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KENYA - FINLAND
WESTERN WATER SUPPLY PROGRAMME
PHASE IV, 1993-1996

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FOR COMMUNITY WATER SUPPLY AND
SANITATION (IRC)

PROJECT DOCUMENT

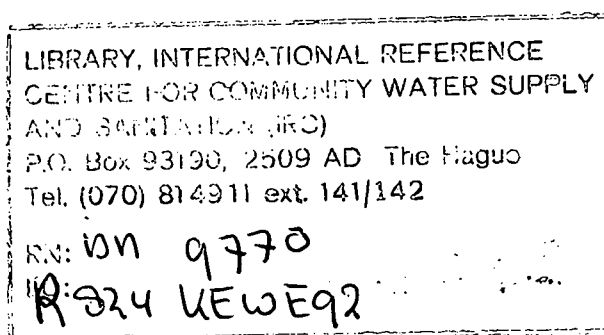
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Table of Contents

0	INTRODUCTION	1
1.	PROGRAMME BACKGROUND AND JUSTIFICATION	3
1.1	Background	3
1.1.1	Physical features and economy	3
1.1.2	Water supply situation	6
1.1.3	Kenya-Finland Western Water Supply Programme	7
1.2	Justification for the continuation of the Programme	8
2.	OBJECTIVES AND INDICATORS	11
2.1	Development objectives and indicators	11
2.2	Immediate objectives and achievement indicators	12
3.	TARGET GROUPS, ENVIRONMENTAL SETTING AND INSTITUTIONAL FRAMEWORK	18
3.1	Target groups	18
3.2	Environmental settings	18
3.3	Institutional framework	18
4.	PROJECT COMPONENTS	21
5.	PROJECT STRATEGY	23
5.1	A strategy to implement a demand-driven approach	23
5.2	Overall approach and strategy	24
5.3	Strategy for consolidation	25
5.4	Strategy for new areas	26
6.	INPUTS	31
7.	PROGRAMME BUDGET	32
8.	ASSUMPTIONS AND RISKS	39
9.	PROJECT ORGANIZATION	41
10.	REPORTING, MONITORING AND EVALUATION	43
Annex 1.	STAFFING SCHEDULE (KEY PERSONNEL)	
Annex 2.	JOB DESCRIPTIONS FOR KEY PERSONNEL	
Annex 3.	LIST OF NEW EQUIPMENT	



Abbreviations and Acronyms

ASDO	-	Assistant Social Development Officer
B/H	-	Borehole
CDA	-	Community Development Assistant
DDC	-	District Development Officer
DO	-	District Officer
DPHO	-	District Public Health Officer
DSDO	-	District Social Development Officer
DWB	-	District Water Board
DWE	-	District Water Engineer
FINNIDA	-	Finnish International Development Agency
FIM	-	Finnish Marks
GDP	-	Gross Domestic Product
GOK	-	Government of Kenya
KES	-	Kenyan Shillings
KEWI	-	Kenyan Water Institute
KFWWSP	-	Kenya Finland Western Water Supply Programme
KFPHCP	-	Kenya Finland Primary Health Care Programme
lcd or lpd	-	Litres per person per day
MOCSS	-	Ministry of Culture & Social Services
MOH	-	Ministry of Health/Medical Officer of Health
MOLG	-	Ministry of Local Government
MOWD	-	Ministry of Water Development
NGO	-	Non Governmental Organization
NWCPC	-	National Water Conservation and Pipeline Corporaton
O&M	-	Operation and Maintenance
P&D	-	Planning and Design
PWE	-	Provincial Water Engineer
PTA	-	Parents Teachers Association
WSDP	-	Water Supply Development Plan

0 SUMMARY

The Project Document for Phase IV of the Kenya-Finland Western Water Supply Programme is based on the recommendations of the Project Preparation Mission which visited Kenya between October 29 - November 26, 1991 and on the findings of the Appraisal Mission of May 7 - 26, 1992. Background reading material elaborating on the strategy and development issues incorporated in this Project Document can be found in the Background Report to the Appraisal Mission (June 1992), the Interim Report prepared by the Project Preparation Mission, November 1991, the Case Study prepared for UNCED 1992 on the KFWWS-Programme by FINNIDA, September 1991 and the Mid-Term Review Report of April 1991.

The project presented in detail in this document considers consolidation of the Programme activities in the areas hitherto served and proposes an expansion of Programme activities to cover the whole of the Western Province. Project activities in Siaya District/Nyanza Province will be phased out. Decentralization of Programme activities to the four districts in this province: Kakamega, Busia, Bungoma and Vihiga is foreseen, whereby the Programme increasingly plays a facilitating role in all the aspects of planning, implementation and follow-up of water supply facilities as well as in support of capacity building through the development of human resources, training materials, and through promotional and awareness raising hygiene education activities.

The Programme will further provide support to a limited hydrological survey activity in the Western Province to complement the data regularly collected on groundwater resources. This monitoring exercise will contribute to better quantitative and qualitative water resources management. As many of the surface water sources for the Western Province originate from Nandi district limited activities in hydrological surveying and water supply development are foreseen also for the south-western part of that district.

The Project period is proposed as 1993-1996. After 1996 no further FINNIDA financial or technical assistance in the Western Province is assumed. A strategy to ensure a proper and gradual transfer of responsibilities, capacities and skills is part and parcel of the proposed project. Implementation of that strategy should ensure a smooth phasing out of all Programme activities by 1996.

The estimated total cost of the Programme is FIM 70 million (KES 480 million), out of which the share of the Government of Finland is FIM 48 million (KES 320 million) and the share of the Government of Kenya KES 107 million (FIM 15.7 million). The beneficiaries are estimated to contribute worth of KES 49 million (FIM 7.2 million) towards the construction of their own community managed water supplies.

The funds that are generated as part of the community contribution or for work done on private or semi-private projects are to be deposited with the District treasury. These funds will be used to pay for operational costs of the decentralized Programme in that district (transport, staff) and to pay for building materials and local labour (masons, fundis).

1. PROGRAMME BACKGROUND AND JUSTIFICATION

1.1 Background

Background reading material elaborating on the strategy and the development issues incorporated in this Project Document can be found in the Background Report to the Appraisal Mission (June 1992), the Interim Report prepared by the Project Preparation Mission, November 1991 and the Mid-Term Review Report of April 1991.

1.1.1 Physical features and economy

The Republic of Kenya has a total area of about 583,000km². Only 15% of the total land area receives more than 750mm of annual rainfall which makes the area suitable for agriculture fairly limited. The total population was estimated at 24.0 million in 1991 of which 82%, 19.7 million, live in rural areas. The population growth, estimated to be about 3.3% annually, ranks among the highest in the world.

During the first decade of Kenyan independence from 1964 to 1973 the Gross Domestic Product (GDP) grew on an average 6.3% annually. Since 1973 the growth rate has been smaller and has been slightly over 5% per annum in the late 80's. Taking into consideration the population growth the real per capita growth during that time has been close to 2% annually. The national income per person was estimated at KES 4,446 (US\$ 250) in 1989. Maintenance of the current growth rate is, however, endangered by high inflation and persistent budget deficits.

In the last two years Kenya has gone through a process of political liberalization that has led to the formation of various political parties in addition to the ruling KANU party. This process of democratization leads to increasing expectations on the part of the population which need to find their initial fulfillment in free and fair general elections. The transition period to the elections is marked by political uncertainties about policies and directions of all parties and by frequent demonstrations and riots relating to the wish for greater political influence in the affairs of the land. The delay in setting the date for such elections is further exacerbating the situation. An atmosphere of insecurity is growing due to an upsurge in robbery and banditry. This has further affected a weakening economy by reducing income from tourism and by causing concern to investors about the economic prospects of Kenya.

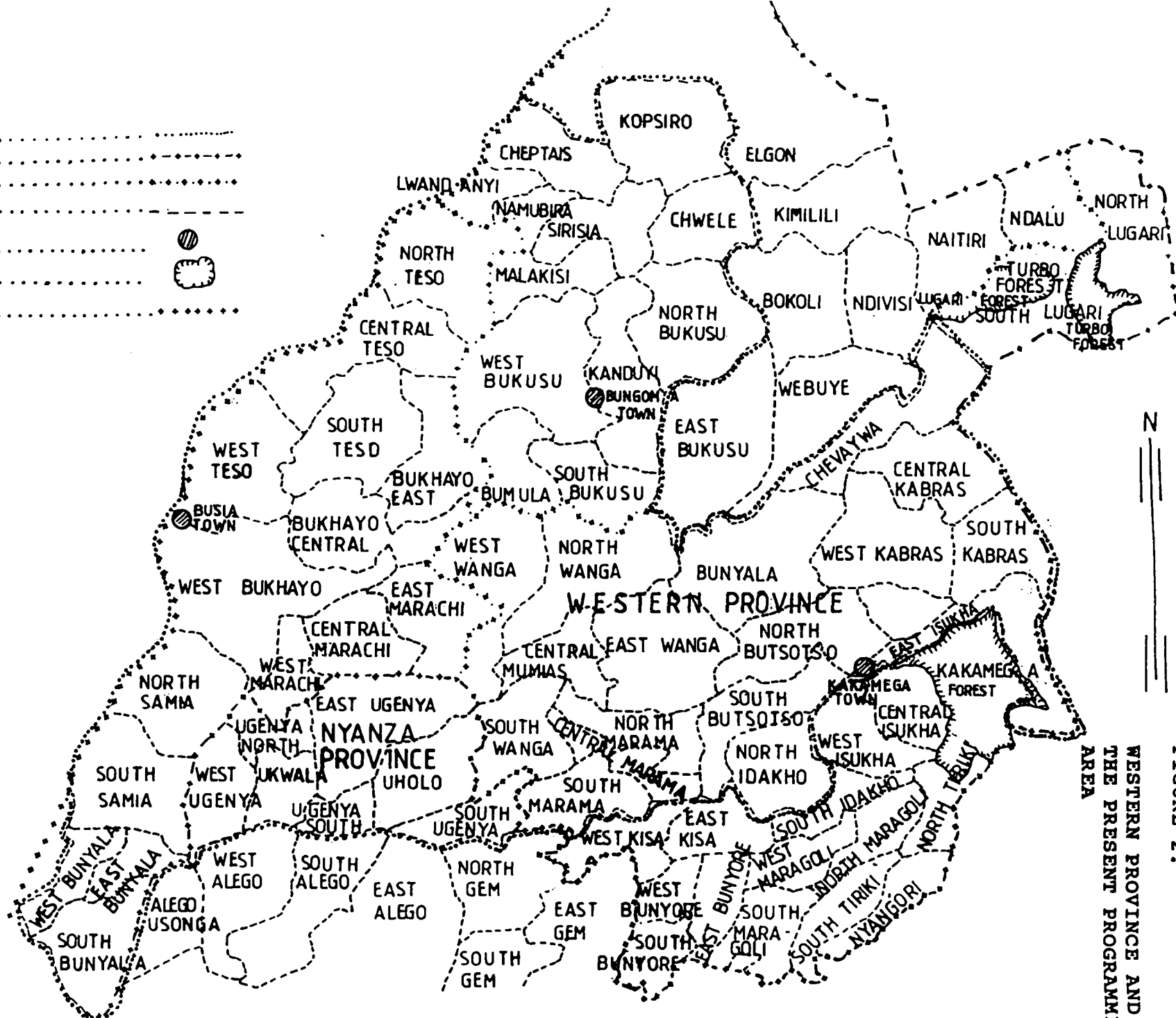
The situation is not helped by the influx of refugees from Somalia and to a lesser extent Sudan, which puts a further financial strain on the country.

The government is under pressure to reduce its expenditures and so both governmental agencies as well as parastatals are forced to charge at least the cost price for their services. Thus, schoolfees, water rates and the costs of health services are rapidly rising, further fueling inflation. While prices of basic commodities have risen considerably in price in the past few months, salaries have however remained at the same level. For the near future, less public funds will be available, calling for more reliance on cost recovery and private initiative.

The Kenya-Finland Western Water Supply Programme, phase IV, covers the four districts of Western Province: Kakamega, Bungoma, Busia and Vihiga. Six divisions in Siaya District in Nyanza Province were included in earlier phases of the Programme but will be phased out in the first two years of Phase IV. To compensate for water taken from Nandi District in the Rift Valley Province some limited water supply development activities are considered in the border area between Nandi and Vihiga district (See Figures 1 and 2).

LEGEND

- PROJECT AREA BOUNDARY
- PROVINCIAL BOUNDARY
- DISTRICT BOUNDARY
- LOCALATIONAL BOUNDARY
- MAJOR TOWN
- FOREST
- INTERNATIONAL BOUNDARY



WESTERN PROVINCE AND THE PRESENT PROGRAMME AREA

FIGURE 2.

Table 1. Estimated population (1991) within the programme area

District	No. of Locations	Population	Area (km ²)
Kakamega/ Vihiga	42	1,604,000	3560
Bungoma	24	814,000	3074
Busia	16	496,000	1774
Siaya (within Progr.)	6	210,000	541
Nandi (within Prog.)	6	120,000	350
Total Progr. Area	94	3,244,000	9299
- Consolidation Area	53	1,763,000	4810
- Expansion Area	41	1,481,000	4489

The average population density is about 349 persons/km².

The Programme area is almost totally rural; more than 95% of the population earn their living from agriculture. With an average per capita income level at KES 1350 per annum in Western Province (1988), income levels seem very much lower than the national average, but they must be seen in the context of a rather strong subsistence economy. The land is generally privately owned with the plots being quite small in Western Province. Plots range between half an acre in Vihiga district and a few acres up the slopes of Mount Elgon. Zero-grazing -- stable feeding of improved cattle breeds yielding substantially more milk -- is being promoted strongly in recent years. In some areas in the Western Province dairy management may prove a profitable business which however requires reliable access to an adequate quantity of water fairly close to the homestead. Apart from sugar cane no substantial cash crops are grown. With little industry or other opportunities for gainful employment there is a regular migration of male population to Kisumu and further towards Nairobi. Remittances from these migrant workers are reportedly small and irregular. Whereas sugar cane only provides income once every two years, dairy farming might at a current wholesale litre price of around 4-5 shilling be one of the best prospects for the generation of a regular cash income.

The annual rainfall in the Programme area is 1,100 - 2,000 mm resulting in fairly abundant water resources.

1.1.2 Water supply situation

Most of the urban population in Kenya is either served from piped water supply schemes or has reasonable access to public systems. Usage is not excessive ranging from 10 to 70 litres per capita per day.

In general, the rural population has limited access to improved water supplies despite a number of recent rural water supply programmes. Service coverage varies strongly from province to province. The Western Province with a rural water supply coverage of over 50% of the population is one of the highest in Kenya. The vast majority of the rural population carries water over considerable distances from natural sources which are often polluted, insufficient or unreliable.

A small proportion of the currently served rural population has individual connections, and the balance draws water from communal water points (CWP), kiosks, protected

springs or wells. Water usage ranges from 60 litre per head per day (lcd) for individual connection to about 10 lcd (or even less) for wells and protected springs.

The water supply situation in the different parts of the Programme area varies considerably depending on whether that part has been covered by the earlier phases of the programme or not. Real coverage rates are further influenced by the degree to which the supply is functioning or can be used.

For instance, due to operational problems, many of the water supplies, particularly the piped schemes, are not functioning as intended. It is estimated that only about 60% of the people within the piped schemes are served regularly, whereas the same percentage is over 90% in the point source water supplies. Thus, it is estimated that - at best - only about 39% of the population of the proposed Phase IV Programme area enjoys a regular improved water supply.

The table below shows the number and percentage of population estimated to be living within the coverage areas of improved water supplies in 1991:

Table 2. Population within areas with improved water supplies

Area	Population	Piped Supply	Point Source	%
Western Province				
- Present progr.area	1,553,000	439,000	700,000	73%
- Rest of province	1,361,000	442,000	-	32%
- Total for province	2,914,000	881,000	700,000	54%
Siaya (within Progr.)	210,000	25,000	110,000	64%
Nandi District (within proposed prog. area)	120,000	20,000	-	17%
Total progr. area				
- Consolidation Area	1,763,000	464,000	810,000	72%
- Expansion Area	1,481,000	462,000	-	31%

1.1.3 Kenya-Finland Western Water Supply Programme

The Governments of Kenya and Finland have agreed that rural water development is one of the sectors of programme concentration within their development cooperation. In accordance with this, it was decided in 1980 to start the Western Water Supply Programme, formerly called Kenya-Finland Rural Water Supply Development Project in Western Province. The first agreement concerning the Programme was signed in February 1981. The terms and conditions of the Programme are subject to the Agreement of Technical Cooperation between the Governments of Finland and Kenya signed in September, 1975.

Since its commencement, the Programme has been implemented in four phases:

- * Investigation and Planning Phase from February 1981 to October 1983;
- * First Implementation Phase (Phase I) from November 1983 to December 1985;
- * Second Implementation Phase (Phase II) from January 1986 to December 1988; and
- * Third Implementation Phase (Phase III) from January 1988 to December 1992.

Up to the end of 1991 the Programme has produced around 3300 new point source water supplies (protected springs, wells and boreholes) and 17 piped water supply schemes and rehabilitated 12 piped schemes, thus improving water supply for well over 1 million people. The total cost of the Programme up to the end of Phase III (1992) will be FIM 262.6 million.

Since the Programme's inception, its approach to planning and implementation of improved rural water supply has gradually been altered. The programme has developed from the mere provision of point sources to the mobilization of communities for planning, construction and maintenance. In the previous phase major steps have been made to ensure **staff development, training of community members** for operation and management, **decentralization of activities to the districts** and in general **capacity building** of project partners for sustainability.

As unequivocally expressed by the Mid-Term Review of Phase III the Programme should respond to the demand for better water supply by the people rather than just providing the communities in a given area with improved supplies. To enhance the long-term sustainability of the intervention a noticeable shift in the delivery concept of the project is made from a supply-driven to a demand-driven approach. This change has been effected only in 1992 and needs to be further developed in terms of procedures, promotion and mobilization. The demand-driven approach is in line with present-day government policy directions in which communities are urged to initiate their own development activities and take responsibility for their completion and sustainability.

To make the demand-driven approach work, greater involvement and cooperation with the field staff of the Ministry of Culture and Social Services and the Ministry of Health will be necessary. Institution building geared towards increased linkages and collaboration between MOWD, MOCSS, MOH staff especially at district and locational level will have to be undertaken. The latter is also corresponding with the need to transfer duties and responsibilities to GOK line departments when the Programme starts phasing out in the course of Phase IV.

1.2 Justification for the continuation of the Programme

In terms of physical coverage with improved water supplies the present programme area is markedly better off than the national average. Still, most schemes are not seen by the people as community schemes but rather as Programme schemes. Thus communities still expect the Programme to come and assist in the repair of water points.

Towards the end of Phase III an expanded handing-over campaign will have allowed the transfer of many schemes to the beneficiaries. But, merely handing-over schemes is not sufficient, the Programme should also ensure that the communities through training and attitude are able and willing to take on the responsibilities for the water point or piped scheme.

Once communities have understood their role in the water supply development process, the Programme has to make sure that support structures are in place to occasionally assist these communities to execute their tasks. This means that through full decentralization of Programme capabilities support capacities will be available at district level. Training of staff and the creation of an enabling environment through establishment of proper procedures, preparation of manuals and promotional materials, and through the provision of logistic and operational support will be necessary to guarantee continued functioning of supplies.

A key element in this support structure will be the setting-up of a spare part sales system in the Western Province for the Afridev and Nira 85 handpumps. Substantial progress is being made in ensuring local manufacture and distribution but it will take another year or two before an acceptable system is in place.

Actually the above discussion relates to the imperative of **consolidation** of the facilities that have been installed in the previous phases through the intermediary of the Programme. Quite a bit of physical and promotional work needs to be done to ensure that the water supply schemes can be managed by the community and will last to bring the intended social, economic and health benefits.

A withdrawal of the FINNIDA support at this stage would result in a collapse or unsatisfactory operation of many of the systems and thus a considerable loss of investment. Therefore, a **final phase of four years** is proposed to ensure adequate consolidation of achievements while at the same time further capacity building and transfer of skills can take place to those government staff who eventually will continue undertaking similar projects at district and locational level. As it is further expected that the demand-driven approach will allow a far greater degree of cost-sharing than before, it seems very possible that MOWD can continue to play the necessary catalytic role in water supply development even when there is less construction budget available after the withdrawal of FINNIDA support.

In view of the low degree of functioning of the existing piped water supplies the extension of the Programme to the remaining parts of Western Province is justified. This is especially true for Vihiga district where a large number of very old piped water schemes have erroneously been assumed to function adequately, thus leading to neglect for the water supply situation in this southern part of the previous Kakamega district in earlier programme phases.

In addition to the expected positive effects on well-being and health, increased provision of clean water might also have a direct economic impact. Dairy farming through "zero-grazing" could become an important source of income in the new areas, particularly in Vihiga district. This is likely to make cost recovery and maintenance easier.

Expanding the programme to cover whole administrative entities - i.e Western Province - makes institutionalization easier and helps the integration of the Programme into the present administrative set-up in line with the district focus policy.

Provided that MOWD supported by the Programme provides good services and that adequate promotion and administrative consistency is maintained, the "demand driven" approach will lead to a steady demand for services. Whereas requests for assistance may be slow initially, it is envisaged that more demand will be created when the approach takes root.

The urgency to **consolidate the past achievements** and the opportunity to **establish** through the demand-driven approach, a relatively **self-sustaining process of water supply development, improvement and expansion** that can be guided and further

developed by GOK district level staff when the Programme withdraws in four years time, is a rightful justification for further continuation of the Programme. If the latter is to be achieved, however, it is also imperative that planning, management and implementation of the activities undertaken in the context of the programme are increasingly executed by GOK staff at district and provincial level. This means that a planned transfer of executive tasks to GOK staff well before the end of Phase IV and a changing role of the expatriate staff in which the advisory function is strongly emphasized.

2. OBJECTIVES AND INDICATORS

2.1 Development objectives and indicators

The overall objective of the Programme is to **support the government's efforts to provide the population of Kenya with a safe and adequate supply of potable water for better health, for an improved standard of living and better economic opportunities.** In the Programme area the more specific long term development objectives are:

- * to **consolidate** the water supply situation in the area already covered by earlier phases of the Programme so as to **ensure sustainable functioning** of the present water supplies;
- * to **encourage continued development** of new water supplies **using the demand-driven approach** and to improve the water supply situation in the remaining part of the Western Province **in a sustainable manner**;
- * to **clarify the roles of various Programme partners** - public sector, private sector and consumers - in water supply sector development and strengthen the role of public institutions, in particular MoWd, **in promoting, supporting and supervising sector activities.**

Indicators of the achievement of these long term development objectives are for the:

Consolidation Area, that

- * the water supply systems are functioning satisfactorily and are either managed by the beneficiaries or by competent institutions with full recovery of the O&M costs;
- * communities (men and women) are aware of the procedures to be followed to initiate a project under the demand driven approach;
- * the development of new water systems is going on to meet the local demand with minimum subsidy and external support;

Expansion Areas, that

- * the water supply situation has improved in the expansion areas and the water supply systems are functioning in a satisfactory and sustainable manner;
- * the institutions responsible for water sector development are able to manage public water supplies (financially and otherwise) under their care and to support communities in managing for their own water supply systems. The revenue collected in the schemes is sufficient to cover at least O&M costs;
- * communities are more able and willing to manage their own water supplies and understand the rationale for cost-recovery. Communities are planning for future improvements and expansion of the system; and

- * communities (men and women) are aware of the procedures to be followed to initiate a project under the demand driven approach.

2.2 Immediate objectives and achievement indicators

(a) Studies

A number of studies are proposed. The objective of these is to provide better understanding and knowledge on the prevailing situation in the expansion areas of the Programme, give guidance to the Programme implementation and formulate a framework for the future water supply development.

The achievement indicators of the studies are that:

- a socio-economic survey is completed for the expansion areas. The study assesses the technical and financial options in water supply development and is used to formulate strategies and approaches in community sensitization and mobilization to support the implementation of community initiated water supply development projects. The survey should be gender specific;
- a base-line health and hygiene behaviour study is completed and defines the health and hygiene situation in the expansion areas. The study gives guidance for hygiene education efforts required to motivate for water supply improvements and to achieve health impact in the future. Lastly it provides a yardstick for the assessment of possible future health impact;

Another important concern within the Programme area is the maintenance and update of the Water Supply Development Plan for the Programme area. In addition more attention needs to be given to the surface water resources available within the Programme area in terms of quantity and quality. A limited hydrological survey effort will be undertaken in Phase IV of the Programme to ensure a better understanding of the water resources issues in the Western Province. The effort will be coordinated closely with the MOWD and the Provincial Hydrological Engineer to ensure that the resulting data are compatible with MOWD resources planning.

The achievement indicators of the component are that:

- a limited hydrological survey is maintained to assess the quantitative and qualitative aspects of the rivers and streams that feed into the Western Province. An assessment is also made of those rivers and sources that could augment water supplies within the Western Province but do not originate there;
- the Water Supply Development Plan for Vihiga district is completed in consultation with the District Development Committee. The necessary amendments to the Kakamega district water supply development plan are completed;
- a survey is made of the sources that originate in Nandi district that could be used to augment water supplies in Vihiga district. A limited water development plan for the border area between Vihiga and Nandi district is prepared that will contain proposals for compensatory water supply development support west of the Nandi hills in return for utilisation of water in Vihiga district.(

b) Physical Improvements of Water Supplies

The objective of the component is to extend in a financially and institutionally sustainable way, technical assistance complemented by appropriate material and financial support to communities, institutions and private individuals intent on improving their water supply facilities. These water supplies are estimated to serve approximately some 175,000 beneficiaries.

A limited number of MOWD operated (municipal) piped water supply schemes will be considered for rehabilitation and expansion. Rehabilitation of these schemes will provide about 200,000 people with reliable water supplies.

The achievement indicators of the physical improvements are that:

- about 500 community point source water supplies (protected springs, shallow wells or boreholes) have been constructed to the full satisfaction of the community. The facilities are used and maintained by the community;
- comprehensive surveys and designs have been made for the construction, rehabilitation or augmentation of about 12 community managed piped schemes. The surveys and designs should include a feasibility study showing full financial justification and viability of the schemes in relation to level of service, water consumption, water rates, costs of energy and O&M against various design and resource cost scenarios. It should also include a financing perspective for incremental improvement of service levels, to cover major repairs and to expand the area of coverage;
- about 8 of the 12 schemes surveyed are expected to be feasible for construction and will be completed. The schemes will be fully managed by their respective consumer communities with only limited technical and managerial assistance from MOWD;
- comprehensive surveys and designs have been made for the rehabilitation or augmentation of about 20 MOWD managed municipal piped schemes. The surveys and designs should include a feasibility study showing full financial justification and viability of the schemes in relation to level of service, water consumption, water rates, costs of energy and O&M against various design and resource cost scenarios. It should also include a financing perspective for incremental improvement of service levels, to cover major repairs and to expand the area of coverage;
- About 15 of these MOWD schemes which are assessed as feasible are completed;
- around 300 semi-private and private water points have been constructed according to Programme standards with technical assistance given by the Programme through the DWE.

(c) Operation and Maintenance

The objective of the component is to improve technical and financial performance of the different water supply systems aiming at sustainable operation without external technical assistance and financial support or subsidy.

Indicators of the achievements are that:

- the community water supplies completed during Phase IV and constructed during the earlier phases are functioning and producing good quality water at least 75% of the time on average with no direct support from the Programme;
- a functioning distribution and sales system for spare parts for Afridev and Nira 85 handpumps, based on local suppliers;
- the operating cost of community based piped schemes constructed by the programme during Phase IV is fully recovered by rate payments;
- the MOWD piped schemes rehabilitated/augmented by the Programme are functioning and producing good quality water at least at 75% efficiency on average in relation to their rehabilitated capacity;
- the operating cost of the MOWD piped schemes rehabilitated/augmented by the programme in earlier phases is recovered for 75% from consumers; and
- the operating cost of the MOWD piped schemes rehabilitated/augmented by the programme during Phase IV is fully recovered by rate payments.

The above indicators can be verified through the waterpoint O&M programme and the community piped supplies monitoring programme. Data on the performance of the MOWD schemes can be obtained through the office of the Provincial Water Engineer.

(d) Training and Manpower Development

The objective of the component is to enhance the technical and managerial skills of the personnel associated with water supply development in the Programme to ensure continued implementation of the activities supported by the Programme and sustainable operation, maintenance and management of the existing and new water supply facilities. In the context of continuing decentralization and skills transfer to the district and locational level manpower development and posting is essential.

The achievement indicators of the component are:

- all Programme, MOWD, MOCSS and MOH staff introduced to the demand-driven concept and familiarized with the procedures. In addition key persons from other ministries and departments as well as from NGO's active in the Western Province familiarized;
- specific training in community development (including participatory techniques) for water supply development provided to all fieldstaff of MCSS;

- specific training in community development (including participatory techniques) for water supply development provided to all fieldstaff of MOH;
- a system of trainers of trainers (TOT's) introduced to support the training of water committees in community based management and of pump attendants in handpump O&M;
- all water committees trained in community based management for water supply during the construction period of the project;
- all pump attendants trained in handpump O&M during the construction period of the project;
- all operators of piped supplies provided with hands-on training during the construction of the scheme as well as with a specific water supply plumbing course. The latter could be provided during a two week stage period in the Provincial Mechanical Workshop and will include pipe fitting, simple electrical work, meter repair, etc.;
- specific training opportunities provided to Programme-related fundis to introduce them to water supply construction standards and small enterprise management skills. It is expected that an additional 60 fundi's can be trained to augment the corps of local skilled staff for water supply development; and
- specific training opportunities provided to senior Programme and District level staff relating to the demand-driven approach and sustainability in water supply;
- essential Programme tasks and duties effectively handed over from expatriate staff to GOK employees well before the end of Phase IV.

(e) Community Support

The objective of community support is to encourage communities to initiate water supply improvements in their area. The mobilization process should enable men and women in the community to plan, construct, operate and maintain their water supply on the basis of informed decision-making, and eventually upgrade and expand it.

The achievement indicators of this component are that:

- more than 75% of the established water committees of the community water supplies are functioning. This can be verified by including the appropriate indicators in the monitoring programme;
- genuine requests for Programme support are forthcoming at a rate exceeding 200 in the first two years and 300 per year thereafter (see also (g));
- water committees are established and functioning at a rate commensurate with the number of projects undertaken; and
- consumers, men and women, are taking informed decisions concerning water development goals and options, financing mechanisms and management.

(f) Institutionalization

The objective of this component is to actively involve the various Programme partners in the implementation of the Programme activities and so enhance their capacities and interest to continue these independently after the withdrawal of the Programme.

The achievement indicators of this component are that:

- DWE and his staff at district level, as well as CDAs and PHTs at locational level capable of promoting demand, facilitating application procedures and undertaking survey and planning of projects. This indicator can be verified by the number of requests handled and the number of projects developed for implementation;
- DWEs and the other partner institutions successfully providing support to the implementation, management and operation and maintenance of community water supplies with only limited direct technical and logistic support from the Programme. This can be verified through the monitoring programme using the O&M indicators as well as by developing some additional indicators to assess the dynamism and problem solving capacity of the individual water supply management committees.
- phase out directly recruited Programme staff by at least 50 employees per year. Provide these employees with encouragement through training and otherwise to get employment elsewhere.

(g) Promotion and hygiene education

To facilitate the demand-driven approach appropriate procedures and selection criteria will be developed. These procedures should be transparent and need to be communicated to the public. A promotional campaign will have to be undertaken which will address the various issues that help people to make informed decisions about their water supply development future.

The achievement indicators for this promotional campaign are:

- development of a set of clear messages relating to the application procedure for a community-, an institutional or a private water project; to choice of technology and cost; to community management and O&M; and to hygiene education;
- regular broadcasting and advertising of these messages utilizing a range of mass-media opportunities, seminars and gatherings;
- genuine requests for Programme support are forthcoming at a rate exceeding 200 in the first two years and 300 per year thereafter (see also (e)).

For hygiene education the achievement indicators are:

- all communities receive hygiene education as a regular Programme input during the process of assistance; and

- areas which show a low demand despite a higher than average incidence of water related diseases are identified and receive hygiene education in order to increase their interest in improving their water supply system.

Though the promotion of the demand-driven approach could be considered to be a support activity whose impact can be seen in the number of requests received, it is considered too critical an issue for the success of the programme to just view it as only a support activity. This is why a separate category of indicators has been included.

(h) Monitoring

Data collection and monitoring is essential to assess progress and identify possible problems for many of the Programme components. This data collection and monitoring serves a variety of purposes, such as:

- programme management and implementation;
- programme progress;
- success of demand-driven approach (by number of applications);
- functioning of water supply operations;
- long term functions relating to updating of plans;
- overall service level; and
- impact of demand-driven approach on position of women and poor households.

The overall objectives of data collection and monitoring and the monitoring support is to provide sufficient data for Programme implementation. These data will increasingly need to fulfil MOWD and district level planning requirements and need to be as compatible as possible to allow integration of data in such monitoring systems.

The achievement indicators for monitoring are:

- Programme monitoring system producing information sufficient for verifying the physical and financial performance of the Programme;
- data collection and consolidation systems established and functioning within MOWD at provincial and district level that provide sufficient information on water resources, water supply situation, and operation and costs of water supply systems. Training of two (part-time) officers per district to operate these systems. Exchange of data with the relevant authorities at district level as well as with the Programme;
- system established to monitor the procedure of individual requests and the process/type of assistance provided per project; and
- system in place to follow access of women and poorer households to Programme services and to monitor requests from low demand areas.

3. TARGET GROUPS, ENVIRONMENTAL SETTING AND INSTITUTIONAL FRAMEWORK

3.1 Target groups

The target group of the Programme is the entire population of the area, though the support for construction of new water supplies and rehabilitation of existing ones will try to emphasize more the expansion areas. The demand-driven approach may favour requests from better-off communities (households) and therefore care should be taken to continue to involve poorer communities (households) in the Programme and ensure that these also have access to water supply development activities.

Women being the main providers and users of domestic water will remain as a special target group. Involvement of women in all stages of a water project is seen as essential to effective utilization and sustainability, as well as to achieve the objectives of improved health and economic status.

3.2 Environmental settings

Pressure on land due to the high population densities, growth and lack of sustainable approaches to land and water management is causing increasing deterioration of catchment areas affecting particularly the surface waters - the quality and the seasonal variation of the flow. This has to be taken into consideration both in new water supplies and in rehabilitation of existing ones when assessing the adequacy and the quality of the source. During earlier phases of the Programme it was accepted already that the problems of poor quality and increasing fluctuations in the yield associated with surface water sources are normally avoided when groundwater is used.

Wherever possible the Programme will continue to favour groundwater sources for community water supply. To sustain yields and ensure good water quality appropriate protection zones, tree planting will be needed for spring protection, while proper construction details need to safeguard shallow wells and boreholes from unnecessary contamination.

The Programme's direct impact on the environment is expected to be small. However, improved water supply may increase land utilization and the development of more intensive livestock and dairy farming (in particular zero-grazing). An assessment of the potential impact on the environment should be sought in collaboration with relevant authorities.

Drainage of excess water or sullage may lead to small scale erosion or provide a breeding ground for mosquitoes. In urban or urbanising areas the per capita consumption and population densities are higher and thus the amount of grey water will increase. Proper design of water supply facilities accompanied by hygiene education should limit the risks of this excess water becoming an environmental health risk.

3.3 Institutional framework

The Ministry of Water Development (MOWD) has overall responsibility for water development, catchment protection and water quality and pollution control. The Ministry also has the responsibility, together the National Water Conservation & Pipeline Corporation (NWPC), for the operation and maintenance of most piped water supplies in the country. At present there are over 600 gazetted schemes which are run by the Ministry or NWPC.

The MOWD, in liaison with the Ministry of Local Government (MOLG), develops sewerage and sanitation facilities aimed at improvement of public health. The MOLG also oversees the functions of all local authorities and assists in providing financing for water and sanitation development in some of the principal towns. Responsibility for rural sanitation and health education rests with the Ministry of Health (MOH).

The Ministry of Culture and Social Services (MCSS) in liaison with relevant other ministries supports self-help schemes in rural areas and in general assists communities in organizing themselves. In line with the district focus policy the District Development Committees are playing a leading role in reviewing project requests, soliciting community participation and prioritizing projects before submission to the various executing ministries. Other relevant sector institutions are the Ministry of Lands and Settlements, Ministry of Agriculture, Ministry of Forestry and Natural Resources, Ministry of Education and River and Lake Basin Authorities. Also the non-governmental organizations - NGO's -are playing an increasingly important role in rural water development.

Within a province the Provincial Water Engineer monitors, evaluates, supervises and coordinates water activities. In the districts matters concerning water are the responsibility of the District Water Engineer who is an expert member of the District Development Committee. At the beginning of 1991 Water Boards were established. The Boards are sub-committees of the DDC's and are expected to assume a leading role in coordinating water sector development activities in the districts in future.

In the Western Province the Kenya-Finland Primary Health Care Programme has in the past been an important partner for environmental health related planning and development at divisional and sub-divisional level. Stronger collaboration between these two Finnish supported Programmes is envisaged.

At district level the DDC formulates an annual plan for water development. Relevant components of this plan are submitted to the Programme for financial and technical assistance. Following agreement between the district and the Programme, the Programme provides support to the DWE in the further planning and execution of water supply development activities. At district level representatives of MCSS and MOH are associated closely with these activities. At locational level Community Development Assistants and Public Health Technicians facilitate the community development process and through the Chief's office liaise with technical staff of MOWD to provide technical services.

The further strengthening of this variety of institutional linkages at district, divisional, (sub-)locational and village level is a key development objective of the Programme.

4. PROJECT COMPONENTS

The main Programme components and their sub-components are presented below. These components have also been reflected in the budget indicated under section 7.

(a) Studies

- socio-economic survey for Western Province expansion area
- baseline health and hygiene study for the expansion areas
- water supply development plan, Vihiga district
- amended water supply development plan, Kakamega district
- ad-hoc diagnostic studies in low-demand areas
- support to data collection and regular updating of water supply development plans
- water resources management study

(b) Physical Improvements of Water Supplies

- support to the development of community managed water points and piped water supplies
- support to the rehabilitation and augmentation of MOWD piped water supplies
- support to the development of semi-private and private water points

(c) Operation and Maintenance

- establishing, monitoring and supporting the O&M system for the waterpoints
- monitoring and supporting spare parts production, supply and delivery system for water points
- improvement of O&M and management (including financial management and revenue collection) of community piped water supplies as well as MOWD managed schemes;

(d) Training and Manpower Development

- introduction of all Programme, MOWD, MOCSS and MOH staff to the demand-driven concept
- training of field level extension workers of the Programme, MCSS and MOH in the specifics of community management support activities
- skills development of communities and pump attendants
- training of water operators and local artisans (fundi's)
- support to MOWD's HRD efforts in areas related to programme activities
- continued support to the present directly employed Programme staff to enable them to find employment opportunities

(e) Community Support

- monitoring and follow-up of the handed over water supplies constructed during the earlier phases of the Programme
- sensitizing individual communities and local leaders on the opportunities and benefits of improved water supply; informing them of the procedures and conditions for support by the programme

- supporting communities to develop, construct and manage their own water supply systems, either point source supplies or piped schemes.

(f)

Institutionalization

- provision of operational facilities and transport support to MOWD
- provision of transport support and field allowances to MCSS at district and locational level, as appropriate
- incorporation of MOH and MCSS staff in seminars and exchange visits with other Programmes
- provision of transport support and field allowances to Public Health Technicians at locational level, as appropriate.

5. PROJECT STRATEGY

5.1 Strategy to implement a demand-driven approach

The defining characteristic of the programme strategy is the use of a 'demand driven' approach. This means that the people themselves are expected to take the initiative and responsibility for improving their water supply situation, rather than being the passive recipients of government services. Communities as a whole, smaller user groups (e.g. women's groups, neighbourhood groups, etc.), or private individuals can apply for assistance. The main condition is that requests for assistance will be considered only if the consumers show a willingness to take a on the responsibility for the management and financing of the water supply. Hence 'demand' is defined not only as an expression of felt needs, but also as a genuine preparedness to make significant contributions to ensuring sustainable water supply development. Community management and cost sharing are the corner stones of this strategy.

Community or user group management of the water supply systems implies that the consumers own the system, and take responsibility for managing it, pay for long-term operation and maintenance costs and preferably even save money for occasional larger repairs and for expansion.

Cost sharing means that consumers are expected to pay a share of the investment costs. Community members are viewed as consumers, controlling the development process on their own behalf, rather than as beneficiaries of an externally planned and implemented service project. As consumers they have obligations as the owners and managers of improved water supply systems, but they also have rights to a cost effective and high quality water supply facility.

The main role of the Programme is to facilitate the process through which user groups can achieve their water supply development goals. The provision of information and the facilitating of community decision-making processes is considered to be centrally important in relation to factors such as technology choice, service level, form of local organization, user regulations, local financing mechanisms etc.

Training for community management and technical skills and follow-up monitoring are additional important elements in the enabling environment that the Programme has to create.

The demand-driven approach has significant implications for all components of the programme, from planning, programming, and implementation, to long-term monitoring and evaluation.

The following principles are seen to be of critical importance for the strategy to implement the demand driven approach:

- * provision of comprehensive public information that allows community members (men and women) to make informed decisions and the development of good consumer relations through field level facilitators
- * application of clear and transparent procedures for the consideration of requests and the provision of assistance
- * services that respond to needs in a cost effective way and which offer a choice of technology and level of service that is most appropriate to local conditions considering physical, economic, social, management, organisational, environmental, etc.)

- * a process approach to assistance, including allowing community members sufficient time to grow to decisions, to understand their implications and to agree on a common water supply development strategy
- * synchronization of community development inputs and skills development support with the technical aspects of project implementation
- * an enabling environment in which the Programme or the DWE is seen as a genuine partner in facilitating water supply development in the community through the delivery of good quality technical assistance and other forms of encouragement and facilitation
- * strengthening of the private sector so that it may contribute more substantially to the development of independent water supply development and may take on the distribution and sale of spare parts

5.2 Overall approach and strategy

The overall approach during the fourth phase of the Programme is "demand driven" whereby support is given only to activities which are genuinely required and requested by the beneficiaries who are willing and prepared to take over the responsibility for managing their water supply or are prepared to pay the full cost of it. The strategy elements indicated above and the additional that follow are based on this approach.

The aim is to transfer more and more of the initiative and responsibilities for the implementation and financing of the water supply development and operation and maintenance from the Programme and the GOK to the consumers. When at the moment in the present Programme area about 90% of the financing and implementation of the water supply development is the responsibility of the Programme and the remaining 10% shared between the government and the beneficiaries, it is foreseen that during Phase IV the Programme's involvement will gradually be reduced and a greater share taken by the beneficiaries. The role of the GOK in financing the projects will basically be limited to technical assistance, with very limited additional support, if at all, from the development budget. The operation and maintenance responsibility, both financial and managerial, is in the case of MOWD managed piped schemes shared between the government and the consumers. In the light of the GOK's policy of cost-sharing for services full cost recovery of at least O&M expenditures will be aimed at for these municipal MOWD schemes by setting appropriate water consumption rates and stricter revenue collection.

Implementation of this strategy will result in the following effects:

- * For new community projects the Programme's share for financing and implementation of the community water supplies will be about 70% whereas the communities will be fully responsibility for the O&M.
- * With respect to MOWD managed public piped water supplies, the Programme may, through its rehabilitation programme and on the basis of a sound economic and technical feasibility report, approved by FINNIDA, finance about 50 - 70% of the redevelopment cost during Phase IV.

The responsibility for implementation of the Programme activities will be shifted to MOWD through integration of the Programme into the DWE's office. MOWD will remain fully responsible for the O&M of the public water supplies but will receive technical advice on cost-recovery and revenue collection so as to ensure that gradually 75% of the O&M cost of older projects and 100% of the O&M cost of the municipal piped schemes rehabilitated during Phase IV will be recouped.

- * For community based piped schemes full cost recovery of O&M cost will be the rule.

Additional general strategies that govern the implementation of the Programme are:

- the Programme will be further decentralized and integrated into the existing institutional set-up at district and locational level and will increasingly function as advisor and facilitator rather than the implementer of projects;
- activities will be implemented by partner agencies, ngo's and the private sector as much as possible;
- a comprehensive institutional development strategy needs to be developed in consultation with MOWD, MOH and MOCSS as well as other Programme partners to agree on a common, phased plan of action for the transfer of responsibilities and duties from the Programme to the line departments at district and provincial level. In view of the fact that the Programme will not be continued after 1996 this institutional development strategy should be developed and implemented with some urgency;
- the Programme continues to recognize the important role the women are playing in water supply and in related hygiene behaviour aspects. Women's role in planning, O&M, and management of community water supplies will be strengthened. Care should be taken that this does not result in an unintended additional burden to women in respect of physical, financial or other contributions. Thus, encouraging women's involvement in project planning, implementation and management should be accompanied by practical measures which make it possible for women to participate with a minimum of extra burden. These measures should be defined in close consultation with the women themselves (e.g. convenient meeting hours on convenient days, financial compensation of female pump caretakers or extension workers, etc.);
- water supply development will be recognized as a part of the general development effort and, specifically, as a part of the water resources management in the Programme area and in the whole catchment basin. This means that the water supply development plans and individual projects have to be reviewed in the context of general physical and economic development and have to take into consideration other uses of water and environmental aspects.

5.3 Strategy for consolidation

In the consolidation area the continuing functioning of the existing water supply systems will be achieved through improved management of the schemes supported by strong and functional back-up systems established within the existing partner institutions. The Programme will monitor the functions of the community water supplies and their back-

up systems and, when necessary, provide additional support and training or technical assistance. This assistance will, however, not any more be given directly to the communities but by way of the institutionalised support system. Continuity of the activities and the back-up support is to be achieved by strengthening the partner institutions, in particular those at district and locational level.

In the piped water supplies follow-up and monitoring of the earlier efforts for improving the O&M will continue and, if necessary, additional support will be provided in the areas of management and cost recovery.

Although the aim is to emphasize support to the development and construction of new systems in the expansion areas, the Programme can during Phase IV also consider requests coming from the consolidation area. When coverage in the area from where the request originates, is deemed adequate according to MOWD and Programme policies, assistance in constructing a community water point will only be provided when at least 30% of the project costs are contributed by the community.

5.4 Strategy for new areas

(a) Studies

Socio-economic studies will be carried out in more depth in the expansion areas within the Western Province. North Eastern Bungoma, North Eastern Kakamega and the whole of Vihiga will be the focal areas for these studies. Baseline health studies will be carried out in conjunction with the socio-economic studies to collect the necessary health data in the expansion areas.

The community water supply schemes and the MOWD managed municipal piped water supply schemes that are to be supported by the Programme will be subject to comprehensive surveys that will include a feasibility study showing full financial justification and viability of the schemes in relation to level of service, water consumption, water rates, costs of energy and O&M against various design and resource cost scenarios. It should also include a financing perspective for incremental improvement of service levels, to cover major repairs and to expand the area of coverage. An assessment of the willingness and ability to pay will be included. Implementation of the project will be subject to approval by FINNIDA of the feasibility survey and the design document.

The water supply development plan for Vihiga district will need to be prepared as well as amendments to the Kakamega district water supply development plan. A survey must further be undertaken to assess the potential of the sources that originate in Nandi district for water supply development in Vihiga district. In that context a supporting water development plan limited to the border area between Vihiga and Nandi district should be drafted.

To strengthen water resources management in the Western Province, a limited hydrological survey effort will be established and maintained to complement the geo-hydrological database. The water resources management study should be set-up in close collaboration with MOWD to ensure compatibility of data.

(b) Physical improvements of water supplies

The target of this component is to increase the number of people with access to improved water supplies. This will be achieved by supporting the communities to construct or develop their own water supply systems, by rehabilitating and augmenting existing piped water systems and by encouraging individual families to construct their own wells. The above improvements will be accompanied with supportive measures which will ensure correct use of these facilities and will encourage sustainable operation maintenance.

In community water supplies the strategy is to support the community in improving its water supply. Cost-sharing will be emphasized and communities will be asked to meet 30% of the implementation costs (materials, transport and labour). For cost-sharing the community will have the option to provide labour or/and material or cash to pay for its share. Depending on the technology and level of service chosen various modalities in which the community can pay, can be negotiated on the basis of standard quantity estimates.

Although the general rule should be that the community pays 30% of the investment cost, consideration can be given to such factors as present water supply situation, community's economic capacity and alternative water supply options to decide on a reasonable cost-sharing percentage. For transparency and good administration, however, the Programme is advised not to allow too many cost-sharing criteria and percentages to develop.

The use of cost effective, sustainable and locally available technologies is emphasized and the Programme is expected to continuously develop its approaches towards this target. Choice between technologies, decentralized or on-site well ring production, size and shape of the outlet of NIRA 85 handpump, etc. need further attention. Appropriate new approaches can be developed and tested for private and semi-private water supplies.

In high potential and high density areas community managed piped water supplies or their rehabilitation will be considered. Within the present public water systems communities will be encouraged to take over the schemes or become responsible for water distribution ("zoning") with MoWD remaining as a bulk supplier only.

Rehabilitation of MoWD schemes will be concentrated on piped water supply systems where rehabilitation is cost effective and the potential for improved operation and full revenue collection exists. These aspects will be studied in the feasibility studies to be carried out for each scheme considered for rehabilitation. Augmentation (expansion of design capacity and/or extension of distribution systems) will be considered on the same criteria as rehabilitation.

(c) Operation and Maintenance

The strategy for achieving the objectives of the component will be the consolidation of the O&M procedures and systems developed during the present phase and developing equivalent procedures and systems for the expansion area using experience gained in the present Programme area.

Community water supplies, whether developed during the earlier phased or supported by the Programme during Phase IV, will not be directly maintained or repaired by the Programme. This will be done by attendants and caretakers appointed by the water committees or by the private repairmen, e.g locational repairmen. If they fail, the MOWD personnel at divisional or district level will assist. The Programme support will be limited to monitoring, training and support to the back-up system.

A key element in this support structure will be the setting-up of a spare part sales system in the Western Province for the Afridev and Nira 85 handpumps. Efforts shall be continued to pursue local manufacture and distribution of relevant parts. The system should be in operation by the end of the second year of Phase IV.

Developing appropriate financial management systems for the water supplies, and in particular for the piped water supplies, will form a key area of attention for the Community Development and Training section and the O&M section. During Phase IV advisory support and monitoring will be directed at these aspects for water points as well as for piped schemes.

Especially for piped schemes, the strategy will emphasize the understanding of the real costs, both operational costs and fixed costs, and the need to improve revenue collection. Appropriate measures to improve metering, billing, accounting and management information will be developed. The aim will be to achieve full cost recovery through improvement of service and operational reliability. Consumer's relations should be improved and problems related to consumers, e.g. non-payments of bills studied.

(d) Training

Training in relation to community water supplies will be carried out at the lowest possible level using the extension workers at the locational and divisional levels. This means that emphasis will be given to training of this personnel (training of trainers).

Training for MoWD staff will be carried out in accordance to the respective Manpower Development Plans and preferably utilizing in-country training opportunities. On-the-job training will form an important component in institutionalization and integration of the Programme activities into those of the partner institutions. The importance of community mobilization and management aspects will be reflected in the training programme.

(e) Community Support

To create demand for improved water supply, a general awareness of the importance and benefits of clean drinking water for health, for convenience and for economic purposes needs to be established among the people. To promote the demand-driven approach a sustained promotional campaign will be undertaken which will address the various issues that help people to make an informed choice about their water supply development future. Using existing community level organizations, women's groups and NGO's as well as facilitators associated with the Programme, communities can be mobilized to organize themselves for the implementation and management of their water supplies.

The target group for the initial sensitization is the entire population in the Programme area. The main channel of sensitization is through the district and locational administrative structure. Public meetings such as chief's barazas and other public information events and campaigns will be used to further clarify the issues and thus raise the demand.

The same public information opportunities can be used to advise on community management aspects and issues of sustainability.

During Phase IV the responsibility for community mobilization and support will be shifted from the Programme to the extension workers under MCSS, MOH and other institutions.

(g) Involvement of Private Sector and NGO's

To improve efficiency and to decrease the dependency from the public sector increased involvement of the private sector and NGO's will be supported. Private companies or artisans could assume a stronger role in water supply development, maintenance, supplying of building materials, handpumps and spare parts, transportation, operation of water supplies.

Local artisans (fundi's) could increasingly be involved directly - with technical support from the Programme or the DWE- in community level water supply development relating to the construction of shallow wells and springs or the installation of handpumps.

NGO's could be involved e.g. in community mobilization and support in defined areas, carry out community training or engage in facilitating income generating activities.

The development of cost effective and sustainable locally based water supply development options will further strengthen the potential for community initiated and managed water projects. At the same time, the Programme should take care that price setting for its services is such that it does not unduly compete with private entrepreneurs.

(h) Cooperation with other Institutions

As a part of the institutional integration process the implementation of the Programme activities will be done in close cooperation with partner institutions. This will be the case specifically in community sensitization and mobilization and health education, in which areas MCSS and MOH are already involved. The Community Development Assistants (CDA's) under the supervision of District Social Development Officer of the MCSS will be further encouraged to play a leading role in community mobilization and support. Similarly the personnel of the Ministry of Health will be invited play a key role in health education and the promotion of sanitation. To enable these institutions to play their role effectively, the Programme will in consultation with the MOWD, MCSS and MOH make arrangements to support the MCSS and MOH extension effort by providing training opportunities, transport and operational facilities.

Monitoring the performance, motivation and practical constraints of the extension staff of the MCSS and MOH is further required to ensure a good social, economic and health effect of the projects requested and completed.

(i) Hygiene Education and Sanitation

The importance of good hygiene practices and proper sanitation will be emphasized through training programmes, particularly at community level. Public Health Technicians under the supervision of the District Health Technicians will be responsible for this task. Collaboration with the Kenya-Finland Primary Health Care Programme will increase the efficiency of all hygiene education and sanitation efforts considerably and avoid duplication of efforts.

Educational materials will have to be developed which encourage a two way communication between community members and the Public Health Technicians. Participatory techniques are very useful in this respect. These materials can best be developed jointly by both Programmes and the Ministry of Health.

Public Health Technicians and their supervisors, the District Health Technicians, need to be trained and prepared thoroughly. Communication techniques, knowledge of water & health related issues and the Programme's procedures for assistance will have to be important parts of the training.

Hygiene education and sanitation activities must be an integrated part of the process of intervention at community level. Good communication of information and joint planning of activities of MOH, MOWD and MOCSS are therefore very important. Systematic communication of information, participation in Programme planning meetings and efficient coordination will contribute to a team spirit and motivate all extension agents involved.

6. INPUTS

Inputs to the Programme will be provided by the Governments of Finland and Kenya. The Government of Finland will provide the technical assistance personnel, locally recruited unskilled personnel, equipment and materials and furnish the administrative and operational costs of the Programme. The Government of Kenya will provide (senior) professional personnel and local skilled staff to Programme Headquarters and the district and locational level operational units on a secondment or attachment basis, as appropriate. The beneficiaries will provide a considerable input in the form of consultation, material, labour, cash and follow-up to the planning and construction of community water supply facilities.

Personnel

The required key personnel inputs are shown Annex 1 and their job descriptions in Annex 2. The expatriates and some of the local personnel will be provided through a consultancy contract. Local professional and skilled personnel (except local consultants) will be provided by the Government of Kenya through secondment or attachment from various ministries, mainly MOWD.

Note: During Phase IV the staff allocations at Programme Headquarters will be reduced. As far as relevant, staff will be assigned to the districts or will return to their ministry. Directly employed Programme staff will be made redundant at a pace of at least 50 staff positions a year.

The input required from the MCSS and MOH is the personnel involved in community mobilization and support, community training and, to a certain extent, for the baseline health study. In each sub-location a Community Development Assistant under the supervision of MCSS or an equivalent extension worker will be required. These workers will use an estimated 50% of their time on average for Programme activities. A considerable input is also needed on the part of the Public Health Technicians at the locational level. Officers from both ministries are required at the District level to supervise and coordinate activities in liaison with the District Water Engineer's office and District Development Planning Officer. An appropriate monitoring and reporting system needs to be developed to ensure effective utilization of the MCSS and MOH field staff inputs.

Equipment

The procurement of the equipment will be carried out according to the regulations for the Government of Finland. The existing equipment and facilities under the control of the Programme will be utilized during Phase IV. A preliminary list of new equipment is presented in annex 3.

Note: During Phase IV several central workshop activities of the Programme will be reduced in favour of decentralization of these activities to the districts. In addition a number of activities will be privatized thus reducing unnecessary overheads at the Programme level.

7. PROGRAMME BUDGET

The estimated total cost of the Programme is FIM 70 million (KES 480 million), out of which the share of the Government of Finland is FIM 48 million (KES 320 million) and the share of the Government of Kenya KES 107 million (FIM 15.7 million). The beneficiaries are estimated to contribute worth of KES 49 million (FIM 7.2 million) towards the construction of their own community managed water supplies. More detailed break-down of the costs is presented in table 3 - 5.

It should be noted that the contribution of the government of Kenya will entirely consist of salaries of the professional and skilled personnel attached to the Programme, and that most of them are already on the government payroll. The main part of the contribution to community water supplies will be the value of their own labour, while in the case of private and semi-private systems rather more substantial cash contributions will be received which will flow back into the operational budget of the Programme.

The moneys that are generated as part of the community contribution or for work done on private or semi-private projects, are proposed to be deposited with the District treasury. The District treasury will open a separate account for that purpose. The account should be handled jointly by the district treasurer and the district water engineer and to be used to pay for operational costs of the decentralized Programme in that district (transport, staff) and to pay for building materials and local labour (masons, fundis).

The receipts in that particular account will in time decide how much work is undertaken within a district, with districts with low recovery of beneficiary contributions being forced to do less work than districts where such contributions are collected properly. It is further proposed that on an annual basis an independent auditor is brought in to audit and advise on the Programme accounts at Programme headquarters as well as at district level. The latter will also include an audit of the account, maintained at the district treasury in which the contributions of the beneficiaries are deposited.

Table 3. Total Project Costs by Major Components

COST ITEM	Cost Estimates (in millions)		
	Forex FIM	Local Costs KES	Total Costs FIM
A. Studies			
1. Socio-economic survey Western Province Expansion Area	.07	.66	.17
2. Baseline Health Study/expansion are	.08	.66	.18
3. Water supply development plan Vihiga and amendment Kakamega		.88	.13
4. ad-hoc diagnostic study low-demand areas		p.m	.00
5. datacollection/updating plans		.44	.06
6. water resources management study	.13	1.46	.34
subtotal	.28	4.10	.88
B. Physical Water Supply Development			
1. Planning and Design			
1.1 Planning and Design of W/S	.15	2.00	.44
1.2 Field Investigations	.36	5.25	1.13
1.3 Water Quality Control	.16	.80	.28
1.4 Personnel attached to Planning and Design		5.21	.77
subtotal	.67	13.26	2.62
2. Construction			
2.1 Community Managed Water Points	.97	44.02	7.44
2.2 Community Managed Piped Supplies	.50	11.58	2.20
2.3 Rehabilitation of MOWD supplies	.26	7.50	1.36
2.4 Support to semi-private and private water points	.57	21.72	3.76
2.5 Community/owner contributions		-39.79	-5.85
2.6 Personnel attached to Construction	2.00	1.75	2.26
subtotal	4.30	46.78	11.18
C. Operation and Maintenance Support			
1. Community W/S, O&M	.08	4.73	.78
2. Distribution/sales system handpumps	.50	2.00	.79
3. Community based piped schemes	.74	12.61	2.59
4. MOWD piped schemes	.54	8.33	1.77
5. Community/owner contributions		-8.82	-1.30
6. Personnel attached to O&M	1.00	4.90	1.72
subtotal	2.86	23.75	6.35

Table 3. Total Project Costs by Major Components (cont'd)

COST ITEM	Cost Estimates (in millions)		
	Forex FIM	Local Costs KES	Total Costs FIM
=====			
D. Training and Manpower Development			
1. Training of MOWD/MOH/MCSSS staff in demand-driven concept		1.40	.21
2. Training of TOT's		.50	.07
3. Training of water committees/follow-up		10.60	1.56
4. Training of Operators/Fundis		.51	.08
5. HRD opportunities MOWD/MOH/MCSSS sta	.27	5.00	1.01
6. Support to phased out of staff		2.00	.29
7. Personnel attached to Training and Manpower Development	2.50	2.76	2.91

subtotal	2.77	22.77	6.12
=====			
E. Community Support			
1. Monitoring and Follow-up			included in D3
2. Personnel attached to Community Support MCSSS and MOH		12.47	1.83

subtotal		12.47	1.83
=====			
F. Institutionalization			
1. Provision of facilities/operational costs		4.00	.59
2. Transport support/operational costs		8.65	1.27

subtotal		12.65	1.86
=====			
G. Promotion and Hygiene Education			
1. Message development & testing		.88	.13
2. Reproduction/Advertising/Radio		.30	.04

subtotal		1.18	.17

Table 3. Total Project Costs by Major Components (cont'd)

COST ITEM	Cost Estimates (in millions)		
	Forex FIM	Local Costs KES	Total Costs FIM
H. Monitoring			
1. System development	.16	.30	.20
2. Decentralization/operator training		.30	.04
3. Personnel attached to Monitoring		.60	.09
subtotal	.16	1.20	.34
I. Project Administration			
1. Programme Management and Office			
1.1 Personnel	2.50	6.00	3.38
1.2 Communications		4.45	.65
1.3 Garage	.20	3.60	.73
1.4 Security		.96	.14
subtotal	2.70	15.01	4.91
2. Freights and Travel	1.80		1.80
3. Home Office	.36		.36
4. Auditor		.88	.13
subtotal	4.86	15.89	7.20
J. Vehicles and Equipment	4.86		4.86
SUBTOTAL	20.76	154.05	43.41
Contingencies (10%)	2.08	15.41	4.34
GRAND TOTAL (in millions)	22.84 FIM	169.46 KES	47.76 FIM

Table 4. Financing Plan (in millions)

Source of Finance		1993	1994	1995	1996	Total
Government of Kenya	KES	25.83	25.08	28.42	27.55	106.88
FINNIDA	FIM	14.99	13.45	11.05	8.27	47.76
Beneficiaries	KES	10.53	13.84	13.24	11.00	48.61
Total	FIM	20.337	19.174	17.176	13.94	70.63
	KES	138.29	130.38	116.80	94.79	480.26

Table 5. Expenditure schedule by component (in millions)

Component	1993		1994		1995		1996		Total	
	Forex FIM	Local KES	Forex FIM	Local KES	Forex FIM	Local KES	Forex FIM	Local KES	Forex FIM	Local KES
A. Studies	.18	1.80	.03	1.24	.04	.78	.03	.28	.28	4.10
B. W/S Development										
B.1 Planning	.21	5.80	.13	3.36	.16	2.10	.17	2.00	.67	13.26
B.2 Construction	1.08	12.05	1.18	13.52	1.11	12.45	.93	8.76	4.30	46.78
C. O & M Support	1.30	8.32	.70	6.35	.46	6.27	.40	2.81	2.86	23.75
D. Training/HRD	.84	7.32	.67	6.40	.66	5.43	.60	3.62	2.77	22.77
E. Community Support		3.83		3.48		2.85		2.31	.00	12.47
F. Institutionalization		4.50		4.00		2.30		1.85	.00	12.65
G. Promotion/Hyg. Educ.		.52		.41		.13		.12	.00	1.18
H. Monitoring	.16	.45		.45		.15		.15	.16	1.20
I. Project Admin	1.32	4.00	1.20	3.94	1.20	3.99	1.14	3.96	4.86	15.89
J. Vehicles/Equipment	1.34		2.16		1.10		.26		4.86	.00
Contingencies	.66	5.11	.52	3.53	.41	3.73	.49	3.04	2.08	15.41
Total Costs	7.09	53.70	6.59	46.68	5.14	40.18	4.02	28.90	22.84	169.46
							FIM Total (in millions)			47.76

23

8. ASSUMPTIONS AND RISKS

The major change in the recent past of the Programme has been the shift from a supply driven to a demand driven approach. This approach is in line with the current Government policies which emphasize cost recovery and community management. The role of the Ministry of Water Development is further changing to one of promoter of water supply development rather than being the sole provider and water undertaker. It is assumed that these policies will be further developed and promoted, and that practical steps will be taken to implement them. The development of procedures for setting and periodically reviewing local water tariffs is one such step.

In other words, the Government has to commit itself to improve the performance of its own schemes of its own schemes and to allow private or community initiative to take off. This is crucial if the demand driven approach of the Programme is to succeed. In the light of the recent policy developments the environment for the successful evolution and acceptance of the demand-driven approach is considered quite favourable.

The number of MOWD staff presently assigned to the Western Province is more than sufficient to support Programme activities. However, at professional level the Programme has up to now employed a considerable number of local professionals and skilled staff. As more and more of the execution of the Programme will be carried out by MOWD staff, it is important that the adequate qualified personnel is made available. In the recent past counterpart staffing at Programme level has improved, while more professional staff is also in place at the district level. In view of the intended reduction of the size of the Programme over the next four years to a size that will also be manageable when FINNIDA support is withdrawn, it is considered feasible that the GOK will be able to second or attach qualified staff to the Programme's operations. In the case of MOWD this means that present staffing levels will need to be continued whereas for the involvement of MOH and MCSS field staff appropriate and practical arrangements (transport, training opportunities) need to be made corresponding to available staffing levels at district, divisional and sub-divisional levels.

Lack of non-wage recurrent funds is a structural problem in the Kenyan public service. Many of the MOWD schemes are in a vicious cycle with little recurrent funds for O&M resulting in poor service level. The latter, coupled with lack of management skills, leads to a low level of water supply services, reduced payments by consumers, thus leaving in turn less money for maintenance and regular operation. It is assumed that revenue collection will improve as a result of the incentives recently built in the collection system whereby the District Water Engineers can retain a bigger share for O&M when they collect more revenues. Simultaneously, it has to be observed that any marked improvements in Government allocations can not be expected. Public promotion and improved consumer relations are elements of a strategy that the Programme will put at the disposal of MOWD managed schemes to enhance - in combination with rehabilitation and service level improvements - the revenue collection. Critical review of the economic and technical feasibility of piped water supply schemes will be needed to ensure that correct investments are made.

It is assumed that all the point source water supplies constructed by the end of Phase III will be handed over to the respective communities. Prerequisites for handing over are a functioning well committee, a technically well developed source and a sufficient and good-quality water supply. Furthermore, the well committee and pump attendants must have been trained and the committee has to have a bank account with an adequate deposit. Not all the handing-over formalities will be completed at the end of Phase III and so additional efforts have to be directed towards its completion during the first year of Phase IV.

In any case it can be expected that some, maybe 10-20%, of the well committees become non-functional or do not function optimally due to a lack of motivation, understanding, mismanagement, disagreement and alike. In view of earlier "neglect" of the community development component, it is an obvious risk that the "drop-out rate" is higher. Additional inputs into training, motivation and monitoring may then be required. The proposed public information campaign may have a beneficial effect in reducing the "drop-out rate" by further clarifying the role of the community, the DWE and the Programme in the present water supply development approach adopted for the Western Province.

The establishment of a functioning and commercially viable spare parts distribution and sales network is crucial to the community level repair potential of the Afridev and Nira 85 hand pumps. If repairs are delayed due to lack of spares, consumers get frustrated and return to their earlier unsafe water sources, unsettling, by that action, the whole water supply development effort.

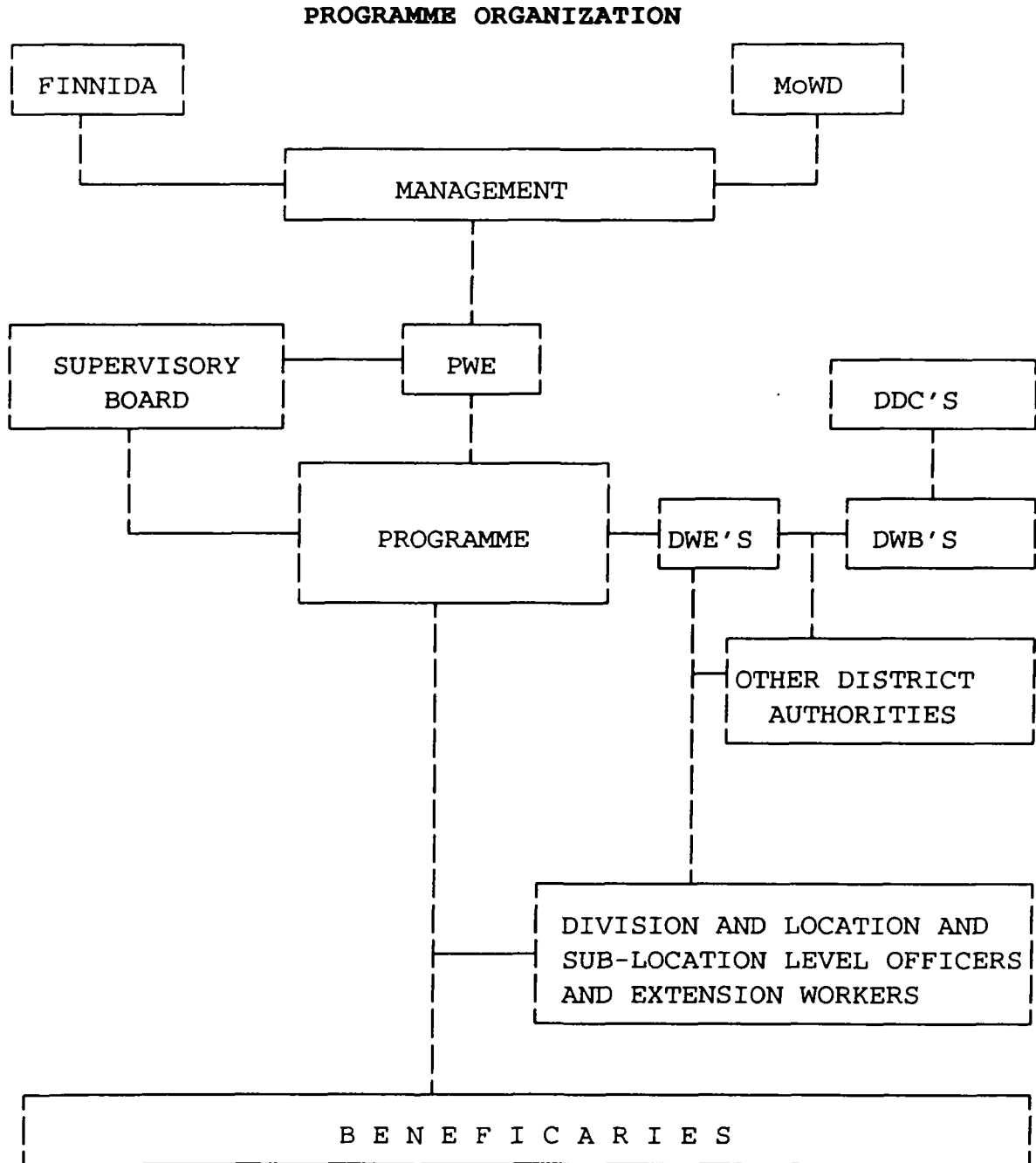
Promising initiatives are undertaken the last year of Phase III to ensure local manufacture and supply of spares. It is imperative that these initiatives are intensified in Phase IV, preferably in collaboration with other larger programmes (e.g. Lake Basin Development Authority, UNDP/WB Programme-Nairobi) to ensure that a viable spare part manufacturing and distribution system for the Afridev and Nira pumps is in place by the end of 1994.

It is uncertain how much demand will be forthcoming at the proposed 30% cost share of the community. However, limited promotion so far has generated a good response. It can thus be expected that a well designed public information campaign will lead to an adequate number of project requests. If the demand turns out to be much higher than implementation capacity the share of investment cost paid by the beneficiaries could be raised.

9. PROJECT ORGANIZATION

The Programme organization will remain basically the same as at present i.e, the implementation will be carried out by a consultant which will be jointly selected by the Governments of Finland and Kenya. The organization structures is shown in Figure 3.

Figure 3.



The consultant will recruit the expatriate personnel and after approval of the Governments, employ them as Programme staff. The proposed expatriate staff inputs are shown in the staffing schedule, Annex 2.

The MOWD and other relevant ministries will second the required Kenyan staff from its own personnel or give the Consultant permission to recruit these from the open market. This personnel will be deployed as Programme staff. The positions and durations of the key Kenyan personnel is also shown in Annex 2.

The Management Committee will follow the progress of the Programme and makes decisions on changes of the contents of the Programme Document and approves the annual work plans. The committee will be chaired by the Director of the MOWD and will have 2 further members from MOWD and representatives from FINNIDA and the Programme. The PWE, Western Province, is also a member. The committee will meet as required.

The Programme Supervisory Board will be chaired by the PWE, Western Province. Members include PHO, PSDO, Provincial Administration from Western Province, Primary Health Care Programme and the Programme. The Programme coordinator at the MOWD headquarters will also be a member of the Board. The Board will meet quarterly and will monitor the progress of the Programme, coordinate the implementation of its workplan and facilitate interministerial cooperation. The Board will also review the draft annual work plan before its submission to the Management Committee.

At the district level the coordination and monitoring of the Programme activities will be arranged through the District Water Board or directly through the District Water Engineer. The District Water Boards will approve the work plans of the Programme at the district level.

The District Water Engineer will hold monthly coordination meetings to review progress and synchronize the inputs of the district and locational level representatives of MOWD, MCSS and MOH into the Programme activities. The DWE also maintain a transport pool to facilitate field level supervision and coordination.

10. REPORTING, MONITORING AND EVALUATION

The Programme will submit the following regular reports to the government of Finland and Kenya:

- * annual work plan by the end of November of the previous year. The work plan for the first year will be submitted one month after the initiation of Phase IV;
- * annual reports providing a textual description of the main Programme activities, achievements and concerns. In annexes the annual report further contains additional information on activities, outputs, inputs, staffing, facilities, expenditures and other relevant facts about the Programme. To be submitted by the end of February, the succeeding year;
- * quarterly report providing a brief textual description of the main Programme activities, achievements and concerns in that period. In annexes it will contain further similar items as listed for the annual report as well as a brief review of the activities planned for the next quarter in comparison with the current work plan.

The Ministry of Water Development will assign an officer part-time to act as liaison officer between the Programme, FINNIDA and the MOWD. In addition to coordinating tasks and regular field visits, the designated officer will encourage dissemination of the experiences gained in the KFWSSP through appropriate representation in national and international seminars, through the organization of workshops for MOWD Headquarters staff and through dissemination of relevant published KFWSSP information to other programmes and agencies active in water supply and sanitation in Kenya.

The day-to-day monitoring of the Programme will be carried out by the Provincial Water Engineer. The Management Committee and the Supervisory Board will review progress of the Programme in their meetings. At the district level the recently established District Water Boards are expected to assume a coordinating and supervisory role over the Programme activities in each district.

The Programme review/evaluation will be carried out annually by 1-2 outside evaluators. These reviews should take place around September-October so as to provide guidance for the preparation of the annual workplans. The evaluation in the third year should be a more thorough one looking in particular at the progress made in the phasing out of Programme activities, the handing over of Programme responsibilities to the district level and the activities that need to be undertaken or reinforced to enhance the chances for independent continuation of Programme-like activities after the withdrawal of FINNIDA support.

Following the withdrawal of the FINNIDA support, a post-evaluation will be organized to extract the lessons and experiences that can be drawn from this long-term water supply development programme.

Annex 1. STAFFING SCHEDULE (KEY PERSONNEL)

Post	1993	1994	1995	1996	
Programme Manager	A A	A A	A A	A A	RE/PWE
Rural/Development Economist	A A	A A	A	A A	
Office Manager	A A	A A	A A	A	
Head of Planning and Design Dept.					
Head of Construction Dept.	A A	A A	A A		
Head of Operation and Maintenance Dept.	A A	A A			
Head of Community Development and Training Dept.	A A	A A	A	A A	
Head of Mechanical Dept.					
Head of Planning Section					
Head of Design Section					
Head of Field Investigation Section					
Head of Water Quality Section					
Head of Piped Water Supply Section					
Head of Community Water Supply Section					
Head of Drilling Section					
Head of Community W/S Operation and Maintenance Section					
Head of Monitoring and Hydrology Section					
Mechanical Engineering Advisor					
Head of Electrical Section					
Head of Training Section	A A	A A	A A	A A	
Head of Community Mobilization Section					
Head of Socio-Economic Section					
Home Office Coordinator	A A	A	A	A A	
Resident Engineer					

Consultant --A--A--A--
Local -----
Part-time -A- -A- or -- -- --

Annex 2. JOB DESCRIPTIONS FOR KEY PERSONNEL

This section only provides the sets of tasks to be executed within the Programme. It should be read together with annex 1: staffing schedule (key tasks)

Tasks proposed to be covered by expatriate staff during the whole or part of Phase IV have been preceded by an * . As far as relevant an attempt has been made to indicate in annex 1, when these tasks can be transferred to Kenyan personnel.

1. * Programme Manager (50-100 %)
Responsibilities
To carry out the overall management of the Programme. To liaise with FINNIDA, the MOWD, MOH, MCSS and other agencies.
2. * Rural/Development Economist (30-50%)
Responsibilities
Assists PWE in development of procedures for tariff setting and revenue collection procedures for piped schemes and supervises training of accountants. Assists Head of Construction in assessing economic viability of proposed schemes, advises on financial and cost recovery issues at the district and scheme levels.
In charge of management information system development and information dissemination.
3. * Office Manager (50%)
Responsibilities
In charge of overall control of Programme funds, purchasing and (local) procurement, personnel and office services.
4. Head of Planning and Design Department
Responsibilities
In charge of the preparation of the Water Supply Development Plans, designs, plans, programmes, investigations, water supply studies, monitoring of water supplies, collection of water resources and water supply data, updating of plans etc. To liaise with other departments to ensure appropriate synchronizing and timing of all activities. To oversee that the costs of the department do not exceed the limits of the Programme budget. To act as deputy to the Programme Manager.
5. * Head of Construction Department (50%)
Responsibilities
In charge of all construction activities. To liaise with other departments to ensure appropriate synchronization and timing of all activities.
Advise on management issues at provincial, district and scheme levels.
Carrying out management, financial and cost recovery review as part of rehabilitation studies.
To oversee that the costs of the department do not exceed the limits of the Programme budget.

5. * Head of Operation and Maintenance Department (100%)
Responsibilities
 In charge of the programme support to the operation and maintenance of water supplies, including providing technical advise on technical issues relating to O&M of piped schemes.
 To develop an adequate spare part supply distribution and sales system, including local manufacture. To liaise with other departments to ensure appropriate synchronizing and timing of all activities. To oversee that the costs of the departments do not exceed the limits of the Programme budget. After two years the expatriate staff member will be replaced by a Kenyan officer.

6. * Head of Community Development and Training Department (Direct hiring of local staff member) (100%)
Responsibilities
 In charge of community development and training activities. To liaise with other departments to ensure appropriate synchronizing and timing of all activities. To oversee that the costs of the departments do not exceed the limits of the Programme budget.

7. Head of Mechanical Department
Responsibilities
 In charge of mechanical workshops and stores. In charge of maintenance of Programme vehicles and Water Supply Development equipment. The Provincial Mechanical Engineer is proposed to take charge of this task. He will be assisted by a mechanical engineering advisor for the first two years of Phase IV.

8. Head of Planning Section
Responsibilities
 In charge of feasibility and other water supply studies, and collection, storing and processing water supply data. Assisting in preparation of Water Supply Development Plans.

9. Head of Design Section
Responsibilities
 In charge of detailed designs and preparation of design guidelines.

10. Head of Field Investigation Section
Responsibilities
 In charge of the hydrogeological, geological and geophysical investigations, and collection, storing and processing water resources data.

11. Head of Water Quality Section
Responsibilities
 In charge of water quality monitoring, water quality analyses and laboratory operations.

12. Head of Piped Water Supply Section
Responsibilities
 In charge of rehabilitation of MoWD piped schemes and construction of new community piped schemes. Arranges the preparation of O&M procedures and manuals, and the training of operators.

13. Head of Community Water Supply Section
Responsibilities
 In charge of construction support to community and private water points. Monitors requests received for assistance in development of water points. Encourages in collaboration with the Head of Training Section the continued training and utilization of local artisans in the Programme area.
14. Head of Drilling Section
Responsibilities
 In charge of drilling activities, drilling stores and maintenance of drilling equipment.
15. Head of Community W/S Operation and Maintenance Section
Responsibilities
 In charge of the support to the O&M of community water supplies including further development of monitoring system at Programme and district level. Assists Head of Operation and Maintenance Department in development of spare part delivery system.
 This position may be come redundant after two years when the tasks of this officer could be merged with those of the Head of Operation and Maintenance Department.
16. Head of Monitoring and Hydrology Section
Responsibilities
 Acts as system analyst to the Programme and maintains the Programme databases used for monitoring. Executes a limited hydrological surveying programme in close liaison with the Head of Field Investigation Section. It is proposed that the present assistant systems analyst who is also the Provincial Hydrological Engineer will fulfil this task.
17. * Mechanical Engineering Advisor (100%)
Responsibilities
 Facilitates transfer of responsibilities for the mechanical workshops and stores to the Provincial Mechanical Engineer as Head of the Mechanical Department. Advises on decentralization, privatisation and phasing out, as relevant, of the workshops maintained by the Programme. Develops a model approach to financial sustainability of the workshop sections that are retained by the Programme.
18. Head of Electrical Section
Responsibilities
 In charge of electrical works included in the O&M support and rehabilitation/augmentation of water supplies.
19. * Head of Training Section (100%)
Responsibilities
 In charge of community and staff training. In charge of pump attendant, spring attendant and contractor training in liaison with O&M Department. Preparation of training programmes and training materials. Responsible for the development and provision of the public information materials and other Programme support information efforts. Liaison with other training institutions in Kenya and overseas. Supervising the trainees from other institutions in the Programme, Assisting KEWI in all aspects as necessary.

20. **Head of Community Mobilization Section**
Responsibilities
In charge of community sensitization, community mobilization and other community development activities before, during and after the construction of community water supplies, i.e siting, committees, land easements registrations, etc. Assist head of training section in the preparation of promotional Programme support materials.
21. **Head of Socio-Economic Section**
Responsibilities
In charge of socio-economic studies and activities in the communities including income generating activities.
22. * **Home Office Coordinator (20%)**
In charge of foreign purchasing and procurement. Liaison with FINNIDA, Finland and the Programme. Recruitment of expatriate staff and general home office support.
23. **Resident Engineer**
Responsibilities (in addition to the his normal duties)
Monitoring the Programme progress and performance. Coordinating of the inputs of the Government of Kenya and the functions of the participating institutions, particularly MoWD, MCSS and MOH. Member of the Management Committee and the chairman of the Coordination Committee. This task is fulfilled by the Provincial Water Engineer, Western Province

Annex 3. LIST OF NEW EQUIPMENT

Note: This list is tentative and should be reviewed at the beginning of the Phase and annually in connection of the preparation of the Work Plan. The present Programme equipment is assumed to be used for Phase IV. Renewal of the equipment is included in the list below.

Type	no	Unit Price FIM, million
Vehicles:		
- lorry, 7 tons	2	0.40
- lorry, 5 tons	2	0.25
- 4WD vehicles (Land Rover or equiv.)	10	0.10
- saloon cars	2	0.06
- motorbikes	40	0.008
- tractors with trailers	2	0.25
- bicycles	100	0.001
Other Equipment:		
- test pumping set	1	0.06
- drainage pumping set	10	0.025
- compressors	2	0.09
- diesel generating sets	2	0.04
- welding machines, electr.	1	0.005
- welding machines, diesel	1	0.10
- motorize light test auger set	1	0.03
- manuals test auger sets	4	0.15
- computer equipment (renewal and district equipment)		0.40
- miscellaneous (10%)		0.50