5.2 Improvement in Public Administration

5.2.1 Basic Concepts

Chapter 2 noted a number of issues concerning the overall organisation of the water and sewage sector and the responsibilities of the constituent institutions. These need to be resolved if the performance of the sector is to be significantly improved. The most important of these include:

1) weak regulation of the sector (in the areas of water pollution, water abstraction, water quality, tariffs) and the institutions in it; e.g. Nairobi Water and Sewerage Department appears to enjoy rather too much autonomy at present and is apparently not operating effectively and efficiently;

2) MWR, the ministry responsible for policy formulation, strategy, development planning and implementation, and regulation, is also the country's largest water undertaker;

3) under-representation, fragmented management and apparent lack of recognition for the sewerage development subsector;

4) a lack of logic and clarity in the roles and limits of responsibility between the main institutions involved in the water and sewage subsectors;

5) weak performance of most Local Authorities in the management of water and sewerage services;

6) the need for a strong enabling and regulatory environment to encourage and at the same time monitor the operation of water and sewage schemes on a commercial basis, with the involvement of the private sector where and when appropriate; and

7) the need to progressively implement the institutional prescriptions of the National Water Policy in, for example: redefining MWR's role as supervisory, regulatory and enabling, rather than service provider; defining roles for and coordinating all actors in the sector.

The objectives of a rationalisation of the institutional framework of the sector, therefore, it is suggested, would be to:

1) promote effective and efficient regulation of the water and sewage sector, and clearly segregate regulation from the operation of water and sewage schemes;

2) rationalise and clarify the roles and boundaries of responsibility between the main sectoral institutions while reducing MWR's role as service provider;

3) establish a unified body within MWR responsible for providing, within a water and sewage sectoral plan, planning, supervision of construction and O&M monitoring, and advisory services for the sewage subsector, and reporting to a senior level;

4) ensure that scarce financial, technical and human resources are allocated efficiently;

5) support long-term public sector reforms by:

6) enabling schemes to be operated on a commercial basis with a greater degree of autonomy, with the aim of funding future capital investment from scheme revenue, and by

7) encouraging and promoting investment from the private sector at the appropriate time; and

8) improve the delivery of services to the customer.

This Study agrees with several consultancy reports issued over the past five years or so, that agreement and implementation of a rational development strategy for the water supply and sewerage sector, based on the above objectives, is of key importance in improving overall sector performance.

The objective is to focus on a minimum number of key problem areas and propose action to resolve them. This is to avoid dissipating scarce resources on too many proposals and action plans.

(1) Rationalisation and Clarification of Major Institutional Roles

The roles and responsibilities of MWR, NWCPC, MOLA and the LAs, and any other scheme operators, should be rationalised and clearly defined in terms of:

1) policy formulation;
2) sector strategy and planning;
3) regulation;
4) scheme planning and implementation; and
5) scheme operation.

The revision of responsibilities referred to in the National Water Policy would, in the longer term, concentrate the responsibilities of MWR and other ministries on overall sector policy and strategy, planning, coordination and regulation, while the development, implementation and operation of schemes would be handled by NWCPC, the municipalities and other undertakers. This has been accepted by GOK in principle, specific proposals and modalities appear in outline in 5.2.2 below.

To achieve such a separation of roles and responsibilities, in addition to the development of a regulatory framework, it will be necessary to:

1) strengthen the management, systems and general resources of existing and potential water undertakers to allow them to take on additional schemes currently managed by MWR and NWCPC; and
2) agree the criteria and procedure for allocating schemes.

Also, the poor financial performance in the sector has to be addressed. Existing problems include, generally:

1) under-recovery of capital and even operating costs;
2) inadequate budgets for operating and maintaining schemes, and severely under-funded budgets; and
3) hidden cross-subsidisation between schemes,

which appear to be due to inadequate tariff levels, constraints from the central planning and budgeting system, and poor operation, maintenance and financial control by existing water undertakers. Proposals for dealing with some of the major current problems appear in 5.3 below.

(2) Scheme Allocation Criteria

It will be important to establish a logical basis, which can be agreed between the parties involved, for the allocation of water and sewage schemes among the main actors. Such criteria could include:

1) financial viability;
2) size of scheme (water volume or population served);
3) type of scheme (bulk water/pipeline supply; distribution to consumer);
4) municipal/urban/rural scheme;
5) geographical location (e.g. by catchment area, basin, or administrative unit); and
6) the need to combine water supply and sewage disposal schemes under one water and sewerage manager, as in the municipalities.

(3) Framework for Regulating Schemes and Undertakers

A regulatory framework should be set up to monitor the operational, environmental, and financial performance of undertakers and of schemes to ensure that:

1) adequate service levels are provided for consumers;
2) tariff levels allow the undertaker to meet reasonable and agreed financial targets, but are fair to each category of consumer;
3) services are extended to supply changing demand, when necessary;
4) new projects are sensible and are planned and carried out efficiently and effectively; and
5) performance is regulated using specific criteria and operating licences are controlled.

The framework, within which all undertakers (including Nairobi City Council W&S Department) would have to operate (this would be a condition of the undertaker's licence), would allow undertakers to function without political interference but would make sure they understand their responsibilities for delivering performance. This arrangement is also needed for regulating privatised or franchised water and sewage schemes in the interests of customers and investors. Specific proposals appear in 5.2.2 below.

5.2.2 Proposals for Institutional Restructuring

(1) Ministry of Water Resources

It is recommended that MWR should continue to have overall responsibility for policy making, strategy, planning, coordination and regulation of the water sector (water supply and sewerage development), and should retain its current functions, at least in the short term. Some changes are, however, necessary (see **Figure - 5.2.1**).

First, two areas should be strengthened to emphasise their growing importance and an apparent lack of attention in the past:

1) planning, design and construction, and overall supervision of sewerage schemes and their operation and maintenance;
2) central regulation of:
3) water abstraction, water pollution and water quality, and
4) water undertakers and sewage providers, including tariffs.

Although sewage works and the sewage subsector are the responsibility of municipalities and some urban centres and are currently therefore under the jurisdiction of MOLA, it is important that, being part of the water sector, MWR has overall responsibility for and control over this subsector. The linkage between sewerage and water supply should be strengthened. In planning, for example, design criteria for water supply will inevitably affect those for sewerage services. To fulfil this responsibility adequately, the present functions relating to sewerage, currently dispersed in several MWR units, should be brought together in one Division under a deputy director reporting to Director, WDD - who should now be designated Director, W&SDD (Water and Sewerage Development Department). The sewerage functions to be regrouped include:

1) Technical planning
2) Technical design
3) Sewerage schemes construction
4) Sanitation monitoring and maintenance.

MWR would act in a supervisory and advisory capacity as necessary, while MOLA and the larger municipalities actually undertake these functions. MWR would be responsible for ensuring overall the proper execution of the functions.

In connection with the last function, an Inspection Unit for Sewerage Schemes should be set up as recommended by a 1983-1991 German funded sewerage inspection and training programme.

An additional section dedicated to sewerage may be required in the Special Water Programmes Division.

The relationship between MWR, MOLA and the municipality should be comparable to that existing in water supply, where the municipality is a water undertaker. MWR should be responsible for ensuring that municipal and other urban water supply and sewage disposal schemes are operating and being maintained as planned, and for providing appropriate technical support. **Figure - 5.2.2** outlines the proposed responsibilities and relationships between the agencies concerned. On site sanitation should remain under the overall control of MOLA assisted by MOH.

Regulation of water abstraction, water pollution, and water quality should be grouped together with surface water and groundwater management in one department reporting to the Permanent Secretary, to detach regulatory functions as far as possible from the mainstream work of the Ministry, and be given a higher profile. This agency would support the Water Apportionment Board, the Catchment Boards and the District Water Boards in their decisions and recommendations regarding the conservation and management of water resources. MWR must ensure that this regulatory organisation is adequately funded, so that its functions are properly carried out. To greatly reduce the current delay in approving water abstraction permits, Catchment Boards should be delegated powers to approve routine or less significant permit applications, and all Boards should meet far more frequently.

In the longer term, MWR should relinquish most of its direct water undertaking activity, beginning with the handover of municipal and urban schemes to local authorities when these are adequately prepared for the task. This handover would be progressive and would take a number of years to accomplish fully (see (3) below).

The other progressive divestment, currently on-going under the Community Management of Water Supplies Project, is that of rural water supply schemes to selected communities, so that they can take over the management of their own schemes, thereby reducing MWR's direct involvement in service delivery. Assets are not being transferred yet, merely handed over for the communities' use. MWR is supporting capacity building within communities with SIDA's assistance under the Kenya/Sweden Rural Water Supply and Sanitation Programme. The procedures and documentation developed should allow this divestment to continue with the help of the District Technical Committee (DTT) led by the DWE in his expanded role. This leaves MWR to look after policy and regulatory functions after handover plus the advisory role described immediately below. MWR should also allow for the cost of replacing assets (a) not transformed and (b) provided by NGOs. A database of all these assets should be created during the proposed national survey of community schemes (see (2) below).

In parallel with the above, MWR should retain its increasing role in the rural areas, both by acting as undertaker of the smaller less profitable or loss-making schemes, and by advising local

communities with or without NGO involvement (in conjunction with Ministry of Culture and Social Services) and actively helping them, from District or Division offices, to prepare for, set up and manage their schemes on an on-going basis, receiving and solving technical problems. There must be greater emphasis on this facilitating role for rural schemes in future, accompanying MWR's progressive divestment of the more conventional water undertaker roles. MWR's District and Division offices must devote more effort to helping schemes to operate, maintain their assets and raise the necessary funds (e.g. from revenues raised by applying a tariff to consumption) in a systematic way. **Figure - 5.2.3** outlines the proposed responsibilities and relationships between the agencies concerned. All community schemes should be registered with the Ministry, whether or not they are supported by NGOs.

The formation and successful operation of financially autonomous water and sanitation companies by LAs will attract potential water undertakers, both urban and rural. MWR (until the formation of a separate regulator) assisted by MOLA should develop minimum quality and performance standards and monitor undertaker performance. MWR should take over under-performing schemes until new management is appointed.

Concerning MWR's Head Office structure and operation, it is additionally recommended that:

1) In the Construction Division, Water Resources Development Branch, while MWR is involved in drilling and dam construction, these activities should be increasingly opened up to the private sector to reduce MWR's direct involvement. Where MWR is directly involved, on a reducing basis, its services should be offered at commercial rates, where possible in competition with the private sector.

2) The Applied Water Research Branch should devote more of its resources to research in the sewerage subsector, particularly concerning technologies with low capital and operating costs.

3) Staffing of the Operations and Maintenance Division should be constantly reviewed for potential reductions as water supply schemes are handed over to other undertakers.

4) The potential for merging sections in the Water Resources Management and Water Resources Development Branches should be investigated.

Concerning Provincial offices, it is recommended that staff should be reduced to the minimum required for advisory, supervisory and monitoring activities, and, if so decided, the calculation and dissemination of water supply and sewerage tariffs (see 5.4.2), and the administration of adjustments to District revenue (see 5.4.1). Each Provincial office should be provided with a PC for these purposes and to maintain a database of Provincial information.

The present development programmes for the Kenya Water Institute (KEWI) should be pursued as planned in view of its current and future importance, both as provider of training and

coordinator of training from other institutions. KEWI's increased autonomy should be recognised by having it report to the PS MWR rather than Director, WDD. Courses needed concern:

1) meter reading;
2) meter repair and calibration;
3) billing and revenue collection;
4) bookkeeping and accounting, with special reference to the billing and collection system;
5) leakage control and the reduction of UFW;
6) water treatment and plant operation
7) supervisory courses for the above;
8) sewage treatment for operators and supervision; and
9) personal computing using spreadsheet and database software.

The Action Plan says that course 1) only is presently available. Courses 2), 3), 5) and 8) are "planned", while course 4) and a second 5) course are to be "developed". No timetables are provided. The proposed O&M improvement programme requires that all courses should be available by the beginning of the 1999/2000 financial year.

(2) Community Water Supply Schemes

Considerable emphasis is given to community water supply schemes because of their large coverage of the population, the potential for disease due to the use of untreated and polluted water supplies for domestic purposes (currently in the media), and their important role in providing untreated water for small scale, but widespread, irrigation. Much of the basic information originates from a survey carried out during the study for the Meru Master Plan and has been extrapolated for the entire country. However, nationally, information on the number, location and characteristics of community schemes is incomplete. Community participation is the key characteristic of these schemes, but the level of participation varies greatly - from just contributing labour and materials to full responsibility for all aspects of development and on-going management of the scheme.

Organisationally and legally, it has been recommended[1] that community water supply groups registered as self-help groups under the Ministry of Culture and Social Services should register as Associations or Companies so that they can apply to become Water Undertakers under the Water Act and take advantage of the resulting benefits. This assumes no change to the current Water Act. In this case, the Water (Undertakers) Rules should be revised to make registration and other requirements a lot simpler.

The community schemes are generally simple gravity schemes with the characteristics profiled in 2.1 and are currently facing many operational, management and financial problems. They appear united in their wish not to be interfered with by GOK as they fear metering and GOK tariffs. They would accept technical and financial assistance from GOK if there were no strings attached.

[1] *Legal and Institutional Options for Community Management of the Water Supplies in Kenya*; UNDP-World Bank Water and Sanitation Program, Regional Water and Sanitation Group - Eastern and southern Africa

The development options would appear to be:

1) Metered bulk supply from MWR. Scheme members would pay bulk charges and manage their own distribution system.
2) Coexistence of MWR scheme (supplying treated water for domestic purposes) and the community scheme (supplying untreated water for irrigation and other purposes). The MWR supply could be in bulk as in 2) above.
3) MWR and community schemes to supply mutually exclusive areas.

Option 2) would seem to be most suitable as a model given: the increasing danger to public health of consuming untreated water; the need to conserve treated water; and the communities' wish to remain, as far as possible, independent of GOK.

Actions required to improve the current situation include:

1) Undertake a national survey of community schemes, both self-help and NGO supported;
2) MRW to provide water quality surveillance (including sampling and testing) at all community water supplies, including those already handed over to community groups;
3) MWR to provide start-up and on-going advice in technical and management matters from District or Division Water Offices;
4) MWR, MCSS and LAs to provide advice on legal and organisational matters relating to the status of those operating community schemes; and
5) Where new or extended MWR schemes are being considered near community schemes, the above options for development should be assessed and the most appropriate one selected.

As stated in (1) above, MWR should continue the divestment of its rural schemes to community groups under the Community Management of Water Supplies Project, while ensuring that groups are properly prepared for their responsibilities.

(3) National Water Conservation and Pipeline Corporation

The question of how best to utilise NWCPC, now a major resource in water supply, is not straightforward to answer, even at the strategic level. In the view of the Study team, simple mutually exclusive divisions between the functions and areas of jurisdiction of NWCPC and those of MWR or the LAs, although desirable, are not yet feasible. A further review of the consequences of NWCPC focusing solely on the development and supply of water in bulk to undertakers, even in the longer term, showed significant disadvantages including the following:

1) operational and billing/collection problems at the interface between bulk supplier and undertaker or distributor. These have already been experienced and are probably intractable;

2) if NWCPC is to be commercially viable, it must be able to recover the capital cost of major schemes; this seems unlikely at current or potential bulk supply tariff rates even if NWCPC's efficiency and effectiveness were dramatically improved; and
3) the difficulty of neatly separating bulk supply from water undertaking activity in many schemes.

However, the following can be clearly recommended:

1) Of the five areas in 5.2.1(1) above, NWCPC should undertake scheme planning and implementation, and scheme operation. Where possible, NWCPC should concentrate on bulk water schemes. It should have no responsibility for policy formulation (MWR), sector strategy and planning (MWR) or regulation (MWR or agency), although it could advise on the first two areas.

2) Where NWCPC is a water undertaker in a municipality which is ready to become one under the UWASAM local authority development project, its responsibilities should be handed over to the LA.

3) It should have no responsibilities for developing or operating sewerage schemes.

4) NWCPC should continue to develop and operate bulk supply and pipeline schemes within or between catchment areas, as in the case of the Mzima and Nol-Turesh schemes, where these are required by strategic development plans.

5) NWCPC should continue to operate as a water undertaker where its schemes cannot be transferred to a suitable and capable LA, other water undertaker which is likely to deliver a superior performance, or well prepared community group. However, in the longer term, only in exceptional circumstances would NWCPC continue as water undertaker in municipalities, where for instance, a large municipality such as Mombasa proved incapable of assuming this responsibility, and this should only be a temporary measure. (A better solution for Mombasa, already recommended, would be to form a water and sanitation company (so that the two services could be managed together) with joint NWCPC and municipal council shareholding (for voting only), profits being retained by the company. The Council would thereby have an interest in both water and sewerage issues.) The MWR should monitor and control these situations.

6) Scheme allocation criteria based on those outlined above (see 5.2.1(2)) should be agreed and applied to all current NWCPC and MWR water supply schemes to decide which should be transferred to NWCPC, and which to MWR. The majority of transfers should be from MWR to NWCPC to reduce MWR's responsibility for service delivery. Schemes should not be transferred to NWCPC until its performance has improved (see next bullet point).

7) Further major efforts must be made to improve NWCPC's operational and financial performance if it is to have any hope of being commercially viable and delivering an adequate water supply service. NWCPC schemes taken over from MWR have shown little, if any, improvement since the transfer. As noted in 2.1.2 above, it appears that the operation and maintenance of schemes is still highly centralised. Regional Managers have to refer quite minor procurement and personnel decisions to Head Office for approval. To function as a regionalised as opposed to a centralised organisation, essential for the development of regional management and the prompt delivery of service locally, adequate financial and operational authority must be delegated to the regions. This is likely to be a major reason for the poor financial performance of four of the five regions (see 4.1.5) nearly ten years after NWCPC was established. In addition, despite NWCPC's over-centralised management, it seems from the Study Team's review that corporate planning and control against targets and standards is hardly functioning. It may be presumptuous to say so without the benefit of a full scale review, but the Corporation appears to be still behaving as a government department. This implies that much more capacity building and reform is needed, e.g. by transferring authority to regions while maintaining a strong central monitoring capability, before it can operate commercially.

Because of the lack of up-to-date information obtained, the Study team found it impossible to propose specific action to resolve the foregoing other than broadly delegating more authority to regions and repositioning the PIU for the Mombasa and Coastal Water Supply Project in Development Services Department. A further review of NWCPC is probably needed therefore, to propose improvements where required (for the benefit of the water supply system as a whole) in the following main areas:

1) organisation structure and functions;
2) corporate plans, standards and targets for performance management;
3) allocation, recruitment, development of staff at all levels to ensure adequate skills
4) staff motivation;
5) scheme management and levels of service;
6) tariffs, billing and collection systems;
7) financial accounting systems;
8) management information and computerisation; and
9) project management.

If it proves impossible to commercialise NWCPC as presently structured, one option would be to break it up into autonomous regional units under the general jurisdiction of MWR, leaving the Coastal Region with its large development programme under a much reduced and renamed NWCPC.

The role proposed for an improved NWCPC, which would include a continuation of its present activities in the development and provision of water in bulk where appropriate, should not duplicate but complement the work of the river and lake basin development authorities (RLBDAs). NWCPC would, in each basin and under the jurisdiction of MWR, have

responsibility for the development of water supply and bulk distribution, and inter-catchment transfer for the supply of water for domestic and general industrial/commercial use.

The RLBDAs should focus on specific industrial and commercial development within their catchment areas and, where needed, the development and provision of water specifically for such projects. They should also carefully monitor water abstraction and use. This is confirmed by the Act (Cap 442) establishing the Lake Basin Development Authority. This would be done in collaboration with NWCPC, both organisations controlled and monitored by MWR's regulatory and water conservation authority.

(4) Municipalities and the Ministry of Local Authorities

It is recommended that, in line with GOK's current policy of decentralisation and local empowerment, the responsibility for management and delivery of combined water and sanitation services to users should be devolved to the lowest feasible level.

Thus the commercialisation of water supply and sewage disposal currently being implemented by municipalities (with German KFW funding and GTZ technical assistance) should continue until all (initially ten) water undertaking municipalities (including Nairobi) have municipally owned water and sanitation companies operating commercially. In addition, non-water undertaking municipalities (initially five) ultimately suitable for appointment as water undertakers (i.e. that will eventually meet certain criteria) should be progressively upgraded to allow them to be appointed as such. At this point these municipalities would begin the commercialisation process, ending with the establishment and operation of autonomous water and sanitation companies. Those municipalities currently without sewerage schemes and not acquiring them over the life of this project, i.e. before 2010, would not be eligible for appointment as water undertakers.

W&S companies would be registered under the Companies Act to ensure the necessary autonomy in financial and personnel matters. This implies separate financial accounts and accountability, retention of water and sewage revenue, and regular auditing. Boards of Directors would include representatives of the various local interest groups as well as of the LA, although the LA would own the company.

There would be a longer term possibility of private equity participation when the operating and financial performance of the W&S companies has improved sufficiently. This private sector involvement would be in addition to the present Management Contracts for senior management posts, and the possibility of Service Contracts for out-sourcing specific services.

One of the major constraints to the separation of water supply and sewerage from the rest of LA activity has been the reliance of LAs on a substantial proportion of water sector revenue to fund other services. Both the Local Government Reform Programme and the UWASAM project are helping LAs to develop other revenue sources so that they can operate satisfactorily without water sector revenue.

It is most important that this project continues without interruption until the necessary reforms are fully implemented and sustainable. According to the findings of UWASAM, it is likely that some 15 municipalities (a) would be large enough in that they do not rely largely on water revenue for their total income, and (b) have sufficient basic capability, to set up separate W&S companies, needed for the efficient and effective delivery of water and sewage services. This programme will require on-going donor assistance to support UWASAM until completion, i.e. until the 15 currently eligible municipalities have been commercialised.

There are currently three W&S companies in operation, in Eldoret, Kericho and Nyeri Municipal Councils. When this pilot scheme proves satisfactory, which seems likely, the project would proceed with the next wave of commercialisation which would be selected from the remaining six municipalities (Kisumu, Kitale, Nakuru, Nanyuki, Nyahuru and Thika) and Nairobi, all of which have W&S Departments. It is expected that JICA will follow the same development programme with its reform project in Kisumu. From the present assessment, a further five municipalities could set up autonomous W&S companies, after similar preparatory work. None of these is a full water undertaker although several are water distributors.

The foregoing model for providing urban water and sanitation services should be extended to apply to towns, once all municipalities have been covered, provided they can meet the stipulated conditions.

MOLA's water and sanitation support role should be clarified with MWR to eliminate the present duplication and omissions, and ensure that all development and operation and maintenance tasks are adequately covered.

MOLA should be responsible for:

1) Liaison with MWR on policy, strategy and planning;
2) Scheme development;
3) O&M support and monitoring;
4) Recurrent and capital cost budgeting; and
5) Funds allocation

5.2.3 Commercialisation and Privatisation

(1) Commercialisation

Structural commercialisation has already begun in the water supply and sewerage sector with the recent establishment of three water and sanitation companies under the GTZ UWASAM Project (see 2.1.3). The aim of this corporatisation, which should be extended to other local authority W&S Departments, is to increase autonomy in the management of these bodies and thereby improve efficiency and effectiveness, and to retain water and sewage revenue for use solely within the sector. Results to date indicate (see 4.1.5) that, so far and with a lot of effort, the process is delivering improved performance. Only time will tell if these results are sustainable. The increased autonomy has to be subject to regulation (without interference in the management

process) where competition is absent, i.e. in a natural monopoly such as water supply and sewage disposal, and this is proposed in (6) below.

(2) Privatisation

Privatisation, or the use of private sector resources, is a further stage in detaching operations or enterprises from the public sector, and generally results in improved performance, operationally and financially, as much experience in Latin America, Africa and Asia as well as in the industrialised countries has shown[2]. It is also GOK policy as expressed in the NWP. In Kenya (as in other emerging economies) private sector funds from domestic and international sources will be vital to help meet the massive investment required in water supply and sanitation development (correcting the "third deficit"). However, there are risks, although these can be managed, and the process must be properly executed. Furthermore, to attract private money there must be opportunity for profit without unreasonable risk; public management must therefore create an environment that lowers risk and offers a high probability of a reasonable return on investment. Again, because of the natural monopoly and greater autonomy enjoyed, the regulatory framework is even more necessary than for the commercial operation of a public company.

Once it has been decided to involve the private sector, as Kenya has, the types of participation have to be chosen. These are, in ascending order of complexity and contract period:

1) Service Contracts, where a private firm provides specific services such as meter installation and repair, meter reading, billing and collection, or system operation.

2) Management Contracts, where a private firm assumes overall responsibility for operating and maintaining the water supply or sanitation system, with freedom to make day-to-day decisions.

3) Lease Contracts, where a private firm leases facilities from a public authority and assumes responsibility for: operation and maintenance; for financing working capital; and replacing working capital and replacing capital components with a limited economic life, i.e. not fixed assets (France has most experience of these arrangements).

4) Concession Arrangements (Build, Operate, Transfer (BOT), or Build, Operate, Own (BOO), or Build, Lease, Transfer (BLT)), where a private firm finances fixed assets as well as working capital and assumes complete operational responsibility as under a lease contract. It owns the assets for the period of the concession (say 10-30 years) and transfers them back to the public authority at the end of this period. For the BOO contract, assets would be retained by the firm.

5) Divestiture, where a private firm takes complete control by purchasing public assets (as in the UK water industry). Even with divestiture (of which there are several

[2] *Private Sector Participation in the Water Supply and Wastewater Sector: Lessons from Six Developing Countries*, Daniel Rivera 1996, The World Bank

variations) the most extreme form of privatisation, the public sector (via the regulatory framework) is still responsible for seeing that services are of the stipulated quality and delivered at a reasonable cost.

Detailed explanations of these categories are to be found in numerous World Bank publications.

The following guidelines may be useful in determining the suitability and extent of private sector participation. They are, in four project phases:

Planning and Policy Phase

1) The policy must stipulate which parts of the water supply and sanitation sector are open to private sector participation (PSP) and be clearly supported at the highest decision-making levels.
2) The more specific the objectives for PSP, whether for efficiency gains or capital increases, the more likely is a successful partnership.
3) Once objectives have been clarified, the private sector option most likely to meet them must be identified.
4) Generally, contracts designed to achieve efficiency gains pose few risks for either private or public sector parties.
5) Investment options that create capital are concessions (BOT and BOO) and divestiture. Concessions are common in water supply and sanitation; divestiture is rare.
6) Effective regulation of private sector participants must cover monitoring of every aspect of their work. Improper regulation can hurt consumers and reduce public support for PSP.
7) Costs, location and authority of the regulatory agency must be carefully considered.
8) Labour need not be adversely affected by the entry of the private sector if there are serious attempts to ease the social effects of dislocation.

Project Development Phase

1) All parties (ministries, consumer groups, etc) affected by the introduction of the chosen private sector options must be fully consulted and briefed to avoid project delays.
2) Legislation must ensure legal status for private sector initiatives.
3) There should be no restrictions on the entry of competitors. Both foreign and local participants should be entitled to the same consideration, ensuring a level playing field for all.
4) Project approval should be hastened to minimise development costs. Clear procedures and guidelines will facilitate this.
5) All risks must be identified and each one allocated to the party best suited to cover it. Risks beyond the control of the private sector, such as convertibility, must be covered by guarantees.

Implementation and Operation Phase

1) Competitive procurement procedures and performance specifications should be drawn up, and the award of contracts should be open.
2) The regulatory authority for evaluating bids and monitoring performance should be adequately staffed and funded to ensure proper oversight of the project company in the delivery of services.
3) The regulatory authority should have financial and political autonomy.

Evaluation Phase

1) The public authority [regulatory authority] should have performance standards for evaluating the project company.
2) In comparing private and public performance, the true cost of sector services should exclude GOK subsidies.

Finally, before beginning a privatisation arrangement or programme, four basic questions should be asked and answered:[3]

1) What do we want the private sector to do for us? An infusion of technical expertise or major new investment?

2) What will the service improvements we want mean for tariffs?

   a) can improvements be paid for from efficiency gains, with the same or a lower tariff?
   b) if not, will consumers be willing to pay higher tariffs?
   c) if not, can grant finance be found to support the service improvements?

3) Does the existing regulatory framework provide sufficient support for the private sector, so that it will willingly take on commercial risk?

   d) if not, can the necessary changes be made fairly easily?

4) Do the key stakeholders (employees, consumers, environmentalists) support private sector involvement?

The answers and a review of the guidelines will enable appropriate privatisation methods and preparatory work as well as targets for private sector involvement to be more confidently identified. The findings of the Peri-urban Water and Sanitation Projects Working Group should be used to assist GOK with this work.

[3] *Toolkits for Private Participation in Water And Sanitation*, The World Bank 1997

(3) Regulation of Water Undertakers, Sewerage Providers and Tariffs

To undertake this task, an appropriate agency should be granted the necessary statutory powers which would include the right to information; ability to set performance standards; approval of tariffs; right to exact penalties if standards not achieved.

The regulatory agency, reporting initially to the MWR Minister to emphasise its independence, would be responsible for the regulation of water undertakers and sewerage providers in order to monitor their operational, environmental and financial performance without managerial or political intervention. (A similar agency, also reporting to the relevant minister, was recently set up for the power sector in Kenya.) Specifically, the regulator would:

1) set performance targets
2) monitor operational and financial performance;
3) enforce service standards;
4) approve tariffs; and
5) license undertakers.

Figure - 5.2.4 outlines the proposed responsibilities and relationship of the regulator and other agencies involved in urban water supply. There are precedents in other African countries for such regulators (e.g.. Zambia) and they are essential components of the corporatised water and sewage sector, for example, in France or England and Wales.

5.2.4 Personnel Administration

(1) Remuneration

Of concern to both water and sewage subsectors is the major issue of inadequate pay and conditions which is prevalent throughout the civil service and the wider public sector. Until some attempt is made to address this issue, it is difficult to envisage the necessary drive and commitment being available to bring about the quite far reaching changes in management and individual motivation and application required by the proposals in this Study. Unfortunately, no current information could be obtained in the time available on 1) the Kenyan Civil Service pay and allowances, 2) NWCPC pay and allowances, and 3) average pay and allowances for comparable positions in the private sector. However, the indications are that public service remuneration is only a fraction of that in the private sector.

Consequently, this Study recommends that a consulting assignment should be undertaken to establish a pay policy for the civil service. This is in recognition of severe skill shortages in managerial, technical and professional positions, the anticipated large differentials between private sector salaries and allowances and those in the civil service, and the low performance delivered by the majority of public service employees at all levels, among other issues. It seems that a culture of under achievement currently exists and is largely related to low pay.

The pay policy assignment, which could be completed in about 6 weeks by an experienced remuneration consultant, would investigate, as a minimum:

1) Civil service and public service pay and allowance structures and how they are implemented; trends in pay relative to inflation;
2) Briefly, external private sector pay and allowances;
3) Analysis of staff establishments/vacancies by grade/agency;
4) Existing job evaluation, performance appraisal systems, and how they are operated;
5) Employer/trade union relations;
6) GOK's current and potential financial performance, relating to employment cost, revenue and revenue improvement programmes and projects;

and would produce:

7) a pay policy document, to be agreed by GOK and trade unions, which would state, among other things:
   a) phased targets for enhancement of pay relative to the private sector;
   b) the need for and mechanisms to achieve productivity improvements and revenue increases;
   c) possible improvements to job evaluation, performance appraisal and pay and promotion systems;
   d) possible application of special salary enhancement for critical posts; and
   e) responsibility for policy implementation

The Study Team stresses the importance of a complete review of the pay system: tinkering with existing schemes to solve micro problems will merely create anomalies and distortions which will eventually have to be resolved in their turn.

(2) Recruitment, Promotion and Transfer of Senior Officers

The Public Service Commission undertakes these important responsibilities, supposedly in consultation with Ministries such as MWR and MOLA (on behalf of LAs). The Study Team received numerous comments on the unsatisfactory service provided by the PSC, especially in recruitment and transfers, which are often done with little or no warning or reference to the parent ministry or the LAs concerned. A review of the functions, methods and value of the PSC and he Department of Personnel Management is recommended, with a view to, as a minimum, greatly increasing the relative authority of Department heads, LAs and District offices in decisions affecting their staff, and possibly abolishing the PSC altogether and replacing it with an appeal body to hear staff complaints.

5.3 Improvement of Operation and Maintenance System

5.3.1 Recommendations for Operation and Maintenance of Water Supply at National Level

(1) Establishment of A Functional Metering System

This proposed programme is estimated by the Study and by MWR (and various other studies) as one of the most important in the drive for improved performance in the sector. Currently, as is reported in 4.1 above, the great majority of consumers are receiving water either free of charge or at the low flat rate tariff, leading to waste and low revenues, and indirectly to poor water service.

The urgent need for a functional metering system throughout the country is accepted by all. However, GOK must provide strong top level support for such a programme. It is suggested that GOK should take the following actions to establish the system and to obtain public support:

1) mobilise meter readers from existing staff through KEWI courses for the training of trainers, and local training programmes;
2) mobilise accountants for requisite bookkeeping and accounting at District level;
3) mobilise technicians from existing staff for meter calibration and repair through KEWI courses for the training of trainers, and local training programmes;
4) assist DWOs to set-up or refurbish meter repair shops with the necessary equipment; and
5) carry out public awareness campaigns for the introduction of the metering system, directly and through the media.

This programme should be also adopted by the municipalities which are water undertakers and by NWCPC, where this corrective action is needed, under the overall supervision of MWR.

(2) Leakage Control

In view of the present lack of active control of water losses and the size of the problem, a national programme to reduce unaccounted for water must have a high priority and has been recommended by other water sector studies. As for the rehabilitation of the metering system recommended in (1) above, strong support from MWR will be needed for successful implementation. The following actions are required:

1) Establish a short course at KEWI for active leakage control (detection and repair);
2) Mobilise technicians from existing staff through KEWI courses for the training of trainers, and through local training programmes;
3) Assist DWOs to acquire and install bulk meters at the outlet of each treatment works and storage reservoir, and subsidiary meters to isolate sub-areas of each system;
4) Assist DWOs to set up or refurbish the necessary detection and repair facilities and equipment;

5) Assist DWOs to prepare the necessary work programmes to cover detection and repair in the distribution network where the majority of leakages occur.

This programme should also be adopted by the municipalities which are water undertakers and by NWCPC, where this corrective action is needed, under the overall supervision of MWR.

(3) Training

The training requirements of two major programmes, together with the training needed for related technical and management tasks throughout the water sector are considerable. To accommodate these and other training needs the Nairobi based KEWI should be further strengthened in both range of courses and capacity to accommodate larger numbers of trainees. As stated in 5.2.2, the areas to be enhanced will include the following as a minimum:

1) meter reading;
2) meter repair and calibration;
3) billing and revenue collection;
4) bookkeeping and accounting, with special reference to the billing and collection system;
5) leakage control and the reduction of UFW;
6) supervisory courses for the above;
7) sewage treatment for operators and supervision; and
8) personal computing using spreadsheet and database software.

The action required of KEWI is outlined in 5.2.2 above.

(4) Technical Assistance at Districts

This programme of work will need significant improvement in the practice and management of District activities. This will apply to operation and maintenance of water supply systems as well as a greater attention to regulatory tasks, such as control of water abstraction, pollution and water quality. It is recommended that six externally sourced expert engineers should be assigned to groups of MWR Districts (to include NWCPC schemes), and the water undertaking municipalities, each for at least one year continuously but the whole assistance programme phased over two years, to assist in upgrading service delivery and regulation, and to help implement the above projects.

(5) Water Tankers at Provincial Offices

The Study Team household survey revealed that during the dry season, more than 50 per cent of households can get water on only one day a week. Therefore, we recommended that two water tankers be procured for each provincial office to alleviate this hardship.

5.3.2 Recommendations for Operation and Maintenance of Water Supply at District Level

(1) Implementation of National Improvement Programmes

The District would be responsible for implementing the National programmes recommended above for meter repair, installation, and reading; improvement to bookkeeping and accounting procedures including those relating to billing and collection of revenue; and the installation of bulk meters and implementing active leakage control routines. For both metering and leakage control, technicians trained at KEWI would organise and train teams at each district, selecting personnel from the existing staff, and would execute the programmes, after appropriate public awareness campaigns have been carried out. Campaigns should cover not only the immediate tasks but also deal with all matters of interest to consumers relating to the water sector.

(2) Customer Registration

To complement the above operations improvement programme, a major effort is required to trace and register those unregistered consumers in the supply area who are using piped water without paying for it. Their existence means less revenue and more wasted water. Surveys suggest as many as 20% of total consumers are unregistered.

(3) Chemical Water Treatment

Chemicals must be acquired, stored and added to process when required, particularly in the case of continuous chlorine treatment. This an absolute priority and non-observance should not be tolerated in the interest of public health, especially when water rationing is prevalent.

5.3.3 Recommendations for Operation and Maintenance of Sewerage Facilities

Certain important recommendations made in 5.2.3, 5.3.1 and 5.3.2 above and 5.4 below will also benefit sewerage O&M. These include establishing a pay policy, the improvement of water supply revenue through various measures which should improve sewerage operation and maintenance, directly by increasing sewerage revenue, and indirectly by increasing water usage which should benefit sewerage plant and sewer operation. Also, the present unsatisfactory arrangements for recruiting, promoting and transferring senior staff should be reviewed and revised.

However, there are major recommendations which are specific to the sewage subsector, in response to the findings in 3.2. For all facilities of interest to this Study, the following actions should be taken:

(1) Revenue

The low levels of revenue in comparison with operating and maintenance costs are well known, as are the causes: non- or only partial receipt of funds due from water undertaker or the LA;

inadequate tariffs; low connection rates; and poor supply of water. A determined attempt must be made, by the sewerage manager, to obtain those funds currently and historically due, informing MOLA of the action taken and the reason for it.

(2) Staff Levels, Skills and Training

To a greater extent than in water supply, management and staff capability in sewerage O&M appears lacking to the point of being non-existent. The following corrective actions should, therefore, be undertaken for all posts:

1) a review of organisation structures, staff establishment and qualifications;
2) a detailed audit of personnel in post, their qualifications, experience against the specifications of their jobs;
3) identification of: vacancies; training needs for existing staff; non-performing and surplus staff;
4) development of programme of: recruitment; training (in-house/on-the-job, KEWI, other); transfers; as required; and
5) implementation of programme.

This should be carried out under the combined supervision of the appropriate department of MOLA (administrative responsibilities), MWR (technical, facilities planning responsibilities), the responsible local authority (W&S Department management, or management of other responsible department).

(3) Tools, Equipment and Vehicles

Without tools and equipment, the best trained and motivated staff will be ineffective. To rectify present deficiencies, an inventory should be taken of existing items against the minimum required. Items required should be ranked in priority order, costed and the amount required requested from the appropriate funding authority (see also paragraph 4) below).

(4) Preventive Maintenance Management

When equipment and manpower needs have been determined, the next step is to plan how these resources should be used.

Preventive maintenance management includes regular inspection and scheduling routine maintenance before problems occur for the purpose of extending equipment life, reducing maintenance costs and increasing reliability.

In the short-term, the following actions should be undertaken with the assistance of appropriate experts:

1) Prepare a maintenance schedule for all M&E equipment

2) Prepare a maintenance schedule for regular inspection and cleaning of trunk sewers
3) Prepare a monthly and weekly manpower scheduling procedure
4) Design and implement a work order system to track all maintenance activities including corrective and emergency repairs
5) Write standard operating procedures for process control, equipment operation and maintenance, laboratory procedures, and data recording

The success of implementing preventive maintenance management will require properly trained people with an understanding of the maintenance scheduling and planning methods as well as the expected benefits. On the job training is the best way of ensuring success and will require full time assistance and support from externally sourced engineers and experienced maintenance programme managers.

(5) Industrial Wastewater Pre-treatment

Local authorities are responsible for establishing bylaws to control pollution by individuals, trade effluent disposal, and the operations of local sewage disposal facilities. Where these bylaws do not exist or are out of date, they should be created or updated by the relevant municipalities under the Local Government Act as soon as possible. This work could be based on bylaws already updated by municipalities such as Kericho.

Existing legislation should be enforced, as mentioned in 5.1. For instance, in urban centres those who are reluctant to pay for sewerage services are not forced to connect even though the necessary bylaws usually exist. A "philosophy of enforcement" has to be created.

Typically, pre-treatment programmes should be implemented at the local authority level where the sewerage operator is responsible for inspecting and monitoring industries connected to its sewer system to ensure compliance with local sewer bylaws.

Implementation of a pre-treatment programme at the local level usually includes the following elements:

1) Development of an inventory of industrial discharges to the public sewer system,
2) Adoption of an industrial pre-treatment by-law,
3) Purchase of monitoring and laboratory equipment,
4) Sampling and analysis of industrial effluents to ensure compliance, and
5) Establishment of administrative procedures to obtain compliance with regulations

(6) Technical Assistance

This substantial programme of work in the sewerage subsector will need a major improvement in the management, operation and maintenance of sewerage facilities to be sustainable. The externally sourced expert engineers should be assigned to groups of sewerage works for at least

one year to help implement the above projects, and generally to upgrade service delivery and regulation.

5.4 Improvement in Financial Administration

5.4.1 Budgeting and Funds Allocation

Reference is made in 4.1.1 to the frequent large disparity between budgeted recurrent expenditure and the funds allocated. It is recommended that the Ministries of Finance and Planning, and the Office of the President take urgent steps to ensure that budgets and available funds coincide to a greater extent than at present. If necessary, an external review of the planning, budgeting and funds management process should be undertaken. It is vital that the funds budgeted are made available at District level, so that management of District operations may proceed rationally and the requisite quality and quantity of water supplied can be maintained.

It is understood that revenue generated by Districts is currently adjusted by MWR in Nairobi to between 65% and more than 100%, to balance the needs of rich and poor areas, before it is returned to districts. It is recommended that this balancing and adjustment should be performed at provincial offices in future, in support of GOK's policy of decentralisation and local empowerment.

5.4.2 Proposals for Water and Sewage Tariff System

It is national policy that water beneficiaries should share, according to the benefits received, the entire capital and operating cost of the relevant public facilities. This is not the case currently but must be an objective of any future tariff system.

We concluded in accordance with the findings of a NWCPC study of national and international tariffs carried out in 1995 that a progressive rising block tariff is best suited to Kenya's needs because it:

1) provides an incentive for conservation;
2) can be structured to achieve social objectives (such as a basic needs block);
3) obviates the need for more complex "industry specific" tariffs; and
4) is in current use, and familiar to both customers and billing staff.

The size of the "basic needs" block should be 10 cubic metres per month,and there should be five consumption blocks with the following band widths:

1) < 10 m^3 per month
2) 10 to 20 m^3 per month
3) 20 to 50 m^3 per month
4) 50 to 100 m^3 per month
5) > 100 m^3 per month.

This structure satisfies the "progressive" requirement. The total average increase in tariff value should be about 700% from the bottom (basic needs) block to the 50 to 100 cubic metres block.

Tariff rates should be set to satisfy an attainable revenue target, such as to cover operating and maintenance costs or to cover O&M costs plus depreciation plus a contribution to reserves at an agreed percentage rate (10% has been suggested) of the cost of new capital works. This is equivalent to establishing a target for the return on the value of the new assets (ROA). Once set to realistic levels, real tariff values should then be maintained by applying annual corrections for inflation.

In 4.1.4, current water tariffs were reviewed for seven municipalities and compared with the MWR and NWCPC basic rate. Considerable and unreasonable disparities in most schemes were noted both in values and in the tariff structure.

In the present absence of a regulatory body responsible for (among other things) examining and approving tariff structures and levels (which is proposed elsewhere in this report), it is recommended that those tariffs departing significantly from the above model should be examined and revised, and the values recalculated to raise the target revenues originally specified. These targets should be at least sufficient to cover O&M costs.

Most municipalities have charged government/institutional and commercial/industrial consumers at higher rates, an option, surprisingly, not adopted by MWR and NWCPC. Note, tudies by industrial concerns analysing costs of abstracting their own water have shown that it costs much less from the municipality, perhaps as little as 30% of the in-house cost. This suggests that there is plenty of room to increase tariffs to industrial and commercial firms before they could produce their own water more cheaply.

Concerning the provision of bulk water from a regional or national water provider such as NWCPC to water undertakers, it is recommended that where adequate bulk supplies are available at the current price of Kshs 10/m^3, these should be used by the water undertaker in the interest of economy. It is estimated that this rate is considerably less than the cost of own production by the undertaker even where low cost resources are available.

It is in the national economic interest to provide water to the consumer as cheaply as possible, consistent with the GOK decentralisation policy, and there needs to be more cooperation between NWCPC and the municipalities to ensure this.

Finally, prices of water sold by kiosks to the poorer citizens, the sole source of water for many people, must be controlled effectively at official rates. To assist implementation, kiosks should be leased to agents who have to sell at the official price. To help ensure that this happens, agents should be drawn from the local community.

The question then arises as to whether tariffs should be set at national, regional,or local (e.g. municipal) level, or a combination of these. At present a combination exists, of the national

MWR and NWCPC rates set in Nairobi, and various widely divergent municipal rates. As the principle of local tariff setting has been accepted for municipalities and agrees with the general theme of the National Water Policy, it would be logical to extend it to either basins/catchment areas, provinces, or districts, whichever is administratively most feasible. This suggests that tariff setting should be based at either provinces or districts (probably the former) and the necessary administrative support put in place. For such devolution to occur, the following would be required at each tariff setting location:

(1) staff with the necessary competence;
(2) the data needed for the computation, which would include for the location:
    1) O&M costs for the period in question, probably one year;
    2) a depreciation figure for the location's assets;
    3) the projected value of new capital works and the percentage rate for the contribution to reserves; and
    4) volumes of water used in the various consumer categories over the past period and preferably forecast for the future period.

Calculated rates would then be scrutinised and approved by the authority responsible, which would eventually be the proposed agency for regulating undertakers.

Regarding sewage, actual sewerage O&M costs and water flows at each municipality should be used as a basis for calculating tariffs, rather than the present standard percentage of the water tariff. The resulting tariff value (in terms of water volume) to generate the necessary funds to meet the desired target recovery could then be expressed as a percentage of the water tariff and collected by the same billing arrangements as are now used.

5.4.3 Improved Investment Method

Investment in development projects in the past has too often been ad hoc and driven by individual donors and their preconceptions without policy guidelines on, for example, appropriate technology, or a well considered sectoral planning framework.

It is essential that such policy guidelines and a planning framework are developed for both water supply and sewerage subsectors and used as a basis for determining investment priorities to avoid more costly errors. The procedure for identifying projects should include the use of standard algorithms and selection criteria for water supply and sewage treatment and disposal. These criteria should be as far as possible identical for both subsectors.

For larger projects, economic and financial evaluations should be routinely used to provide additional information for investment decisions.

Projects should only be approved for implementation if they are fully funded. This would avoid the present unsatisfactory arrangement where many more projects than can be properly funded are started and take far longer to complete than planned. Frequent interruptions to development or construction programmes result in low productivity and excess costs. Thus, as was said in the

1992 Master Plan, five cycles of the implementation of 10 schemes each taking two years to complete would be more cost-effective than the implementation of 50 schemes, each taking 10 years to complete. This approach is more difficult to explain to would-be beneficiaries, but must be adopted in the interest of more effective development.

MWR would be responsible for planning and project selection in the water sector, working through District Development Committees and in collaboration with MOLA.

5.4.4 Improvement in Billing and Collection

In 4.1.3 it was reported that the serious weaknesses in the revenue collection system are largely due to lack of meters and meter repair activity, and substandard water supply. However, other problems relating to ineffective and inefficient meter reading, billing, bill distribution and collection should be addressed. This should be done by training where needed, of meter readers, billing clerks and their supervisors, and, particularly, by providing management support and feedback to supervision, both from District management and from Head Office in Nairobi. However, there is little doubt that some of this inefficiency is due to the general deterioration of the whole metering and water supply system. When improvements are made to the overall system as recommended under this project, it will be easier to obtain better performance in billing and collection.

CHAPTER 6 IMPLEMENTATION PROGRAMME FOR PROPOSED PLANS

Programmes for the implementation of the recommended law and public administration projects are given in this chapter. At this stage, all resource and time estimates are provisional and costs indicative only.

6.1 Institutional Support

To progress the programme in the manner required, a high level Implementation Committee (IMCO) with executive powers should be set up with the specific remit to *ensure implementation* of the agreed projects according to the agreed timetable. IMCO would have the same remit at supervisory level for the agreed water supply and sewerage projects described elsewhere in this Study Report. Members would include a senior representative from Office of the President, MWR, MOLA, MOF and NWCPC.

A Project Implementation Unit (PIU) should be established in MWR to *manage* the implementation of the projects emerging from the Study. These would include all facilities development and refurbishment projects, and organisation and maintenance improvement projects in water supply and sewerage. The PIU should work closely with, and probably draw staff from, the Special Water Programmes Division of MWR, while reporting to Director, WDD rather than Deputy Director, SWPD, in view of the scope, number and interdepartmental nature of the projects involved. MOLA staff should also be co-opted to the PIU, one at least to be at a senior level.

For the PIU to be effective, responsibility for all projects and sub-projects should be assigned to specific team leaders, and there should be adequate planning and costing expertise available to team leaders and the PIU.

The proposed programme of institutional and operational change will demand, in addition, strong, well publicised and sustained support from the highest levels of Government.

6.2 Amendment of Legislation

The programme for implementing the proposals in the text of the strengthening plan (see 5.1) is given in **Table - 6.2.1**. Projects for modifying existing legislation and enacting the environmental Bill should be complete by the end of 1999, while improving enforcement of legislation should be complete a year later. More comprehensive changes to the Water Law would require a further year to accomplish. A single environmental and water law has been suggested for completion in 2005. Costs are estimated at US$ 26,500 and are to cover preparing and conducting training and public relations campaigns.

6.3 Public and Financial Administration Improvement

The programme for implementing the proposals in the text of the strengthening plan (see 5.2.2, 5.2.3, 5.2.4, and 5.4) is given in **Table - 6.2.1**. According to the programme, institution building projects in MWR, local authorities and MOLA, community water supply schemes, and NWCPC would be complete by the end of year 2001/2002, except for those requiring on-going action. The total estimated cost of US $1.313 m is mainly for technical assistance but also includes the cost of local task forces where these have been proposed. The remaining inputs are assumed to be funded from GOK recurrent budgets. Important target dates, or milestones, are: modification of water and sewerage tariffs by 2000 and commercialisation of 15 LAs (including Nairobi) by 2002

6.4 Operation and Maintenance Improvement

The programme for implementing the proposals in the text of the O&M strengthening plan (see 5.3.1) is given in **Table - 6.4.1**. The O&M improvement plan for water supply comprises five major programmes and is scheduled for completion by the end of 2006. Costs estimated at US$ 1.838 m are to cover technical assistance and water tankers. Training is assumed to be paid for under the KEWI strengthening projects. Costs for meter acquisition and repair are included in the Aftercare O&M project cost. An important target date, or milestone, is completion of the metering programme by 2006. Some 50% of the metering rehabilitation should be complete in 2003.

The O&M improvement plan for sewerage comprises five major components (see 5.3.2) and is scheduled for completion by the end of 2004 except on-going actions. Costs of US$ 1,860,000 are for 20 man years of technical assistance over 5 years, and do not cover staff training or the acquisition of tools, equipment and vehicles, all of which has to be specified during the programme.

- PART V : LAW AND PUBLIC ADMINISTRATION -

TABLES

Table - 4.1.1 (1/5) Financial Performance of Water Supply Schemes by MWR

Province Name	District Name	Scheme Name	Annual Water Produced (m^3) (A)	Annual Revenue (Kshs) (B)	Annual O&M Costs (Kshs) (C)	Unit Rate: Water Revenue (Kshs/m^3) (B)/(A)	Unit Rate: O&M Costs (Kshs/m^3) (C)/(A)	Cost Coverage (Kshs) (B/A) - (C/A)
Central	Kiambu	Bathi	964,808	601,900	10,456,000	0.6	10.8	-10.2
		Githunguri	124,686	489,640	280,680	3.9	2.3	1.7
		Ithanga	174,353	370,000	1,460,000	2.1	8.4	-6.3
		Karai	192,498	563,280	513,260	2.9	2.7	0.3
		Karimenu	1,291,080	1,500,000	720,000	1.2	0.6	0.6
		Kikuyu	651,704	4,067,640	1,235,580	6.2	1.9	4.3
		Komothai Ph I	1,669,100	573,720	270,700	0.3	0.2	0.2
		Limuru	561,252		1,519,000		2.7	
		Limuru Uplands	71,400					
		Ndarugu	2,006,300	1,360,000	300,000	0.7	0.1	0.5
		Ngecha			51,300			
		Ondiri/Gikambura						
		Ruiru	30,113	1,000,000	1,748,000	33.2	58.0	-24.8
		Thiririka	2,556,800	3,000,000	660,000	1.2	0.3	0.9
	Kirinyaga	Kabare	584,726					
		Kerugoya	381,060					
		Ndia Ph B						
		Ndia Ph C						
		Ngariama	371,500	607,580	226,880	1.6	0.6	1.0
		Sagana	425,590	1,796,380	341,440	4.2	0.8	3.4
		Wanguru						
	Muranga	Gatango	968,880	1,850,140	31,244,000	1.9	32.2	-30.3
		Kigumo	25,170	421,800	1,825,000	16.8	72.5	-55.7
		Kigumo	3,139,368	494,020		0.2		
		Maragua	5,592	853,500	3,212,000	152.6	574.4	-421.8
		Mathioya Ph I	2,207,483	3,184,480	52,881,200	1.4	24.0	-22.5
		Muranga	720,685	14,465,320	2,920,000	20.1	4.1	16.0
		Sabasaba	16,464	2,715,100	438,000	164.9	26.6	138.3
	Nyandarua	Kinangop R M.	1,632,000	399,560	177,840	0.2	0.1	0.1
		Kirima	694,000					
		Kiiiri	669,600	66,260	85,540	0.1	0.1	-0.0
		Matindiri	20,000					
		Mbuyu C. Dam						
		Njabini	5,280					
		Ol Kalou South						
		Ol Kalou Urban	70,010					
		Ol-J/Kangui	13,500	165,200	1,274,000	12.2	94.4	-82.1
		Oraimutia	3,520					
		Passenga	10,800					
		Sifanga	10,800					
		U/Gilgil	16,800					
	Nyeri	Karatina	460,000	4,900,000	2,500,600	10.7	5.4	5.2
		Mukurweini	65,000	760,000	700,000	11.7	10.8	0.9
		Mukurweini	1,500,000	2,500,000	2,100,000	1.7	1.4	0.3
		Tetu-Thegenge	1,400,000					
		Zaina	214,000					
Coast	Kwale	Kikoneni W/S	33,878		4,147,200		122.6	
		Lunga Lunga W/S	7,274		720,000		99.0	
		Mkongani W/S			475,200			
		Msambweni W/S	21,850	240,000	2,400,000	11.0	109.8	-98.9
		Shimba Hills	5,495		360,000		65.5	
		Vanga W/S	2,704		432,000		159.8	
	Lamu	L. Kenyatta ws	36,000		313,200		8.7	
		Lamu/Mkowe	252,000	745,240	1,500,000	3.0	6.0	-3.0
	Taita	Bura W/S	1,898,000	4,800,000	9,856,000	2.5	5.2	-2.7
		Dembwa Wusi	38,000	204,000	24,000	5.4	0.6	4.7
		Garsen						
		Hola	93,440	568,620	1,548,720	6.1	16.6	-10.5
		Mwajika/Teri	23,800	180,000	24,000	7.6	1.0	6.6
		Ngao	21,950					
		Njoro Kubwa Irr. Canal	25,297,900	18,000	200,000	0.0	0.0	-0.0
		Wundanyi	274,000	1,600,000	1,440,000	5.8	5.3	0.6
Eastern	Embu	Ena-Siakago	570,000	255,080	668,940	0.4	1.2	-0.7
		Ishiara	220,000	296,540	264,220	1.3	1.2	0.1
		Kyeni	990,000	1,067,580	543,340	1.1	0.5	0.5
		Ngandori 'B'	1,500,000	1,424,620	442,240	0.9	0.3	0.7
	Isiolo	Isiolo W/S	1,595,153	12,504,700	3,013,340	7.8	1.9	6.0
	Kitui	Enzio						
		Ikanga	6,930	20,600	252,000	3.0	36.4	-33.4
		Kitui Urban	35,400	720,000	1,299,000	20.3	36.7	-16.4
		Kyuso	2,418	14,600	209,600	6.0	86.7	-80.6
		Mutuu Kitui						
		Mutito	140,000	93,200	436,800	0.7	3.1	-2.5
		Mutomo			17,400			
		Mwingi	9,900	64,800	289,200	6.5	29.2	-22.7
		Ngomeni			35,800			
		Nguni						
	Masaku	Kathiani	198,167	421,100	316,140	2.1	1.6	0.5
		Kibauni	9,522	54,320	154,800	5.7	16.3	-10.6
		Kiima Kimwe						
		Mateu	118,929	326,400	258,200	2.7	2.2	0.6
		Stathani	9,670	41,030	73,740	4.2	7.6	-3.4
		Wamunyu	28,053	125,260		4.5		

Table - 4.1.1 (2/5) Financial Performance of Water Supply Schemes by MWR

Province Name	District Name	Scheme Name	Annual Water Produced (m^3) (A)	Annual Revenue (Kshs) (B)	Annual O&M Costs (Kshs) (C)	Unit Rate: Water Revenue (Kshs/m^3) (B)/(A)	Unit Rate: O&M Costs (Kshs/m^3) (C)/(A)	Cost Coverage (Kshs) (B/A) - (C/A)
Eastern (cont'd)	Marsabit	Dukana W/S	14,400					
		Golole B/H	6,800	80,000		11.8		
		Gudas	20,000					
		Karare	8,000	60,000		7.5		
		Laisamis	9,800	11,160	200,000	1.1	20.4	-19.3
		Loglogo	50,000					
		Maikona Wells	25,000					
		Marsabit	108,000	280,000	120,000	2.6	1.1	1.5
		Moyale Lami	18,500	75,000	360,000	4.1	19.5	-15.4
		Ngurunit	1,000					
		North Horr	1,800					
	Meru	Kanyakine W/S	74,232	3,792,480	6,745,440	51.1	90.9	-39.8
		Meru W/S	1,593,360					
		Mitunguu	197,784	4,154,160		21.0		
		Mwimbi W/S	1,578,720					
		Nkabune W/S	114,012	4,861,200	6,810,000	42.6	59.7	-17.1
		Nkubu W/S	145,968	3,732,480	9,718,800	25.6	66.6	-41.0
		Timau W/S	38,004					
	Tharaka Nithi	Chuka	145,210	516,000		3.6		
		Karingani	12,746,982	916,200		0.1		
	Mwingi	Ezziu						
		Kyuso	4,860	5,000	96,000	1.0	19.8	-18.7
		Mwingi	30,000	300,000	540,000	10.0	18.0	-8.0
		Ngomeni W/S						
		Nguni			10,200			
	Makueni	Kikumbulyu	265,736	1,638,200	822,200	6.2	3.1	3.1
		Kilala	2,040	18,200	78,000	8.9	38.2	-29.3
		Makindu	147,017					
		Mbumbuni	8,744	97,600	5,842,000	11.2	668.1	-657.0
		Mtito-Andei	111,985	1,652,400	600,000	14.8	5.4	9.4
		Wote	27,391	204,600		7.5		
North Eastern	Garissa	Abjugur	9,000		8,000			
		Banane	18,000		11,200			
		Bura	23,000		12,000			
		Dadaab	30,000		12,000			
		Damajale	4,500		20,000			
		Garissa Urban	2,040,000	1,100,000	4,000,000	0.5	2.0	-1.4
		Gurufa	7,500		14,000			
		Hagadera	45,000		20,000			
		Ifo	17,000		10,000			
		Korakora	6,500		8,000			
		Kulan	40,000		12,000			
		Kumahumato	28,500		12,000			
		Liboi	45,000		16,000			
		Masabubu	6,500		8,000			
		Masalani	20,000		12,000			
		Mbalambala	25,000		12,000			
		Modogashe	14,000		12,000			
		Nanighi	17,000		6,000			
		Rhewa	5,500		14,000			
		Saka	14,000		8,000			
		Sankuri	16,000		12,000			
		Shanta-abak	8,500		12,000			
		Welmerer	1,320		4,000			
	Mandera	B.H. Eleven	29,200		276,000			
		Finjaro	7,560		230,000			
		Kalaliyo	29,000		220,000			
		Kutulo	5,400		300,000			
		Mandera	219,000	273,600	1,128,000	1.2	5.2	-3.9
		Neboi (Army Section)	58,400	48,000	326,400	0.8	5.6	-4.8
		Rhamu	51,240	36,000	360,680	0.7	7.0	-6.3
		Rhamu Dimtu	29,200		200,000			
		S Fatuma	29,200		276,000			
		Wargadud	29,200		345,000			
	Wajir	Abakore	55,000		1,120,000			
		Ademesajida	35,000		1,000,000			
		Arbajahan	60,000		1,720,000			
		Biya-Madhow	35,000		1,120,000			
		Dambas	40,000		1,120,000			
		Diff	20,000		1,200,000			
		Dif-Manyale	36,600		1,120,000			
		Eldas	35,000	2,800	1,120,000	0.1	32.0	-31.9
		Gurar	10,000		1,000,000			
		Habaswein	50,000	12,000	2,100,000	0.2	42.0	-41.8
		Hadado	36,000		1,120,000			
		Buthdhawal	6,500		1,200,000			
		Khorahar	45,000	5,520	1,680,000	0.1	37.3	-37.2
		Kutulo	25,000	2,400	1,680,000	0.1	67.2	-67.1
		Sabuli	40,000		1,120,000			
		Sarif	26,600		1,120,000			
		Wajir Mixed	30,000	54,000	760,000	1.8	25.3	-23.5

Table - 4.1.1 (3/5) Financial Performance of Water Supply Schemes by MWR

Province Name	District Name	Scheme Name	Annual Water Produced (m^3) (A)	Annual Revenue (Kshs) (B)	Annual O&M Costs (Kshs) (C)	Unit Rate: Water Revenue (Kshs/m^3) (B)/(A)	Unit Rate: O&M Costs (Kshs/m^3) (C)/(A)	Cost Coverage (Kshs) (B/A) - (C/A)
Nyanza	Gusii	Birongo	1,026,432	1,888,480	2,972,720	1.8	2.9	-1.1
		Etago	21,960					
		Getare	18,250					
		Geteri/Gesusu	1,995	1,900	1,025,260	1.0	513.9	-513.0
		Gionseri	178,850	17,980	14,160	0.1	0.1	0.0
		Keroka	30,787	33,120	524,100	1.1	17.0	-15.9
		Nyamarambe	68,400					
		Riokindo	18,300					
		Tabaka	84,198	207,860	247,880	2.5	2.9	-0.5
	Kisumu	Kanyakwar	85,680	54,360	226,440	0.6	2.6	-2.0
		Kobigori	37,430	4,900	3,200	0.1	0.1	0.0
		Koru/Mnara w/s	10,141					
		Muhoroni	63,360	119,280	23,560	1.9	0.4	1.5
		Nyahera	17,640	20,000	45,600	1.1	2.6	-1.5
		Tamu W/S						
	Siaya	Aluor	15,000		160,000		10.7	
		Bondo	108,000	140,000	160,000	1.3	1.5	-0.2
		Mauna Dam	5,200					
		Sega	80,144	605,400	200,000	7.6	2.5	5.1
		Sidindi/Malanga Ph I	1,600,000	5,601,600	1,200,000	3.5	0.8	2.8
		Ugunja	74,475	360,000	280,000	4.8	3.8	1.1
		Ukwala	100,000	1,900,000	300,000	19.0	3.0	16.0
		Uranga	45,000	90,000	108,000	2.0	2.4	-0.4
		Uyoma	600,000	1,200,000	3,000,000	2.0	5.0	-3.0
		Yala Township	200,000	400,000	120,000	2.0	0.6	1.4
	Homa Bay	Homa Bay	299,040	5,908,440	24,197,280	19.8	80.9	-61.2
		Kochia		54,440	2,914,860			
		Ndhiwa/Rapedhi			5,195,500			
	Migori	Migori	552,960		2,942,500		5.3	
		Rongo	181,440	6,848,680	10,896,000	37.7	60.1	-22.3
	Nyamira	Kendu Bay	6,069	122,400	3,739,140	20.2	616.1	-595.9
		Manga	10,800	55,020	544,000	5.1	50.4	-45.3
		Nyambaria	156,729					
		Nyamira W/S	216,000	1,664,120	3,310,180	7.7	15.3	-7.6
		Nyansiongo	94,867					
		Oyugis W/S	30,000		6,362,300		212.1	
		Tombe	10,368	61,760	344,000	6.0	33.2	-27.2
		West Rachuonyo	6,270		5,883,060		938.3	
Rift Valley	Kajiado	Bissel	12,080		21,360		1.8	
		Ewaso Kedong	213,400					
		Namanga	54,500	111,420	165,380	2.1	3.0	-1.0
		Ngong	291,120		520,920		1.8	
		Ongata Rongai	215,859		308,220		1.4	
	Kipsigis	Baragewet	8,400		144,000		17.1	
		Chepkemel	8,400		172,800		20.6	
		Kenegut	3,600					
		Sigowet	1,500		44,020		29.3	
		Sosiot	151,200		120,000		0.8	
	Laikipia	Doldol W/S	4,639	-	226,000	-	48.7	-
	Nakuru	Bahati Chania	283,824	100,000	200,000	0.4	0.7	-0.4
		Crater Stream	315,360	58,680	200,000	0.2	0.6	-0.4
		Kijabe	10,950	19,980	150,000	1.8	13.7	-11.9
		Kijabe/Longonot	327,770	60,000	110,000	0.2	0.3	-0.2
		Lanet W/S	113,530	43,500	277,040	0.4	2.4	-2.1
		Olenguruone	29,200					
		Piave Kerma	28,280	10,000	24,000	0.4	0.8	-0.5
		Suswa	81,994		82,000		1.0	
		West Acre	92,931		85,960		0.9	
	Narok	Angata Baragoi	3,000	3,800	40,000	1.3	13.3	-12.1
		Kilgoris	48,000	80,000	124,000	1.7	2.6	-0.9
		Lemek W/S	360	30,000	515,140	83.3	1430.9	-1347.6
		Morijo Loita		40,000				
		Mulot W/S	230		571,720		2485.7	
		Narok W/S	430,000	2,445,200	3,500,000	5.7	8.1	-2.5
		Olkurto W/S	380		600,000		1578.9	
	Trans Nzoia	C/Kwanza Kolongolo	16,790		228,000		13.6	
		Saboti	12,410					
	Uasin Gishu	Burnt Forest	19,710	38,000	173,140	1.9	8.8	-6.9
		Kaptagat	21,900					
		Kipkabus	40,850					
		Moi's Bridge	38,830					
		Sosiana	13,140					
		Turbo	103,295					
	Bomet	Bomet	24,360	112,960	31,110,100	4.6	1280.3	-1275.6
		Chepalungu	14,630	74,700	31,959,500	5.1	2184.5	-2179.4
		Longisa Sec Sch.						
		Sigot Longisa	172,800	5,400	41,440	0.0	0.2	-0.2
	Transmara	Angata Baragoi/s	3,800		73,000		19.2	
		Kilgoris W/S	140,000		960,000		6.9	
		Lolgorien W/S	5,500		86,000		15.6	
		Nakataru W/S	10,000	9,700	40,000	1.0	4.0	-3.0

Table - 4.1.1 (4/5) Financial Performance of Water Supply Schemes by MWR

Province Name	District Name	Scheme Name	Annual Water Produced (m^3) (A)	Annual Revenue (Kshs) (B)	Annual O&M Costs (Kshs) (C)	Unit Rate: Water Revenue (Kshs/m^3) (B) / (A)	Unit Rate: O&M Costs (Kshs/m^3) (C) / (A)	Cost Coverage (Kshs) (B/A) - (C/A)
Rift Valley (cont'd)	Baringo	Bartolimo	40,000	400	181,440		4.5	
		Cheberen	43,800	5,920	78,860	0.1	1.8	-1.7
		Chemeron	5,600	13,380		2.4		
		Chemolingot	35,040		245,280		7.0	
		Kabartonjo	109,500	3,640	248,080	0.0	2.3	-2.2
		Kampi Samaki	26,500					
		Kapchepkor	34,675		30,480		0.9	
		Kapkong	127,750					
		Kapluk	43,800		181,440		4.1	
		Kapsoo	12,000		524,000		43.7	
		Kaptere	43,800	17,200		0.4		
		Kipkaech	29,200		103,680		3.6	
		Kisanana	16,060		245,280		15.3	
		Maji Moto	17,155		125,340		7.3	
		Marigat	63,145	23,840	114,160	0.4	1.8	-1.4
		Mogotio	154,030		212,280		1.4	
		Ndabibi	11,680		165,080		14.1	
		Ngendalel	15,695		181,500		11.6	
		Ngetmoi	5,840		241,900		41.4	
		Nginyang	20,075		140,160		7.0	
		Olkokwe	18,250		180,300		9.9	
		Olhepesi	14,235					
		Parkawanin	67,700	6,520	171,040	0.1	2.5	-2.4
		Perkwai	18,250		181,440		9.9	
		Peror	21,900		125,480		5.7	
		Radat	25,550		145,360		5.7	
		Sacho Remo	91,250		707,620		7.8	
		Saos	58,400					
		Seretanin	58,400					
		Talai	35,040		241,900		6.9	
		Tangulbei	15,330		140,160		9.1	
		Tenges	62,050	49,420	239,500	0.8	3.9	-3.1
		Tirimiotin	42,340		245,280		5.8	
	Elgeyo Marakwet	Chebiemit	2,680		23,400		8.7	
		Chebilbai	2,136	3,260	23,200	1.5	10.9	-9.3
		Chepkorio	83,979					
		Chepkorio	137,796		828,650		6.0	
		Chepsigot/Chetebo	302,500		62,000		0.2	
		Chepsigot-Cheptebo	302,500		62,000		0.2	
		Chesatan	57,600		36,000		0.6	
		Iten	122,832	242,840	256,480	2.0	2.1	-0.1
		Itea	70,800		1,579,120		22.3	
		Kapkoi	7,450		89,400		12.0	
		Kapkoi	7,450		261,140		35.1	
		Kaptarakwa	109,500	39,740	323,400	0.4	3.0	-2.6
		Kptarakwa	196,260	466,940	1,606,340	2.4	8.2	-5.8
		Nerkwo	6,816		25,000		3.7	
		Tambach	21,840		189,420		8.7	
		Tambach	12,648		74,020		5.9	
		Tot	6,450		36,000		5.6	
	Nandi	Chepterwai	7,500	8,200	60,000	1.1	8.0	-6.9
		Cheptil	13,000		66,000		5.1	
		Kaptumo	16,900	28,000	78,000	1.7	4.6	-3.0
		Kemeloi Kobujoi Ph I	188,600	100,000	1,055,000	0.5	5.6	-5.1
		Lelmokwo	114,000	312,000	900,000	2.7	7.9	-5.2
		Lessos	50,400		240,000		4.8	
		Mosomber	6,000		46,000		7.7	
		Nandi Hills	96,000	300,000	360,000	3.1	3.8	-0.6
	Samburu	Archers Post	90,000	24,000	108,000	0.3	1.2	-0.9
		Baawa	72,270		35,000		0.5	
		Baragoi	70,080	24,000	65,000	0.3	0.9	-0.6
		Kisima	70,000		70,000		1.0	
		Koijok						
		Kowop	50,000		54,000		1.1	
		Lerata	37,960		10,000		0.3	
		Lesirikan	48,000		50,000		1.0	
		Lowdongokwe	70,080	4,020	60,000	0.1	0.9	-0.8
		Maralal	200,750	420,000	460,000	2.1	2.3	-0.2
		Marti	35,040		60,000		1.7	
		Poro	68,255		60,000		0.9	
		Sirata	70,080	4,700	52,000	0.1	0.7	-0.7
		Suguta	43,000		61,000		1.4	
		Wamba	68,255	60,000	48,000	0.9	0.7	0.2
	Turkana	Kainuk	67,631					
		Kakuma	28,800					
		Kalokol	43,200		197,200		4.6	
		Katabol						
		Kotlo	50,400					
		Lodwar	100,000	400,000	3,360,000	4.0	33.6	-29.6
		Lokichar	43,200					
		Lokitaung	7,680					
		Lokori	72,000					
		Lowarengak	14,400					
		Namodak	17,262					

Table - 4.1.1 (5/5) Financial Performance of Water Supply Schemes by MWR

Province Name	District Name	Scheme Name	Annual Water Produced (m^3) (A)	Annual Revenue (Kshs) (B)	Annual O&M Costs (Kshs) (C)	Unit Rate: Water Revenue (Kshs/m^3) (B)/(A)	Unit Rate: O&M Costs (Kshs/m^3) (C)/(A)	Cost Coverage (Kshs) (B/A) - (C/A)
Rift Valley (cont'd)	West Pokot	Chepareria W/S	250,000		6,000			
		Kabichbich	200,000					
		Kacheliba W/S	90,000		570,000		6.3	
		Kaperguria W/S	162,000	146,300	1,512,120	0.9	9.3	-8.4
		Kaprach	266,450					
		Karas W/S	180,000		540,000		3.0	
		L/Prog. B/h	R/NA		390,000			
		Lityai	R/NA					
		Makutano W/S	190,000	169,760	675,000	0.9	3.6	-2.7
		Ortum W/S	200,000	25,220	15,000	0.1	0.1	0.1
		Sina	69,350					
		Talam						
		Tartar/Keringet	110,000					
Western	Bungoma	Amagoro	800	2,000	530,000	2.5	662.5	-660.0
		Chesikaki	102,000	2,422,700	2,400,000	23.8	23.5	0.2
		Chesikaki	1,042,880	34,000	348,000	0.0	0.3	-0.3
		Chwele	13,800	8,600	39,000	0.6	2.8	-2.2
		Kibichori/Bokoli	498,600					
		Muchi/Milo Khalumuli Ph I						
		Ndivisi/Makuselwa	912,707	594,000	682,000	0.7	0.7	-0.1
		Old Kibichori	135,000	4,600	112,000	0.0	0.8	-0.8
		Webuye	630,000	472,000	13,724,000	0.7	21.8	-21.0
	Busia	Amogoro	4,464	15,120	315,900	3.4	70.8	-67.4
		Amukura	10,903		299,100	0.0	27.4	-27.4
		Amukura Complex	10,903	81,400	134,280	7.5	12.3	-4.9
		Busia Hills			163,900			
		Busia/Mundika	1,327,670		1,384,220		1.0	
		Butula	6,924	26,940	147,820	3.9	21.3	-17.5
		Funyula/Bumala	155,585	55,360	218,340	0.4	1.4	-1.0
		Funyula/Nangina	55,733	116,020	168,660	2.1	3.0	-0.9
		Munana	1,873	105,900	1,778,900	56.5	949.8	-893.2
		Nambale	52,514					
		Port Victoria	462,710		442,700		1.0	
		Sio Port						
		Wakhungu	390		9,380		24.1	
	Kakamega	Butere W/S	99,356	299,200	322,420	3.0	3.2	-0.2
		Little Nzoia	1,312,800	533,760	1,461,080	0.4	1.1	-0.7
		Lumakanda			159,020			
		Malava	24,600		366,440		14.9	
		Mumias W/S	393,652	1,380,340	1,330,920	3.5	3.4	0.1
	Vihiga	Hamisi	5,120	30,720	61,200	6.0	12.0	-6.0
		Kaimosi	321,000	1,097,200	1,462,000	3.4	4.6	-1.1
		Maseno	694,560	2,411,500	2,898,820	3.5	4.2	-0.7
		Mbale II	141,000	470,400	2,443,000	3.3	17.3	-14.0
		Sosiani	283,800	1,008,000	430,000	3.6	1.5	2.0
		Vihiga	20,850	73,000	133,400	3.5	6.4	-2.9

Source : Water Supply Projects and Schemes Status Report. Ministry of Water Resources, 1996

Notes: 1) All the figures in the table are analyzed by the financial information obtained from each of water supply schemes which are either under the directoperation of the Ministry of Water Resources, or under the joint operation of the Ministry of Water Resourses and the National Water Conservation and Pipeline Corporation.

2) The table can only show a rough view of the present financial performance of the water supply scheme under the Ministry of Water Resources, since many information in the source are missing.

Table - 4.1.2 Financial Performance of NWCPC by Water Supply Scheme

Region Name	Scheme Name	Monthly Average Revenue (Kshs)			Monthly Average O&M Costs (Kshs)							Financial Efficiency	
		Revenue Billed (A)	Revenue Collected (B)	Revenue Recovery Ratio (B)/(A)	Electricity Amount	%	Chemicals Amount	%	Others Amount	%	Total O&M Costs (C)	Financial Deficit (B) - (C)	Deficit Ratio (B-C)/(B)
Western	Kakamega	1,050,411	679,822	64.7%	585,060	29.0	285,975	14.2	1,145,323	56.8	2,016,358	-1,336,536	-1.97
	Shitori	184,924	60,417	32.7%	247,052	32.9	181,650	24.2	322,891	43.0	751,593	-691,176	-11.44
	Bungoma	304,866	280,340	92.0%	296,608	21.7	221,325	16.2	847,313	62.1	1,365,246	-1,084,906	-3.87
	Maseno/Kombewe	95,390	64,825	68.0%	0	0.0	98,250	32.7	202,219	67.3	300,469	-235,644	-3.64
	Kisii	731,850	730,900	99.9%	658,832	28.7	186,375	8.1	1,450,844	63.2	2,296,051	-1,565,151	-2.14
	Siaya	198,867	162,112	81.5%	125,000	21.7	70,650	12.3	379,429	66.0	575,079	-412,967	-2.55
	Nyakach	149,915	66,974	44.7%	257,218	33.1	97,575	12.5	423,092	54.4	777,885	-710,911	-10.61
		2,716,223	2,045,390	75.3%	2,169,770	26.8	1,141,800	14.1	4,771,111	59.0	8,082,681	-6,037,291	-2.95
Southern	Nol Turesh	2,512,816	2,162,997	86.1%	1,705,345	41.6	155,625	3.8	2,239,631	54.6	4,100,601	-1,937,604	-0.90
	Oloitokitok	207,350	124,252	59.9%	407,500	36.8	33,750	3.0	666,387	60.2	1,107,637	-983,385	-7.91
	Kiserian	65,119	53,590	82.3%	28,742	21.1	6,750	4.9	101,034	74.0	136,526	-82,936	-1.55
		2,785,285	2,340,839	84.0%	2,141,587	40.1	196,125	3.7	3,007,052	56.3	5,344,764	-3,003,925	-1.28
Central	Ndia	1,106,225	296,923	26.8%	500	0.1	266,550	50.4	261,364	49.5	528,414	-231,491	-0.78
	Mathira	308,975	214,476	69.4%	0	0.0	0	0.0	127,601	100.0	127,601	86,875	0.41
	Kandara	381,850	222,467	58.3%	0	0.0	0	0.0	236,625	100.0	236,625	-14,158	-0.06
	Kiambu	134,305	127,264	94.8%	23,450	18.5	0	0.0	103,267	81.5	126,717	547	0.00
	Kathuti	498,997	249,101	49.9%	35,262	10.1	0	0.0	314,107	89.9	349,369	-100,268	-0.40
	Aguthi	802,416	444,332	55.4%	27,562	7.9	40,500	11.6	280,540	80.5	348,602	95,730	0.22
	Otaya	116,218	167,361	144.0%	2,460	1.3	27,000	13.9	164,600	84.8	194,060	-26,699	-0.16
	Embu	1,703,357	661,101	38.8%	11,950	3.3	132,250	36.5	217,879	60.2	362,079	299,022	0.45
	Marmanet	190,221	120,976	63.6%	67,436	21.0	88,725	27.6	164,848	51.4	321,009	-200,033	-1.65
		5,242,564	2,504,001	47.8%	168,620	6.5	555,025	21.4	1,870,831	72.1	2,594,476	-90,475	-0.04
Rift Valley	Greater Nakuru West	3,207,366	1,265,813	39.5%	692,165	26.5	324,547	12.4	1,598,337	61.1	2,615,049	-1,349,236	-1.07
	Greater Nakuru East	3,357,356	1,838,893	54.8%	41,245	3.5	491,700	41.6	649,531	54.9	1,182,476	656,417	0.36
	Kabarnet	245,932	175,336	71.3%	101,615	23.7	3,375	0.8	322,690	75.6	427,080	-251,744	-1.44
	Kapsabet	181,991	178,577	98.1%	125,108	25.8	50,340	10.4	308,632	63.8	484,080	-305,503	-1.71
	Litein	526,534	355,943	67.6%	803,132	40.1	123,325	6.2	1,075,766	53.7	2,002,223	-1,646,280	-4.63
	Naivasha	112,833	355,943	315.5%	95,377	36.3	1,800	0.7	165,239	63.0	262,416	93,527	0.26
		7,632,012	4,170,505	54.6%	1,858,042	26.6	995,087	14.3	4,120,195	59.1	6,973,324	-2,802,819	-0.67
Coast	Coastal Water Supply	48,300,000	32,600,000	67.5%	5,800,000	28.7	935,000	4.6	13,500,000	66.7	20,235,000	12,365,000	0.38
	Tavera Lunyl	372,752	45,852	12.3%	103,543	25.7	27,000	6.7	272,656	67.6	403,199	-357,347	-7.79
		48,672,752	32,645,852	67.1%	5,903,543	28.6	962,000	4.7	13,772,656	66.7	20,638,199	12,007,653	0.37
NATIONAL		67,048,836	43,706,587	65.2%	12,241,562	28.1	3,850,037	8.8	27,541,845	63.1	43,633,444	73,143	0.00

Source: Brief on National Water Conservation and Pipeline Corporation's Activities and Present Status, NWCPC, September 1997

Table - 4.1.3 Unit Revenue and O&M Costs of NWCPC by Water Supply Scheme

Region Name	Scheme Name	Average Monthly Water Produced (m^3) (A)	Average Monthly Revenue Collected (Kshs) (B)	Average Monthly O&M Costs (Kshs) (C)	Unit Rate		O&M Costs Coverage (Kshs/m^3) (B/A) - (C/A)
					Water Revenue (Kshs/m^3) (B) / (A)	O&M Costs (Kshs/m^3) (C) / (A)	
Western	Kakamega	210,000	679,822	2,016,358	3.2	9.6	-6.4
	Shitori	97,800	60,417	751,593	0.6	7.7	-7.1
	Bungoma	75,000	280,340	1,365,246	3.7	18.2	-14.5
	Maseno/Kombewe	49,500	64,825	300,469	1.3	6.1	-4.8
	Kisii	120,000	730,900	2,296,051	6.1	19.1	-13.0
	Siaya	25,500	162,112	575,079	6.4	22.6	-16.2
	Nyakach	97,800	66,974	777,885	0.7	8.0	-7.3
		675,600	2,045,390	8,082,681	3.0	12.0	-8.9
Southern	Nol Turesh	443,400	2,162,997	4,100,601	4.9	9.2	-4.4
	Oloitokitok	33,000	124,252	1,107,637	3.8	33.6	-29.8
	Kiserian	37,800	53,590	136,526	1.4	3.6	-2.2
		514,200	2,340,839	5,344,764	4.6	10.4	-5.8
Central	Ndia	381,600	296,923	528,414	0.8	1.4	-0.6
	Mathira	630,000	214,476	127,601	0.3	0.2	0.1
	Kandara	450,000	222,467	236,625	0.5	0.5	-0.0
	Kiambu	14,700	127,264	126,717	8.7	8.6	0.0
	Kathuti	276,000	249,101	349,369	0.9	1.3	-0.4
	Aguthi	180,000	444,332	348,602	2.5	1.9	0.5
	Otaya	135,000	167,361	194,060	1.2	1.4	-0.2
	Embu	576,000	661,101	362,079	1.1	0.6	0.5
	Marmanet	96,000	120,976	321,009	1.3	3.3	-2.1
		2,739,300	2,504,001	2,594,476	0.9	0.9	-0.0
Rift Valley	Greater Nakuru West	608,100	1,265,813	2,615,049	2.1	4.3	-2.2
	Greater Nakuru East	540,000	1,838,893	1,182,476	3.4	2.2	1.2
	Kabarnet	45,000	175,336	427,080	3.9	9.5	-5.6
	Kapsabet	24,900	178,577	484,080	7.2	19.4	-12.3
	Litein	226,200	355,943	2,002,223	1.6	8.9	-7.3
	Naivasha	19,800	355,943	262,416	18.0	13.3	4.7
		1,464,000	4,170,505	6,973,324	2.8	4.8	-1.9
Coast	Coastal Water Supply	2,460,000	32,600,000	20,235,000	13.3	8.2	5.0
	Tavera Lunul	36,000	45,852	403,199	1.3	11.2	-9.9
		2,496,000	32,645,852	20,638,199	13.1	8.3	4.8
NATIONAL		5,393,100	43,706,587	43,633,444	8.1	8.1	0.0

Source: Brief on National Water Conservation and Pipeline Corporation's Activities and Present Status, NWCPC, September 1997

Table - 4.1.4 Assessed Revenue Potential of Nyahururu Municipal Council

(Unit: Kshs)

Revenue Source	Assessed Potential (A)		Budget 1996/97		Actual Collection 1995/96 (B)		Percentage of Potential Realized (B) / (A)
Water and Sewerage	16,700,160	(26.1%)	18,046,220	(35.2%)	17,582,914	(51.6%)	105.3%
Land-Based Revenue	15,380,953	(24.0%)	13,290,000	(25.9%)	4,203,630	(12.3%)	27.3%
Licenses	4,806,750	(7.5%)	3,320,000	(6.5%)	3,340,183	(9.8%)	69.5%
LASC	5,373,480	(8.4%)	5,600,000	(10.9%)	3,529,699	(10.4%)	65.7%
Markets	6,233,064	(9.7%)	1,919,900	(3.7%)	1,159,702	(3.4%)	18.6%
Bus Park	6,822,000	(10.6%)	1,516,680	(3.0%)	1,234,800	(3.6%)	18.1%
Rental Housing	1,943,400	(3.0%)	4,560,400	(8.9%)	1,470,325	(4.3%)	75.7%
Conservancy	1,949,760	(3.0%)	1,524,000	(3.0%)	498,450	(1.5%)	25.6%
Slaughter House	4,465,320	(7.0%)	1,328,000	(2.6%)	638,215	(1.9%)	14.3%
Nursery House	250,200	(0.4%)	235,200	(0.5%)	217,900	(0.6%)	87.1%
Exhauster Services	162,960	(0.3%)	0	(0.0%)	224,660	(0.7%)	137.9%
TOTAL	64,088,047	(100.0%)	51,340,400	(100.0%)	34,100,478	(100.0%)	53.2%

Source: Revenue Potential Study for Nyahururu Municipal Council, MOLA and GTZ, May 1997

Table - 4.1.5 Annual Revenue and Expenditure for Water & Sewerage of Nyahururu Municipal Council

(Unit: Kshs)

	1993/94		1994/95		1995/96	
Revenue						
Water Revenue	4,740,535	58.8%	6,767,812	58.8%	10,342,890	58.8%
Sewerage Revenue	3,318,375	41.2%	4,737,468	41.2%	7,240,024	41.2%
Total Revenue (A)	8,058,910	100.0%	11,505,280	100.0%	17,582,914	100.0%
Expenditure						
Salaries and Wages	1,182,140	27.6%	2,758,200	31.8%	3,777,120	37.3%
Daily Operations	2,860,800	66.8%	5,507,222	63.6%	5,599,200	55.4%
Maintenance	199,500	4.7%	197,500	2.3%	484,440	4.8%
Loan Repayment	0	0.0%	0	0.0%	0	0.0%
Insurance	40,000	0.9%	200,000	2.3%	252,200	2.5%
Total Expenditure (B)	4,282,440	100.0%	8,662,922	100.0%	10,112,960	100.0%
Surplus (C)	3,776,470	-	2,842,358	-	7,469,954	-
Surplus Ratio (C) / (A)	46.9%	-	24.7%	-	42.5%	-

Source: Revenue Potential Study for Nyahururu Municipal Council, MOLA and GTZ, May 1997

Table - 4.1.6 Financial Performance of Water Supply and Sewerage Schemes by Local Authorities

- 3 Pilot Local Authorities under the Commercialization Program for Water and Sanitation Services by MOLA & GTZ -

(Unit: Kshs)

	NYERI		KERICHO		ELDORET	
A. MONTHLY AVERAGE REVENUE (Kshs)						
Total Revenue Billed (A)	5,326,613	100.0	3,201,689	100.0	15,020,358	100.0
Water	3,143,440	59.0	2,316,218	72.3	12,107,861	80.6
Sewer	2,005,436	37.6	646,754	20.2	2,317,600	15.4
Refuse	86,515	1.6	145,230	4.5	493,304	3.3
Meter rent	91,222	1.7	93,487	2.9	101,593	0.7
Others	0	0.0	0	0.0	0	0.0
Total Revenue Collected (B)	4,588,974 [1]	100.0	2,718,698	100.0	11,974,021	100.0
Water	4,426,800	96.5	1,818,494	66.9	9,665,008	80.7
Sewer	0	0.0	517,013	19.0	1,904,409	15.9
Refuse	0	0.0	84,310	3.1	79,244	0.7
Water Deposits Received	101,541	2.2	0	0.0	91,605	0.8
Meter rent	0 [2]	0.0	104,410 [2]	3.8	32,200	0.3
Other	60,633	1.3	194,471	7.2	201,555	1.7
Revenue Recovery Ratio (B) / (A)	86.2	-	84.9	-	79.7	-
B. MONTHLY AVERAGE EXPENDITURE (Kshs)						
Total Expenditure (C)	3,813,279	100.0	3,658,290	100.0	5,518,293	100.0
Electricity Charges	546,647	14.3	836,333	22.9		0.0
Water Treatment Chemicals	308,130	8.1	111,066	3.0		0.0
Plant and Vehicle O&M Costs	443,348	11.6	178,199	4.9		0.0
Repaires and Maintenance of Pipelines	131,850	3.5	40,125	1.1		0.0
Payroll (All Statutory Deductions Included)	934,431	24.5	1,142,823	31.2		0.0
Central Establishment Costs	0 [3]	0.0	0	0.0		0.0
Contribution to General Fund	633,386	16.6	0	0.0		0.0
Capital Expenditure	263,136	6.9	131,174	3.6		0.0
Renewal Fund	116,667	3.1	573,510	15.7		0.0
Other	435,684	11.4	645,060	17.6		0.0
C. FINANCIAL EFFICIENCY						
Financial Deficit (B) - (C)	775,695	-	-939,592	-	6,455,728	-
Deficit Ratio (B - C) / (B)	0.17	-	-0.35	-	0.54	-
D. EXPENDITURE COVERAGE						
Monthly Water Produced (m^3)	188,193	-	154,995	-	832,006	-
Monthly Revenue Collected (Kshs)	4,588,974	-	2,718,698	-	11,974,021	-
Monthly Expenditure (Kshs)	3,813,279	-	3,658,290	-	5,518,293	-
Unit Water Revenue (Kshs/m^3) (D)	24.4	-	17.5	-	14.4	-
Unit Expenditure (Kshs/m^3) (E)	20.3	-	23.6	-	6.6	-
Expenditure Recovery (Kshs/m^3) (D) - (E)	4.1	-	-6.1	-	7.8	-

Source: Physical Indicators for Operation, Maintenance and Financial Management, MOLG / GTZ-UWASAM, 1997
Average figures were calculated from the data obtained from January to June in 1997

Notes : 1) Water revenue includes both sewer and refuse revenue
2) Other revenue includes water deposits
3) The amount refers to loan repayment to general fund of the municipal council

Table - 4.2.1 Financial Performance of Selected Municipal Sewerage Schemes

(Unit: Kshs)

Sewerage Scheme	Present Sewerage Flow (m^3/year) (A)	Year	Annual Revenue (Kshs) (B)	Annual O&M Costs (Kshs) (C)	Annual Surplus (Kshs) (B) - (C)	Unit Rate		O&M Costs Coverage (Kshs/m^3) (B/A) - (C/A)
						Revenue (Kshs/m^3) (B) / (A)	O&M Costs (Kshs/m^3) (C) / (A)	
Bungoma	-	1995	200,000	562,240	▲ 362,240	-	-	-
	-	1996	211,000	571,040	▲ 360,040	-	-	-
	-	1997	232,500	607,840	▲ 375,340	-	-	-
Busia	219000	1995	281,166	702,580	▲ 421,414	1.3	3.2	▲ 1.9
	219000	1996	372,434	1,016,760	▲ 644,326	1.7	4.6	▲ 2.9
	219000	1997	323,753	1,127,500	▲ 803,747	1.5	5.1	▲ 3.7
Eldoret	-	1995	61,175,834	656,927,281	##########	-	-	-
	-	1996	145,843,260	42,241,768	103,601,492	-	-	-
	-	1997	155,340,595	67,605,203	87,735,392	-	-	-
Kakamega	876000	1995	-	659,093	-	-	0.8	-
	876000	1996	484,069	726,730	▲ 242,661	0.6	0.8	▲ 0.3
	876000	1997	1,430,651	674,530	756,121	1.6	0.8	0.9
Kericho	730000	1995	-	-	-	-	-	-
	730000	1996	5,820,254	103,600	5,716,654	8.0	0.1	7.8
	730000	1997	5,983,861	24,158,368	▲ 18,174,507	8.2	33.1	▲ 24.9
Kiambu	109500	1995	-	-	-	-	-	-
	109500	1996	-	-	-	-	-	-
	109500	1997	4,476,654	204,527	4,272,127	40.9	1.9	39.0
Kitale	-	1995	26,472,000	-	-	-	-	-
	-	1996	26,472,000	-	-	-	-	-
	-	1997	26,472,000	-	-	-	-	-
Limuru	43070	1995	-	-	-	-	-	-
	43070	1996	3,800,000	-	-	88.2	-	-
	43070	1997	3,900,000	-	-	90.6	-	-
Machkos	365000	1995	800,100	2,746,254	▲ 1,946,154	2.2	7.5	▲ 5.3
	365000	1996	686,232	2,775,472	▲ 2,089,240	1.9	7.6	▲ 5.7
	365000	1997	924,078	3,363,821	▲ 2,439,743	2.5	9.2	▲ 6.7
Mavoko - Athi River	365000	1995	2,418,480	3,319,280	▲ 900,800	6.6	9.1	▲ 2.5
	365000	1996	9,716,900	3,817,180	5,899,720	26.6	10.5	16.2
	365000	1997	9,503,180	7,639,120	1,864,060	26.0	20.9	5.1
Naivasha	255500	1995	1,434,953	370,422	1,064,531	5.6	1.4	4.2
	255500	1996	919,712	468,980	450,732	3.6	1.8	1.8
	255500	1997	1,259,849	526,041	733,808	4.9	2.1	2.9
Ngong	5475	1995	14,000	-	-	2.6	-	-
	5475	1996	17,300	-	-	3.2	-	-
	5475	1997	17,300	-	-	3.2	-	-
Nyahururu	1254140	1995	-	92,430	-	-	0.1	-
	1254140	1996	-	85,958	-	-	0.1	-
	1254140	1997	-	125,392	-	-	0.1	-
Nyeri	912500	1995	13,195,513	8,598,292	4,597,221	14.5	9.4	5.0
	912500	1996	13,619,396	9,532,444	4,086,952	14.9	10.4	4.5
	912500	1997	22,475,233	10,543,773	11,931,460	24.6	11.6	13.1
Webuye	547500	1995	99,960	235,100	▲ 135,140	0.2	0.4	▲ 0.2
	547500	1996	176,620	386,400	▲ 209,780	0.3	0.7	▲ 0.4
	547500	1997	275,700	385,520	▲ 109,820	0.5	0.7	▲ 0.2

Source: Survey on Socio-Economy, Water Supply and Sewerage Sectors Conducted by JICA Study Team March 1998

Table - 6.2.1 Implementation Schedule of Strengthening Plans for Public Administration, Legislation and Financial Administration

(Unit: 10^3 US$)

	Area/Project	Executing Agency	8th National Development Plan (1998/1999 - 2001/2002)				5-Year National Development Plan (2002/2003 - 2006/2007)					5-Year National Development Plan (2007/2008 - 2011/2012)					Total Costs
			1998/1999	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010 -2011	2011/2012	
1	LEGISLATION DEVELOPMENT		0.50	26.00													26.50
1.1	Water Law modification	MWR	**********														
1.2	Changes to other water related legislation	MWR	**********														
1.3	Environmental Management and Coordination Bill	MOENR	**********														
	Long Term																
1.4	Comprehensive Water Act	MWR		**********	**********												
1.5	Single environmental and water law	MWR/MOENR						**********	**********								
1.6	Establish single enforcement agency for water and environment	MWR/MOENR						**********	**********								
2	Implementation of the Law																
2.1	Agree strategy, procedure and training needs	MWR	**********														
2.2	Prepare training programme, resources; identify target staff	MWR (MOLA), (MOH)	******0.50														0.50
2.3	Train provincial and district staff (6 provinces, 64 districts)	MWR, (WAB)		******6.00													6.00
2.4	Prepare, conduct PR campaign regarding water legislation in districts	MWR, (MOLA), (MOH)		*****20.00													20.00
3	IMPROVEMENT IN PUBLIC ADMINISTRATION		361.00	454.50	204.20	251.20	41.60										1312.50
	MWR																
3.1	Establish Sewerage Division	MWR	******2.50														2.50
3.2	Establish Water Resources Management and Regulation Department	MWR	******1.30														1.30
3.3	Hand over water supply schemes to upgraded LAs	MWR, (MOLA)			**********	**********	**********	**********	**********	**********	**********	**********	**********	**********			
3.4	Select community groups to receive water supply schemes and hand over when ready	MWR	****112.50	****112.50	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	225.00
3.5	Strengthen support for rural and community water supply schemes	MWR, (NGOs)		**********	**********												
3.6	Set up independent central regulator for water undertakers and sewerage providers	MWR, (MOLA)				*****47.00											47.00
	Community Water Supply Schemes																
3.7	Assessment of development options for new extension schemes	MWR, (MCSS), (NGOs)	**********														
3.8	National survey of community schemes	MWR	******7.50	**********													7.50
3.9	Water quality test for community water supply schemes	MWR	**********	**********													
	Local Authorities and MOLA																
3.10	Commercialise remaining 7 municipal water and sewerage depts (6 under OTZ, 1 under JICA); supervise pilot W&S companies	MOLA, (MWR)		****162.50	****162.50	****162.50											487.50
3.11	Upgrade additional 5 municipalities and appoint as water undertakers	MOLA, (MWR)		**********	**********												
3.12	Commercialise 5 municipal W&S departments	MOLA, (MWR)			**********	****162.50											162.50
	MWCPC																
3.13	Hand over water supply schemes to upgraded LAs	MWR		**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	
3.14	Apply scheme allocation criteria; receive/hand over water supply schemes from/to MWR	MWR, (NWCPC)	**********	**********													
3.15	Organisational, operational, financial review	MWR, (NWCPC)	*****22.00														22.00
	Personnel Administration																
3.16	Establish pay policy for Civil Service	MWR, (Office of the President), (MOF)	*****22.00														22.00
3.17	Review Public Service Commission	MWR	*****13.70														13.70
4	Improvement in Financial Administration																
4.1	Budgeting and funds allocation	MOF, (MOP), (MWR)	*****17.00	**********													17.00
4.2	Tariff structure and rates for water and sewerage, in MWR, NWCPC and MOLA	MWR, (NWCPC)		*****17.00	**********												17.00
4.3	Improve investment method	MWR, (MOLA)	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	
4.4	Improve billing and collection	MWR		**********													
4.5	Technical Assistance for Legislation and Public Administration Development	MWR, (MOLA)	*****162.5	*****162.5	*****41.70	*****41.70	*****41.60										450.00

Table - 6.4.1 Implementation Schedule of Improvement Plans of Operation and Maintenance

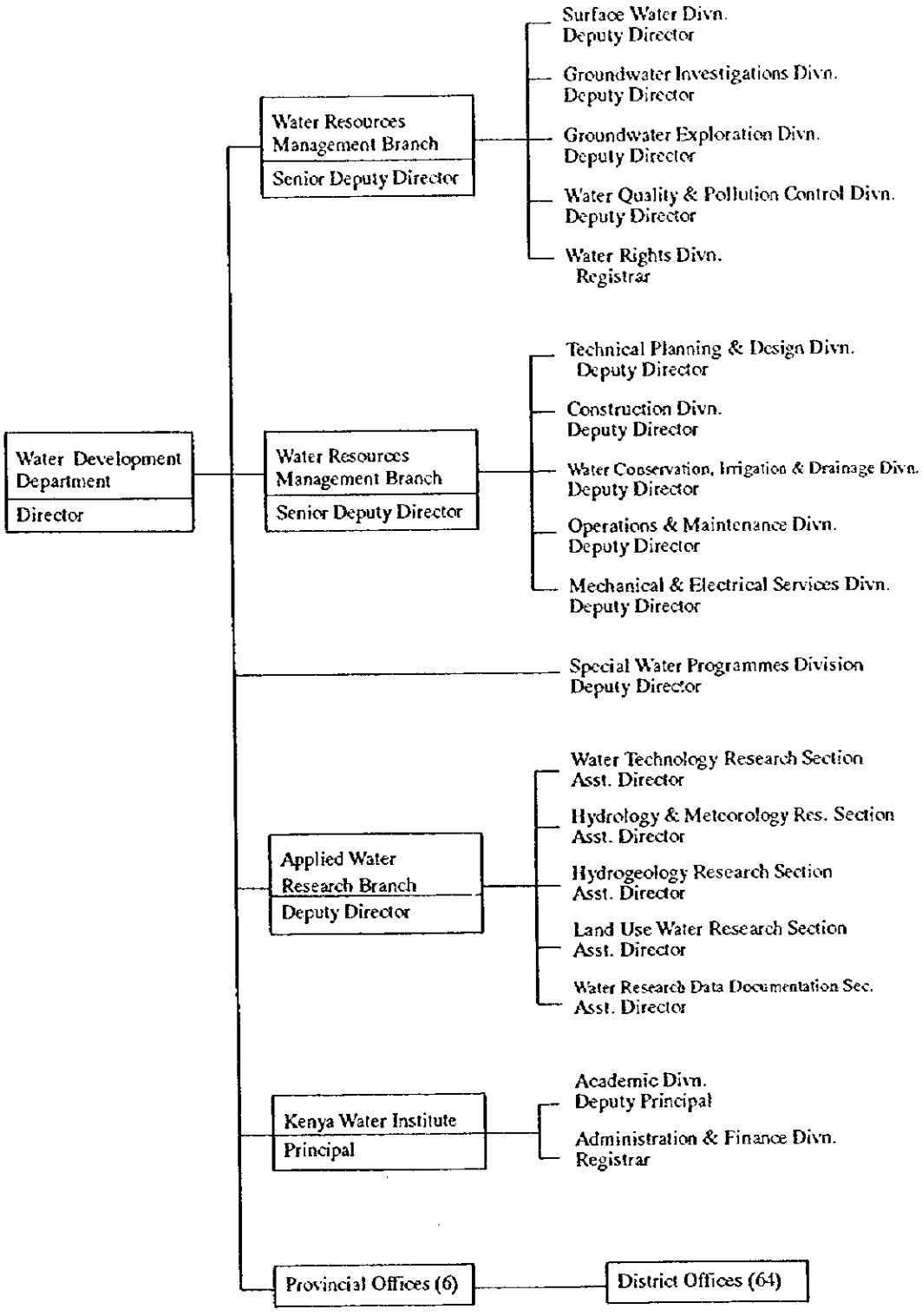
(Unit: 10^3 US$)

	Area/Project	Executing Agency	8th National Development Plan (1998/1999 - 2001/2002)				5-Year National Development Plan (2002/2003 - 2006/2007)					5-Year National Development Plan (2007/2008 - 2011/2012)					Total Costs
			1998/1999	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010 -2011	2011/2012	
1	WATER SUPPLY O&M IMPROVEMENT																1436.00
1.1	Establish functional metering system	MWR, (MOLA),(NWCPC)															KFW!
	* Establish necessary training courses																KFW!
	* Train staff (meter readers, accountants, meter technicians)																project O&M cost
	* Set up, refurbish meter repair shops																
	* Repair, acquire meters																contractor, DWO
	* Prepare, conduct public awareness campaign																
1.2	Leakage control	MWR, (MOLA),(NWCPC)															KFW!
	* Establish new training courses																KFW!
	* Train staff (leakage control technicians)																
	* Acquire, install master and service meters																
	* Set up or refurbish detection equipment																
	* Prepare leak detection programmes																DWO, LA
	* Implement programmes																DWO, LA
1.3	Customer registration	MWR, (MOLA), (NWCPC)															KFW!
1.4	Other O&M staff training (including: billing and collection, supervision, personal computing)	MWR, (MOLA), (NWCPC)															1240.00
1.5	Procurement of water tankers (2 vehicles per province)	MWR		****640.00	****640.00												558.00
1.6	Technical Assistance at Districts for implementing the improvement programme	MWR, (MOLA), (NWCPC)		****186.00	****186.00	****186.00	(6 man years over 3 years)										372.00
2	SEWERAGE O&M IMPROVEMENT																
2.1	Increase operating revenue in each scheme	MOLA, (MWR)															
	* Implement items 1.1 to 1.4																
2.2	Upgrade staff levels and skills upgrade in each scheme	MOLA, (MWR)															
	* Define organisations, staff levels, skills needed																
	* Audit of personnel in post																
	* Identification of vacancies, training needs, non-performing surplus staff																
	* Implement above programmes																
2.3	Procure facilities, equipment and tools	MOLA, (MWR)															
	* Establish minimum overall needs																
	* Determine minimum net needs																
	* Acquire agreed numbers																372.00
2.4	Technical Assistance at each facility to implement items 2.2 & 2.3	MOLA, (MWR)	****186.00	****186.00	****186.00	****186.00	(6 man years over 4 years)										
2.5	Establish preventive maintenance programme and standard operating procedures	MOLA, (MWR)															
	* Prepare detailed sewer inventory																
	* Prepare maintenance schedule																
	* Develop work order systems																
	* Prepare standard operating procedures																
2.6	Implement industrial wastewater pre-treatment programme	MOLA, (MWR)															
	*Prepare inventory of dischargers																
	*Obtain equipment																
	* Monitor industrial effluents																
2.7	Technical Assistance at each facility to implement items 2.5 & 2.6		****186.00	****186.00	****186.00	****186.00	****186.00	****186.00	(12 man years over 6 years)								

Source: JICA Study Team

- PART V : LAW AND PUBLIC ADMINISTRATION -

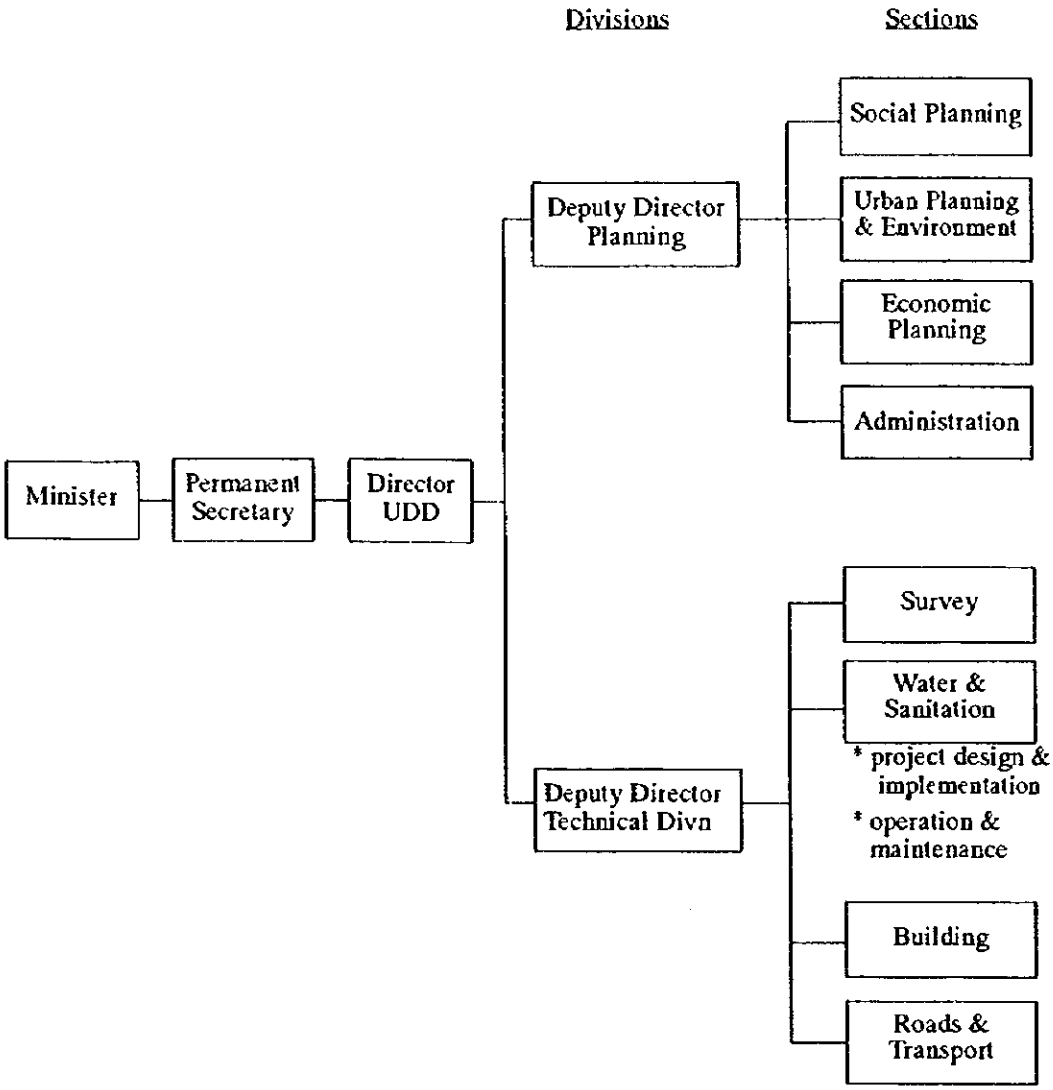
FIGURES



THE AFTERCARE STUDY ON THE NATIONAL WATER MASTER PLAN

JAPAN INTERNATIONAL COOPERATION AGENCY

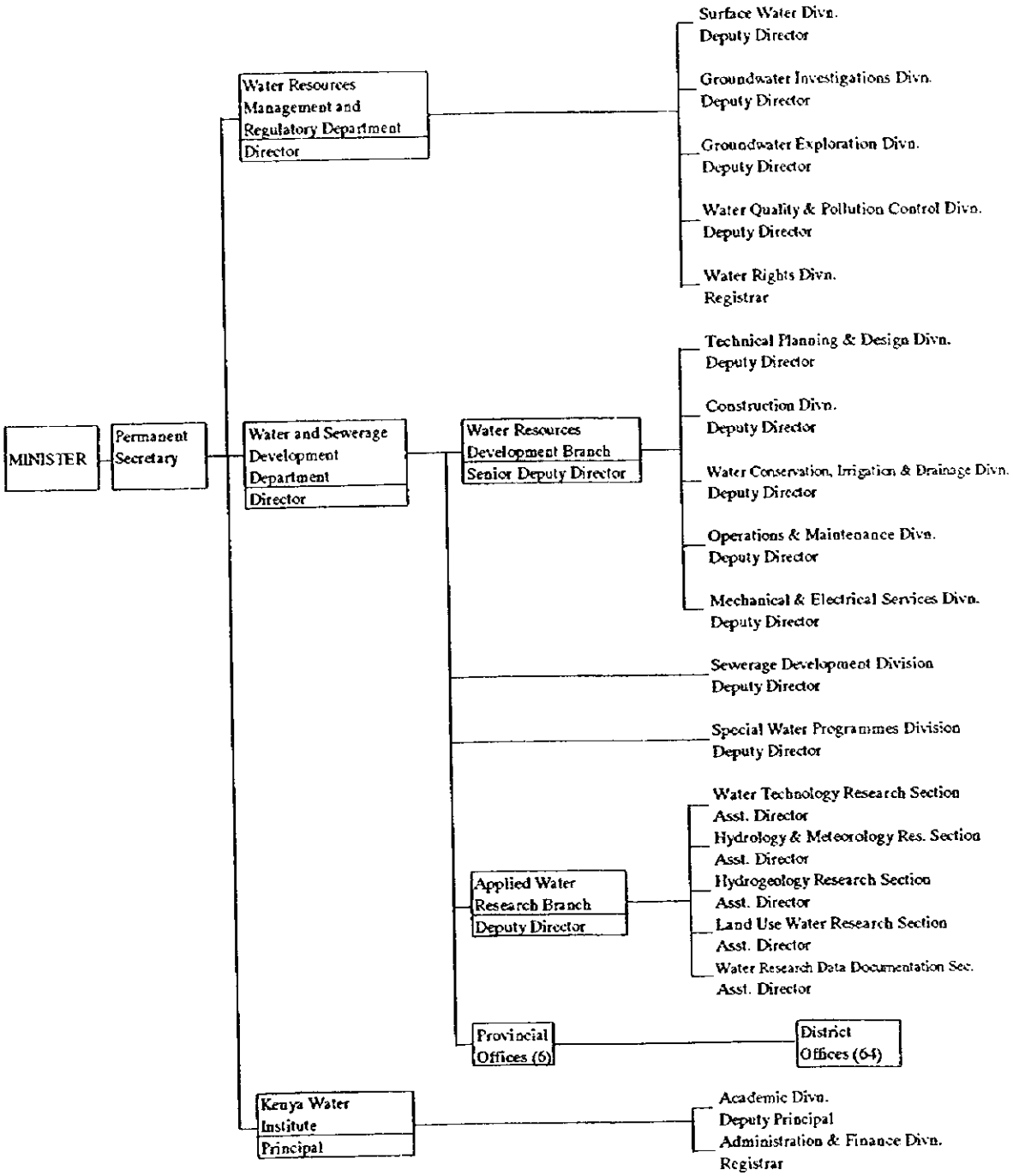
Figure - 2.1.1
Ministry of Water Resources Water Development Department: Existing Organisation



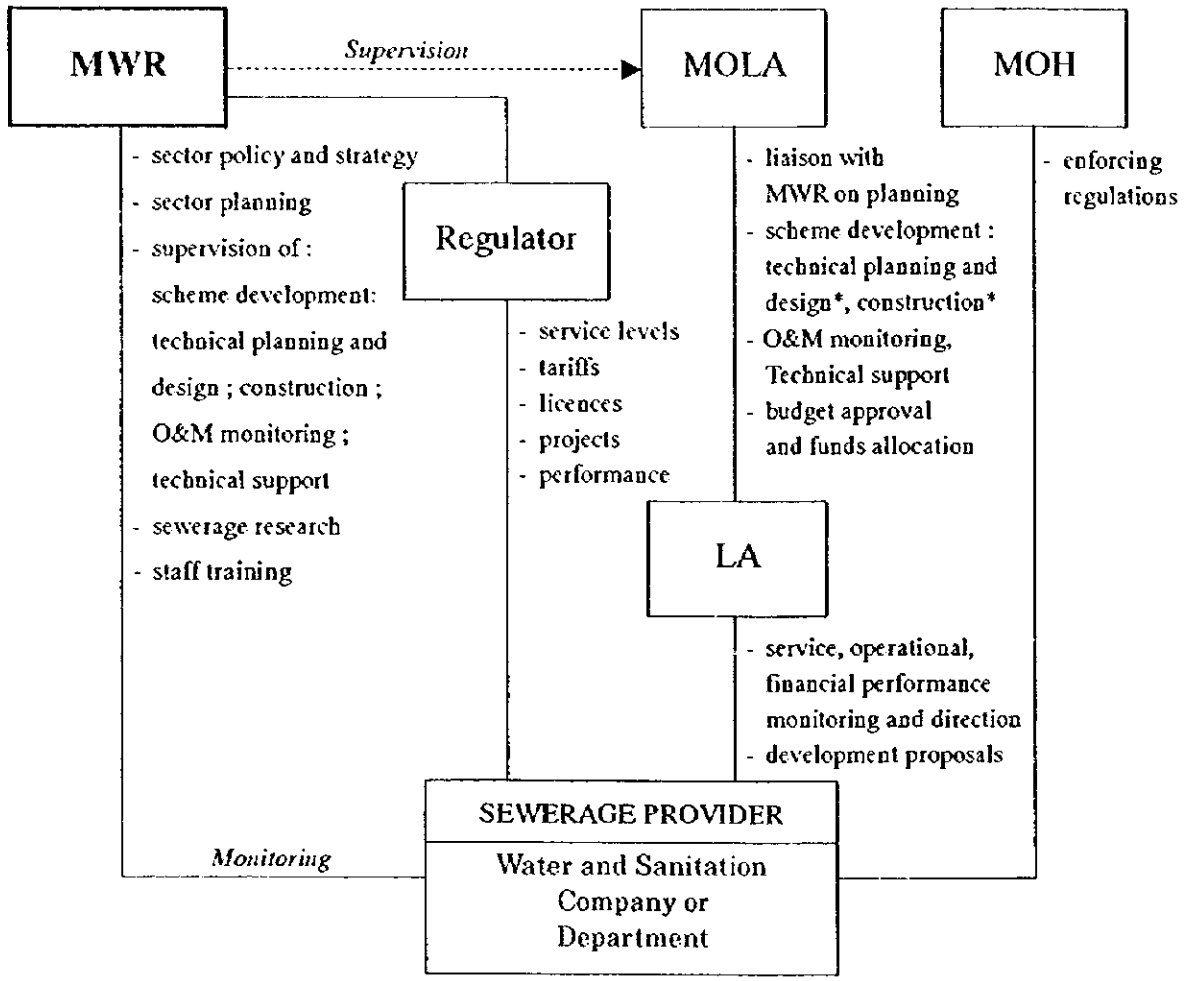
THE AFTERCARE STUDY ON
THE NATIONAL WATER MASTER PLAN

JAPAN INTERNATIONAL COOPERATION AGENCY

Figure - 2.1.2
Ministry of Local Authorities Urban Development Department: Existing Organisation

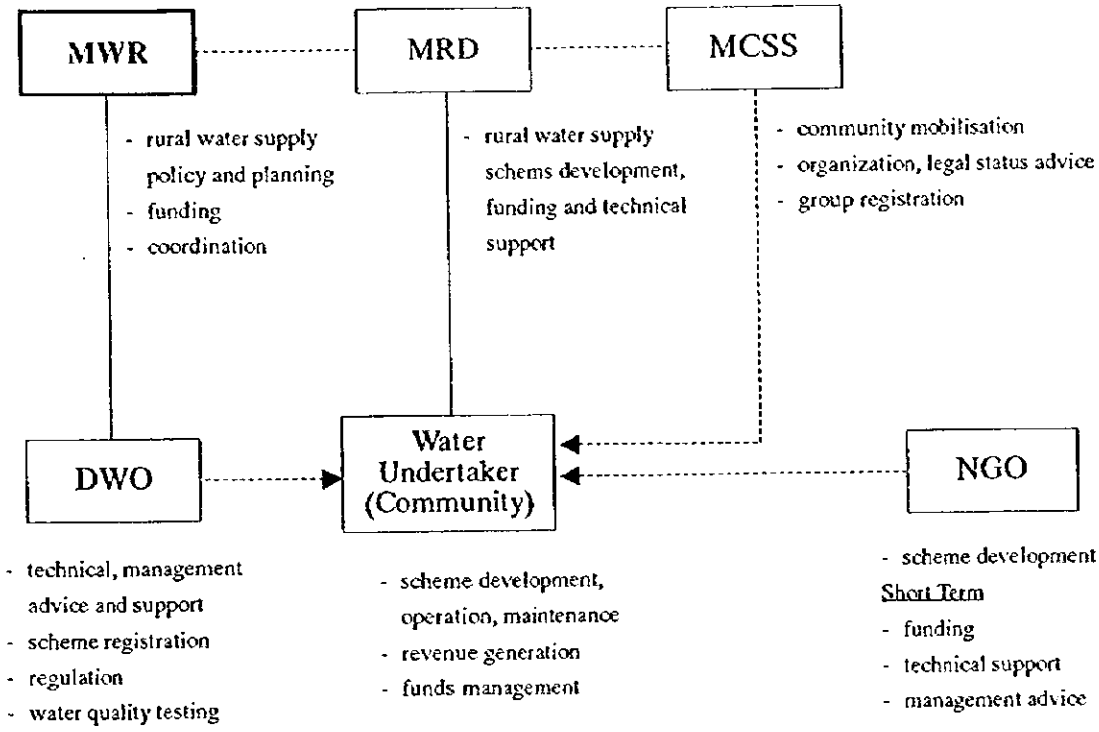


THE AFTERCARE STUDY ON THE NATIONAL WATER MASTER PLAN	**Figure -5.2.1**
JAPAN INTERNATIONAL COOPERATION AGENCY	**Ministry of Water Resources: Proposed Organization**



Note : * : outsourced
MWR : Ministry of Water Resources
MOLA : Ministry of Local Authorities
LA : Local Authorities
MOH : Ministry of Health

THE AFTERCARE STUDY ON THE NATIONAL WATER MASTER PLAN JAPAN INTERNATIONAL COOPERATION AGENCY	**Figure – 5.2.2** **Sewerage Provision : Proposed Organization and Responsibilities**



Note : MWR : Ministry of Water Resources
MCSS : Ministry of Culture and Social Services
DWO : District Water Office
NGO : Non Governmental Organization
MRD : Ministry of Regional Development

THE AFTERCARE STUDY ON THE NATIONAL WATER MASTER PLAN	**Figure – 5.2.3 Rural Water Supply : Proposed Organization and Responsibilities**
JAPAN INTERNATIONAL COOPERATION AGENCY	

THE AFTERCARE STUDY ON THE NATIONAL WATER MASTER PLAN

JAPAN INTERNATIONAL COOPERATION AGENCY

Figure – 5.2.4
Urban Water Supply: Proposed Organization and Responsibilities