impediment to integrated water resources management.

9.5 Concerns with the Existing Legal Framework

Implementation of the law is generally intended by Government and public authorities. If laws are made for good reasons, there must be equally good reasons for their enforcement. Law which is not implemented because it is not enforced encourages the public to disregard it, and is unfair to those who observe it.

Several studies of the sector spanning two decades have revealed that most problems are due to poor implementation and enforcement of the law, rather than any serious deficiencies in it. It is reported that formal enforcement action is virtually unknown, with scarcely a single prosecution under the relevant laws in the last 35 years. (The Study was unable to verify this absence of prosecutions.) The reasons for this low level of enforcement were:

- (a) The division of responsibilities among many agencies, with little coordination and between which cooperation is not always good. At best this makes for procedural difficulties, and at worst leads to lack of interest.
- (b) The number of laws involved which may be difficult to understand and correlate, particularly by the subordinate officials concerned.

- (c) The demise of the Water Resources Authority and the Regional Water Committees, which, in the absence of amendments to the Water Act, implies that their functions have been taken over unlawfully.
- (d) Lack of experience of enforcement procedures by officials and lack of case law.
- (e) Staff shortages.
- (f) Inability to take Water Act prosecutions to subordinate courts quickly. (The present procedure whereby prosecution of people contravening the Water Act must be initiated by the AG will be quite unworkable if the number of prosecutions increases. This would be better handled by designated officers at a lower level, eg water bailiffs).
- (g) An absence of what can best be described as the "philosophy of enforcement", particularly at senior levels. One might add, from the present perspective:
- (h) Generally poor motivation among officials of the public service because of inadequate pay and service conditions when these are compared to the private sector and even state corporations.

9.6 Proposals for Reform of The Water Sector

The need to improve the management systems of providing water and sanitation services in urban areas in Kenya is now apparent and urgent. The technical and operational; commercial and financial; human and institutional; and environmental problems of the water utilities must be addressed. This requires examining different management arrangements that will deliver the intent. Three approaches are considered for ameliorating the problems of water supply in Kenya. These are:

- (a) Retaining the current water management arrangements but strengthening the operations.**
- (b) Corporatization of water and sanitation services.**
- (c) Allowing private sector participation in water utility management.**

Each of these options requires careful analysis as to its viability and application in the Kenyan context. These options are discussed hereunder:

9.6.1 Retaining Existing Arrangements

The proponents of **Retaining the current water management arrangements but strengthening the operations** maintain that the current urban water undertakership arrangements remain. They argue the problem is not institutional but one of the quality of management. Therefore performance of the water utilities can be enhanced

without changing current institutional arrangements but by adopting appropriate reform programmes which include:

- (a) Strengthening the institutional mechanisms of the Ministries of Water Resources and Local Authorities, the urban centers and the National Water Conservation and Pipeline Corporation.
- (b) Developing institutional mechanisms such as contract plans and performance evaluation systems to hold managers of water utilities accountable for results.
- (c) Recruiting skilled manpower with market based compensation systems for the utilities.
- (d) Increasing the autonomy and freeing water utility managers from government interference in day-to-day operational decision making and from non-commercial goals. This will include granting autonomy to management of the utility to hire and fire, negotiate on tariffs and spend outside civil service rules. It also includes restructuring the board of management to diminish the role of sector ministry and civil servants.
- (e) Allowing gradual move to cost recovery tariffs

9.6.2 Corporatization

Corporatization means the formation of autonomous utilities to take charge of water supply and sanitation. Corporatization implies full application of commercial principles to the water service providers. The utilities will have focused and explicit performance objectives, well-defined budgets based on revenues from users, and managerial and financial autonomy. The managers can then be held accountable for their performance. The advantage is rapid improvement in performance.

The key in Corporatization is the formation of autonomous utilities. This can be done through:

- (a) Transferring the assets of the water utility to public **trust company**, owned directly by the Government or indirectly through a local authority. The assets are therefore separated and isolated from those of the Government or council. This company will be managed by an independent Board of Trustees similar to that envisaged under the Kenya Revenue Authority Act. Since this is a public company owned by the Government, it will have the capacity to source multilateral funds for development purposes.
- (b) Forming an **autonomous operating entity** which will be granted some rights to manage the utility by the public trust company. Corporatization will be achieved where an autonomous operating unit is created and which is then allowed to operate on full commercial principles enjoying commercial freedoms. Corporatization establishes independence of a local authority or government unit and insulates it from noncommercial pressures and constraints. This is because

lack of autonomy and accountability creates problems such as over-employment and unfocused goals occur because managers do not have control over day-by-day operations. They also must refer decisions on prices, wages, employment, and budgets to someone else. It is known that water departments in urban authorities are not autonomous units. Under this phase, mechanisms for the creation of institutional framework which can lead to commercialization would be considered. This will include the role of the main stakeholders in the commercialization process and the internal arrangements required to create autonomous water departments including human resource and finance issues.

9.6.3 Private Sector Participation

Private sector participation (PSP) in water and sanitation is based on the separation of the ownership of assets from the management of those assets. Private sector participation involves changing the managerial characteristics of the water industry. It further calls for the making of a complex set of choices about all the factors influencing water sector performance and creating the conditions under which private involvement can yield the desired performance improvements. Experience from PSP in water and sanitation has helped to:

- (a) improve the quality and availability of services
- (b) expand service coverage
- (c) mobilize capital from both public and private sources for urgently needed investments
- (d) introduce new cost-effective technologies and stimulate the development of superior management and more efficient use of labour
- (e) reduce operating subsidies, and in some cases, transform them into positive returns on investments
- (f) reduce political interference in the operations of water utilities which often contributes to the chronic inefficiency in public utilities⁴⁹

9.7 Proposed Institutional Options and Legal Aspects of Lamu Urban Water Supply

The proposed institutional options and legal implications for the institutional improvement and rehabilitation of water supply system for Lamu Urban Water Supply are guided by:

- (a) Government policy on water resource management (Sessional Paper No. 1 of 1999) and policy linkages with Poverty Reduction Strategy Paper (PRSP);

⁴⁹ Nakani, P.2

- (b) Government policy on the restructuring and privatisation of public enterprises (1992)
- (c) Grant financing eligibility for institutional strengthening and infrastructure rehabilitation by development partners and, more particularly, the Government of Japan.
- (d) Sustainability of water supply and sanitation services;
- (e) Improved access of water service to community, especially women;
- (f) Cost effective operations balanced by affordability;
- (g) Speed of incorporation in view of current strict deadlines;
- (h) Consistency with existing incorporation laws;
- (i) Community participation and involvement - public orientation as opposed to private sector orientation;
- (j) Substantial autonomy to deliver service without undue political interference.

The options considered and presented hereunder include: State Corporations; Limited Liability Company; societies Act; and the Trustee Act (Perpetual succession) Act, Cap. 164. These options are summarised below. A detailed analysis of these options and their legal implications are presented in Annex 1 (Institutional options and Legal aspects of Lamu Urban Water Supply Service)

9.7.1 State Corporation

This can be established under the provisions of the State Corporations Act⁵⁰ (Chapter 446). This would be a public institution whose day to day operations would be decided by a Board of Directors in which the Government would have a substantial control. It would satisfy the requirement by the Government that it must retain the ownership of its assets and other investments in the sector. It would also meet the condition for grant financing by the Government of Japan through JICA.

However, in the light of the fact that the stated Government policy is to pull out of the water sector, this is not a recommendable option as it would be contradictory to the government policy. Besides, the National Water Conservation and Pipeline Corporation has not particularly been efficient in the discharge of its mandate in order to justify the establishment of another corporation.

9.7.2 Limited Liability Company

⁵⁰ Chapter 446, Laws of Kenya, (Revised Edition, 1987).

This can be incorporated under the provisions of the Companies Act⁵¹ and may be limited either by shares or by guarantee and be public or private. A company limited by shares may be public in which case its shares may be floated on the stock exchange and any person may become an investor therein by purchase of the shares. The number of shareholders is limited only by the share capital. A private company, on the other hand, has a limited number of shareholders; they cannot be more than fifty. Since the number of shareholders is limited only by the share capital, a public company may cater for the interests of more stakeholders than the private company. But since, in both cases, the profit motive is the driving force in the membership, this may ensure efficiency in the delivery of services.

The company limited by guarantee is a more social service oriented organization that is not motivated by the profit motive. To that extent, the company may promote community participation and involvement in its decision-making process.

The main disadvantage of a limited liability company is likely to be 'taken over' by people with the economic muscle and be used for their own selfish interest with little or no benefits ensuring to the community that is supposed to be benefited. More crucial is the fact that the company will not meet the eligibility criterion for funding by the Government of Japan through JICA. Besides, in cases where companies have been incorporated to take over municipal water supplies, there have been several technical and operational problems. This is especially so in cases where the local authorities concerned have incorporated wholly owned limited liability companies where the municipal councillors have brought in political interference. Cases in point include Eldoret and Nakuru Municipal water supplies.

9.7.3 Co-operative Society

A co-operative society can be registered under the provisions of The Co-operative Societies Act⁵² Under the provisions of this Act, a society which has as its object the promotion of the welfare and economic interests of its members, and has incorporated in its by-laws the principles of (a) voluntary and open membership, (b) democratic member control, (c) economic participation by members, (d) autonomy and independence, (e) education training and information, (f) co-operation among co-operatives, and (g) concerns for community in general, may be registered as a co-operative society with or without limited liability.

The co-operative society is a business organization that would provide an effective tool for community participation and involvement in the operations of a water supply project. It would also promote commercial orientation in the sense that members would expect dividends at the end of every year.

Besides taking a considerably long time to be registered, a co-operative society does not enjoy autonomy from government control in the sense that the Commissioner for Co-operative Development, the Registrar of Co-operative Societies and other officers

⁵¹ Chapter 486, Laws of Kenya (Revised Edition, 1989).

⁵² Act No. 12 of 1997 repealing The Co-operative Societies Act, Chapter 490.

are all appointees and officials of the Government with considerable statutory powers of control of the operations of the co-operative society. To this extent, the Government would still be in control of the water sector.

9.7.4 Trust Corporation

A trust corporation may be registered under the provisions of the Trustee (Perpetual Succession) Act.⁵³ Under this Act, trustees who have been appointed by any body or association of persons established for any religious, educational, literary, scientific, social, athletic or charitable purpose, or who have constituted themselves for any such purpose, may apply to the Minister in the prescribed manner for a certificate of incorporation as a body corporate. The trust corporation has perpetual succession, can sue and be sued in its own name, and can hold movable and immovable property and any other interest belonging to or held by any person(s) for the benefit of the trust. New trustees may be appointed to succeed those deceased or retiring. Besides, the trust would enjoy considerable autonomy, but be accountable to the stakeholders in the operations and management of the project. The board of trustees stands in a fiduciary relationship with regard to the stakeholders on whose behalf they manage the trust corporation.

A detailed analysis of the above options are presented in **Table 9.1** below.

⁵³ Chapter 164, Laws of Kenya (Revised Edition 1981). - 24

Table 9.1: Analysis of Various Substantial Options

OPTION	LEGAL BASIS	ADVANTAGES	DISADVANTAGES	RECOMMENDATION
State Corporation	State Corporations Act (Cap. 446)	<ul style="list-style-type: none"> ❖ Easy to establish ❖ Government backing ❖ Public Institution ❖ Easy transfer of assets 	<ul style="list-style-type: none"> ❖ No independence autonomy ❖ Political interference ❖ Would be contrary to stated policy ❖ Low motivation 	Not recommended
Limited liability Company	Companies Act (Cap. 486)	<ul style="list-style-type: none"> ❖ Easy to incorporate ❖ Commercial orientation ❖ Public can be shareholders (whose company is not wholly owned by council) ❖ Transparency and accountability ❖ May be exempted from taxation if limited by guarantee ❖ Community participation and involvement ❖ May be supported by development financiers ❖ Separate legal entity from shareholders ❖ No direct government involvement and control 	<ul style="list-style-type: none"> ❖ Can be easily wound-up (especially where wholly owned by Council) ❖ Taxation may limit future investment ❖ Can be taken over by a few rich persons purchasing shares thereby frustrating public participation (where company is public) ❖ Transfer of assets problematic 	Not recommended as it raises complex logistic problems

Co-operative Society	Co-operative Societies Act (Cap. 490)	<ul style="list-style-type: none"> ❖ Effective tool for community participation ❖ Business oriented ❖ Profit motivation 	<ul style="list-style-type: none"> ❖ Takes too long to register ❖ Lack of "common interest" among the co-operators ❖ Government involvement and interference ❖ Transfer of assets problematic ❖ May be easily taken over by the rich 	Not a viable option
Trust Corporation	Trustee (Perpetual Succession) Act (Cap. 164)	<ul style="list-style-type: none"> ❖ Easy to register ❖ Perpetual succession, hence sustainability ❖ Independent legal status as public agency ❖ Community service oriented ❖ Governance by own instrument ❖ Political interference unlikely as board of trustees is appointed by stakeholders on basis of instrument ❖ Number of trustees based on instrument ❖ Possible exemption from taxation ❖ Transfer of assets not possible this being a public institution ❖ No shares hence not amenable to acquisition by the rich 	<ul style="list-style-type: none"> ❖ All stakeholders may not be represented on the Board of Trustees 	This is the best option that is recommended for adoption.

9.8 Recommended Institutional options and Legal Implications

In the light of the above analysis and the requirements of both the Government of Kenya and JICA, the registration of a trust corporation to take over the water supply and sanitation services would be the best option. This option not only meets the requirements of the two parties but also presents fewer logistical and operational problems.

The legal requirement will be as follows:-

- (a) Application for registration in the prescribed form accompanied by,
- (b) A statement of the objects and constitution of the trust concerned, e.g. to take over and operate the Lamu water supply service, to enter into an agreement for the lease of any assets and equipment, to impose and charge tariffs for the supply of such services, to employ such personnel or such terms and conditions as may be deemed necessary, to formulate working arrangements for the effective and efficient operation of the water supply, to acquire and hold such property as may be necessary for the discharge of its functions, etc;
- (c) A statement and short description of the property or interest therein which at the date of application is held or intended to be held by the trust;
- (d) A statement as to whether the trust concerned is a society registered or exempt from registration, or is incorporated under the Companies Act;
- (e) The names and addresses of the trustees;
- (f) The proposed title of the corporate body, of which the words "trustees" and "registered" shall form part, e.g. THE REGISTERED TRUSTEES OF ----- (TOWN) WATER SUPPLY SERVICE;
- (g) The proposed device of the common seal; and
- (h) The regulations for the custody and use of the common seal.

Under the constitution in (b) above, provisions can be made for the number of trustees to be registered and how these may be appointed do as to be representative of all the stakeholders.

Organizationally, the Board of Trustees will have the overall management of the trust in order to ensure efficient delivery of services to the consumers. To this extent, it will be its responsibility to hire the management staff and such other personnel as may be required. To ensure transparency and accountability, the Board of Trustees will be expected to consult regularly with the major stakeholders on the progress achieved in implementing the mandate of the Trust. This consultative process will be provided in the trust instrument.

9.9 Institutional Framework for the Proposed Lamu Urban Water Supply Service.

In this section we develop the organisational structures and operating mechanism for the Trust Corporation, which is the recommended institutional and legal option for Lamu Urban Water Supply Service.

9.9.1 Organisational Structure

The proposed institutional framework comprises the following structures:

- (a) The Board of Trustees (BOT)
- (b) Management

The role of these structures is now defined.

9.9.2 Board of Trustees

The Board of Trustees will be the governing body of the Trust Corporation. It will acquire and manage assets on behalf of the stakeholders; and will be responsible for policy guidance and the strategic direction of the Trust Corporation. The Board of Trustees will be appointed from the current stakeholders of Lamu Urban Water Supply. Major stakeholders are:

- (a) Lamu Municipal Council;
- (b) District Water Officer (DWO);
- (c) Major consumers, especially the co-operative societies , business enterprises and institutions (educational and health);
- (d) Development partners;
- (e) Religious organisations;
- (f) Community water projects;
- (g) District Social Development Officer (DSDO)

The initial appointment will be facilitated by the Inter-Ministrial Core Team. Thereafter, replacement within the Board of Trustees shall be effected by the Trustees themselves on the basis of agreed procedure. This renewal process will be detailed in the constitution of the Trust Corporation.

Other provisions enshrined in the constitution of the Trust are:

- (i) That the number of trustees shall be between 5 - 7;

- (ii) That Government representation shall be provided in BOT to safeguard public interest;
- (iii) That BOT can co-opt, for particular purpose, an expert on issues of relevance to the Trust or beneficial to the advancement of the interests of the Trust;
- (iv) That the Board of Trustees shall convene a stakeholders consultative forum every year to keep stakeholders closely informed of the progress in the affairs of the Trust Corporation.

The specific duties of the Board of Trustees are:

- (a) To lease and / or acquire and own assets on behalf of the stakeholders;
- (b) To appoint the General Manager and senior managers of the Trust Corporation and to fix their remuneration;
- (c) To approve the organisational structure and the establishment level of the management and operational staff;
- (d) To approve policy and strategy of the organisation;
- (e) To approve the capital and operating budgets of the Trust Corporation;
- (f) To monitor management performance in accordance with the agreed plans;
- (g) To prepare and submit reports to the Stakeholder Council in the manner provided by law and the Trust Instrument.

9.9.3 Management

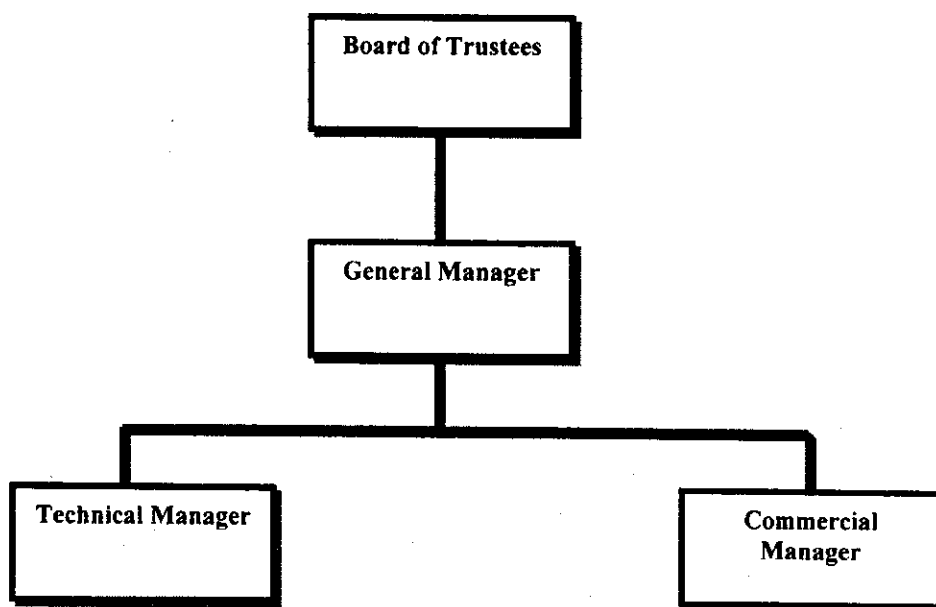
It should be noted that the Trust can operate the water supply system in the Town. Alternatively, the Trust can contract out this function to a private operator. In the event the BOT decides to manage these services, it will appoint senior members of the Management Team.

These are:

- (a) The General Manager
- (b) The Technical Manager
- (c) The Commercial Manager

Other positions will be approved by the BOT but will be recruited by the Management Team. The high level organisational structures of the Trust Corporation are illustrated in **Fig. 3.1**.

Fig. 3.1: High level organisational structures for Lamu Water Supply.



The General Manager: will be responsible for all aspects of the management and operations of the Trust Corporation. These include policy and strategy formulation for BOT approval and subsequent implementation after BOT approval.

The Technical Manager: will be responsible for operations and maintenance; and assets replacement for efficient supply of water and sanitation services.

The Commercial Manager: will be responsible for billing and revenue collection; accounting and financial management of the Trust Corporation. He / She will also approve water supply connections and oversee customer service standards.

9.9.4 Syndication of Water Supply and Sewerage Services Management

It is quite possible that some of the smaller towns could derive economies of scale from syndication of the water supply and sewerage services management. This essentially means forming a management company to manage the water and sewerage services in two or more local towns.

The proposal to form a trust corporation on a syndicated basis must be seen against the need to ensure that stakeholders in the "catchment area" of the local town have a common interest in water and sewerage issues that directly affect them. It is unlikely that stakeholders in different local towns could show a common interest that would sustain the formation of a Water and Sewerage Services Trust Corporation encompassing these different towns. In the event, therefore, where syndication could be a feasible option in the management of the water and sewerage services, this

should be confined to the operational management aspects. In effect, therefore, Water and Sewerage Trust Corporations in the concerned local towns could contract out the operations and management of the water supply and sewerage services to a professional private sector operator. This is a feasible option in areas where expertise in the management of these essential services is limited. It is also a more practical and simpler solution than the formation of a management company by the Trust Corporation in the local towns. The latter is likely to suffer from over-politicisation of the leadership and management role of such a company.

9.9.5 Operating Mechanisms

The operations of the Trust Corporation will be as follows:

- (a) The initial appointment to the Board of Trustees will be facilitated by the Interministerial Core Team. Appointment will be from current stakeholders and will include Government representation. A woman representative should also be appointed. Subsequent appointments to fill vacancies in the BOT shall be provided in the constitution of the Trust. The relevant provision should allow BOT to renew itself by appointing replacements from specified stakeholders. To obtain ownership and support of stakeholders to the proposed Trust and the appointment thereof, a sensitization and consensus building workshop involving major stakeholders should be held before the Trust Corporation is registered.
- (b) The Board of Trustees will "hire and fire" the Senior Managers of the Trust Corporation. The BOT can also contract out the management of the water supply and sanitation system to a private operator. BOT must, however, ensure that the services of the Trust Corporation are not harmed by such an arrangement and will ensure that safeguards are in place to provide services in a sustainable manner. The BOT will own or lease assets and properties on behalf of the Trust Corporation and will enter into contracts with third parties. The BOT will sue and be sued on behalf of the Trust Corporation.
- (c) The management (and / or management agent) will manage the day to day operations of the Trust Corporation. Management will be accountable for their performance to the Board of Trustees through regular reports and meetings of the Board of Trustees.

10.0 FINANCIAL, ECONOMIC AND SOCIAL EVALUATION

10.1 INTRODUCTION

This section provides for the financial, economic and social evaluation of Lamu Urban Water Supply. The financial viability analysis is only useful for indicative purposes only. It is contended that projects of this nature should rely more on economic and social viability. These two aspects are given more emphasis in the evaluation.

10.2 INSTITUTIONAL MANAGEMENT COSTS

To obtain the desired results from the rehabilitation of Lamu town water supply, there will be need for a new institutional arrangement. This will be supported by a change in management style. This involves substantial investment, which is taken as part of the cost of the project. The financial costs for undertaking this exercise are summarized in Table 10.1.

Table 10-1: Lamu Institutional Development Costs

No.	Activity	Bases of cost estimate	Estimated cost (Ksh.)
1	Hold consensus building workshop	(a) Travel refreshments and honorarium for 50 participants at SH. 5,000 /= per participant	250,000
		(b) Consultants facilitation costs and travel	700,000
		(c) Transport and related expenses for ministry staff	200,000
2	Develop and register the trust instrument	Legal and follow up effort	50,000
3	Management Contract	Appoint local expert to support the institutional rehabilitation process for the 3 year period	52,800,000
4	(a) Identify water supply and sewerage infrastructure and estimate cost	Standard infrastructural valuation procedures	5,000,000
	(b) Identify and value other assets.		
5	Develop staffing and financial plans for the new organisation	25 working days at Sh. 40,000 per w/day	1,000,000
6	Develop operations manual	20 working days at Sh. 30,000 per day	600,000
7	Operational Support	Vehicles, motor cycles, computers and software, office equipment	
8	Provide initial working capital to the new organisation	Average annual billings for the last 3 years	2,000,000
Sub -total			62,600,000
Contingency (10%)			6,260,000
Total			68,860,000

It is contended that the key problem in the town's water supply system is management weakness. Institutional support is recommended as the foundation of improving the nature and efficiency of management.

10.3 WATER TARIFFS

Lamu town water supply scheme is subject to the tariff regime legally set by the Minister of Water. The legal tariffs are as indicated in the Table 10.2.

Table 10.2: Urban Water Tariffs

	Charge (Kshs.)
PART I - GENERAL	
(a) Where no meter is installed, a monthly charge of	200
(b) Where a meter installed, the charges will be as follows:	
(i) Where the amount of water sold through the meter in any one month does not exceed 10 cubic metres (minimum charge)	200
(ii) Where the amount of water sold through the meter in any one month is more than 10 cubic metres but does not exceed 20 cubic metres, the charge per cubic metre in excess of 10 cubic metres	25
(iii) Where the amount of water sold through the meter in any one month is more than 20 cubic metres but does not exceed 50 cubic metres, the charge per cubic metre in excess of 20 cubic metres	30
(iv) Where the amount of water sold through the meter in any one month is more than 50 cubic metres but does not exceed 100 cubic metres, the charge per cubic metre in excess of 50 cubic metres	45
(v) Where the amount of water sold through the meter in any one month is more than 100 cubic metres but does not exceed 300 cubic metres, the charge per cubic metre in excess of 100 cubic metres	75
(vi) Where the amount of water sold through the meter in any one month is more than 300 cubic metres the charge per cubic metre in excess of 300 cubic metres	100
c) Where water is sold through a meter at a kiosk, the charge per cubic metre	15
d) Where water is sold by retail at a kiosk per unit of 20 litres or part thereof, the charge per	2
e) For the bulk sales to an undertaker for resale, the charge per cubic metre	15
PART II - BOARDING SCHOOLS	
1. A school with a permissible water demand not exceeding 600 cubic metres per month, the charge per cubic metre	20
2. A school with a permissible water demand not exceeding 1200 cubic metres per month, the charge per cubic metre	25
3. Any other learning institution with a permissible water demand of 1200 cubic metres per month, the charge per cubic metre	25
4. The charge per cubic metre of water consumed in excess of permissible water demand	45
Source: Kenya Subsidiary Legislation, 1999: Legal Notice No. 174	

The tariffs apply only to those who have formal access to water. Those with no access to water and who acquire water from vendors pay about Ksh 10.00 per 20 litres or Kshs 500 per m³. This, for all practical purposes, is a very high charge and has a dramatic effect on the household disposable

income. A computation based on the water consumers' distribution and billing in Lamu gives an average billing of Kshs 37.47 per m³.

10.4 FINANCIAL COSTS OF REHABILITATION

The financial costs for rehabilitation works for Lamu water supply amount to Kshs.196,786,000. These are composed of the cost of rehabilitation amounting to Kshs.127,926,000 (Table 4.4) and that of institutional reform amounting to Kshs.68,860,000 (Table 10.1).

10.5 ECONOMIC COSTS OF REHABILITATION

The economic costs for the rehabilitation of Lamu water supply have been taken to be the total financial costs plus the incremental costs of households to connect to the mains. An average of 1750 additional households will be connected at the cost of Kshs.1,500 per household. The resulting additional costs will be Kshs.2,625,000 bringing total economic costs to Kshs.200 million.

10.6 FINANCIAL BENEFITS FROM REHABILITATION

The main benefit of the rehabilitation plan will be institutional strengthening of the town's water supply system. This will result in enhancement of management. The observable outcomes will be increased water supply, reduction of water losses and improvement in the revenue collection efficiency. The benefits will accrue under the following assumptions:

1. The management Consultant is in place at the beginning of Year 1 and involved for a period of 48 months.
2. The distribution network and metering would be rehabilitated/replaced during the first year of the management involvement.
3. Staff levels, remuneration and requirements are as proposed by the recommended Lamu organization chart.
4. The working capital to kick-start the process is available.
5. The appropriate infrastructure to support operations (transport, computers and software requirements and office space) is available.

The benefits will occur as follows:

10.6.1 Revenue from Extra Water Sold

The scheme is designed to produce an average of 3,500 m³ per day. It currently produces 761 m³ per day. Projected demand will reach 1,962 m³ per day in 10 years. Increased management efficiency with rehabilitation will improve water production to meet demand from the third year of rehabilitation. This will improve water revenues by an average of Kshs.26 million per annum.

10.6.2 Reduction in Unaccounted for Water (UfW)

The current average UfW has been determined to be 65.82%. Assuming that the management consultant has the piping system replaced/repaired and the billing under control within the first year, this should result in UfW being reduced to 25% during year 1 and 2 and then sustained to not exceed 20% during years 3 – 7, then to 10% during years 8-10.

The reduction in UfW will result in revenue improvement averaging Kshs.10 million per annum at the current average tariff rate of Kshs.37.47 per m³ used for Lamu.

10.6.3 Improvement in Collection Efficiency

Collection efficiency for the last three years averaged 34.52%. No change is anticipated in the first year. Improved collection efficiency to 87% in year 2 is expected as a result of improved services. The efficiency will change to 95% as the billing system is enhanced through computerization from year 3 to 10.

Improved collection efficiency will boost cash flows by an average of Kshs. 3 million per annum.

10.6.4 Improvement in Sewerage Coverage Revenue

No benefits are calculated from this source since there is no sewerage system in the town.

10.7 ECONOMIC BENEFITS FROM REHABILITATION

In identifying the benefits, the way to be consistent and accurate is to look at all people conceivably affected by the program and ask how much better off they will be as a result of the expected water and sanitation rehabilitation exercise in the town. In order to give a precise estimation of the social benefits accruing to each individual category, a number of assumptions are made in each approach.

The major focus for this study is on three broad categories of social benefits that are assumed to accrue to the household within a situation of an improved water and sanitation system. These are:

- Social/economic benefits (hereby referred to as opportunity costs) of alternative uses of time previously used for fetching water by the household over along distance.
- Benefits enjoyed by the household due to better health for water users and their families.
- Social benefits accruing from a reduction in health costs.

(1) Valuation of economic benefits of time saved.

The methodology used in the calculation of these benefits is founded on a number of assumptions. These assumptions include:

- i. The minimum amount of water required by each household to meet basic sanitary requirement is 100 l/day. Therefore at the cost of Kshs 10 per a 20L-jerrican of raw water, they would have to spend an average of Kshs 50 per day on water.
- ii. Assuming that the water source is one km away, it means that it would take on average a minimum of 30 minutes per trip to fetch a 20L-jerrican of water. Consequently, to get the minimum daily water requirement of 100L (i.e. 5x20L-jerricans) it would take 2.5 hours.
- iii. Assuming that a household earns an average minimum daily wage rate of Kshs 150 for an eight-hour normal working day, it is then possible to calculate the opportunity cost of fetching water in terms of man-hours spent and converting this to money units. The loss is $(2.5/8 \times \text{Kshs } 150) = \text{Ksh.}47$ per household per day. The annual total loss per household is $\text{Ksh.}47 \times 365 \text{ days} = \text{Ksh.}17,155$.

(2) Economic benefits of better health for users and their families.

In analyzing the benefits accrued to an individual, the study considered the opportunity cost of falling sick due to a water and sanitation related problem.

Given the health data on Lamu (the study, however, from the outset, acknowledges lapses in data capture), on average, each household losses 50 productive days due to the debilitating effects of water related ailments. Assuming a mean daily wage rate of Kshs.150 per person per day, it then follows that the total loss per household will be $\text{Kshs.}150 \times 50 = \text{Kshs.}7,500$ per annum. This is the benefit that would accrue to the users with improvement in water delivery.

(3) Economic benefits from reduction in Health costs.

According to the findings of the Welfare Monitoring Survey II of 1994, the budget share of household income spent on health care is 1.8%. Assuming that 80% of this income goes to sanitation related ailments, and given that the average mean monthly household income for Lamu is Kshs.5,263.86, it implies that each household spends Kshs.75.80 on these types of ailments per month. The total expenditure by per household in the town is $\text{Kshs.}75.80 \times 12 = \text{Kshs.}909.60$ per annum.

(4) **Summary of Economic Benefits derived for Lamu Town**

Nature Benefits	Derived Benefits in Kshs Per Household per annum
Economic benefits of time saved from fetching water from source	17,155
Economic benefits of better health for users and their families	7,500
Economic benefits in reduced health cost	910
Total benefits per household per annum	25,565

10.8 ABILITY TO MEET O&M COSTS

The water supply will be able to raise enough incremental revenue to cover operating and maintenance costs. The net contribution margin is projected to average Kshs.22 million per annum.

10.9 FINANCIAL EVALUATION

Preliminary evaluation of the proposed water supply rehabilitation project should be undertaken in compliance with the financial and economic viability of the project. The overall results of the financial evaluation of Lamu Town Water Supply Scheme are summarized in **Table 10-3**. An average discount rate of about 4%, which reflects the current cost of soft loans to Kenya is used for the evaluation. The base evaluation is for a period of 10 years.

Table 10.3: Financial Evaluation of Lamu Town Water Supply

Financial Evaluation					
FIRR		NPV		RER	
Rate	Viability	Kshs.	Viability		Viability
2%	N/V	(13,689,393)	N/V	1.036	N/V
N/V = Not Viable					

The results of the financial evaluation given in the Table 10.3 indicate that Lamu town water supply is not financially viable, based on the current tariff and a 10-year project life. The NPV of Kshs.(13,689,393) shows that even after rehabilitation of the waterworks the supply will not be able to recover the initial cost of the investment by year 10.

The financial internal rate of return (FIRR) of 2% is positive although not equal to the hurdle rate of 4%. The revenue – expenditure ratio (RER) is 1.036 indicating the project is fully able to cover all its costs. However, as

the results of the sensitivity analysis below show, the results need to be interpreted cautiously.

10.9.1 Financial Sensitivity Analysis

It is generally agreed that evaluation of a water utility over a ten-year period may be too ambitious. Most water utility investments are expected to indicate positive returns from 25 to 30 years after investment. In this case the project was financially evaluated using the following scenarios:

Case 1: The project is has a life of 15 years

Case 2: The project is has a life of 15 years but costs (Investment + O&M) increase by 15%.

Case 3: The project is has a life of 15 years and is financed by Grant.

In carrying out the above analysis we assume that the cash flow at the end of year 10 is maintained in the additional periods.

The results of this analysis are presented in Table 10.4

Table 10.4: Financial Sensitivity Analysis for Lamu Water Supply

	Base Case	Case1	Case2	Case3
	Project has a life of 10 years	Project has a life of 15 years	Project has a life of 15 and Investment Cost and O&M increase by 15%	Case 1 but Project financed by Grant
FIRR	2%	9%	4%	9%
NPV	(13,689,393)	54,438,368	(374,638)	126,185,598
RER	1.0360	1.2816	1.1144	1.2816
	N/V	N/V	N/V	FV
N/V	=	Not Viable		
FV	=	Financially Viable		

The project becomes financially viable immediately the more realistic time frame of 15 years is adopted, with a very encouraging return of 9% and a Net Present Value of Kshs.54,438,368. The project is also viable when financed by Grant. The most positive feature is that over 15 years, the project is not also very sensitive to cost changes.

10.10 ECONOMIC EVALUATION

The results of the economic evaluations are summarized in Table 10.5, which shows that the rehabilitation costs for Lamu Town Water Supply are justifiable with a fairly acceptable economic rate of return. An average discount rate of about 4%, which reflects the current cost of soft loans to Kenya is used for the evaluation.

The project is evaluated using:

- (a) a rate of EIRR (Economic Rate of Return)
- (b) a value of NPV (Net Present Value)
- (c) a ratio of CBR (Cost Benefit Ratio)

Table 10.5: Economic Evaluation of Lamu Town Water Supply

Economic Evaluation					
EIRR		NPV		CBR	
Rate	Viability	Kshs.	Viability		Viability
13%	EV	49,149,268	EV	0.804	EV
EV = Economically Viable					

The project is economically viable with a high EIRR against the hurdle rate of 4%. The positive NPV value of Kshs.49,149,268 makes the project economically very attractive. The project is also able to cover its costs comfortably with a cost-benefit ratio (CBR) of 0.804.

10.10.1 Economic Sensitivity Analysis

An economic sensitivity analysis was performed to determine whether changed circumstances would affect the viability of the project. The following assumptions have been made for the sensitivity analysis.

Case 1: Investment costs increase by 15%

Case 2: O&M costs increase by 15%

Case 3: Both investment costs and O&M increase by 15%

The results of the sensitivity analysis are presented in Table 10.6.

Table 10.6: Economic Sensitivity Analysis for Lamu Water Supply

	Base Case	Case1	Case2	Case3
		Increase Investment Cost by 15%	Increase O&M by 15%	Increase both costs by 15%
EIRR	13%	7%	9%	4%
NPV	49,149,268	21,492,302	29,624,369	1,967,403
CBR	0.804	0.870	0.858	0.924
	EV	EV	EV	EV
EV	=	Economically Viable		

The project is economically viable under all the given conditions. The project economically stands well against any changes in investment and operating costs and is viable under all circumstances.

10.11 SOCIAL EVALUATION

There is no doubt that society values water due to its effect on social welfare. In this study the two main issues considered were full time availability of clean water and the impact of water on public sanitation and health. Residents in the urban area were requested, through a rapid assessment survey, to specify the relative importance they attach to each of these two aspects.

In all the cases, full time availability of clean water was considered to be of very great importance, with a weighting of 99% by residents surveyed. The residents were willing to pay a higher tariff to have availability of water guaranteed. This means that it might be probable for tariff increases to be justified, which would further enhance the financial viability of the project.

The residents were quite clear in their minds that clean water impacts positively on public sanitation and health. On health issues, the response indicated that 90% of disease incidences suffered at the local level should be eliminated by the supply of clean water. Again, residents were willing to pay a premium to mitigate against the health effects of non-availability of clean water.