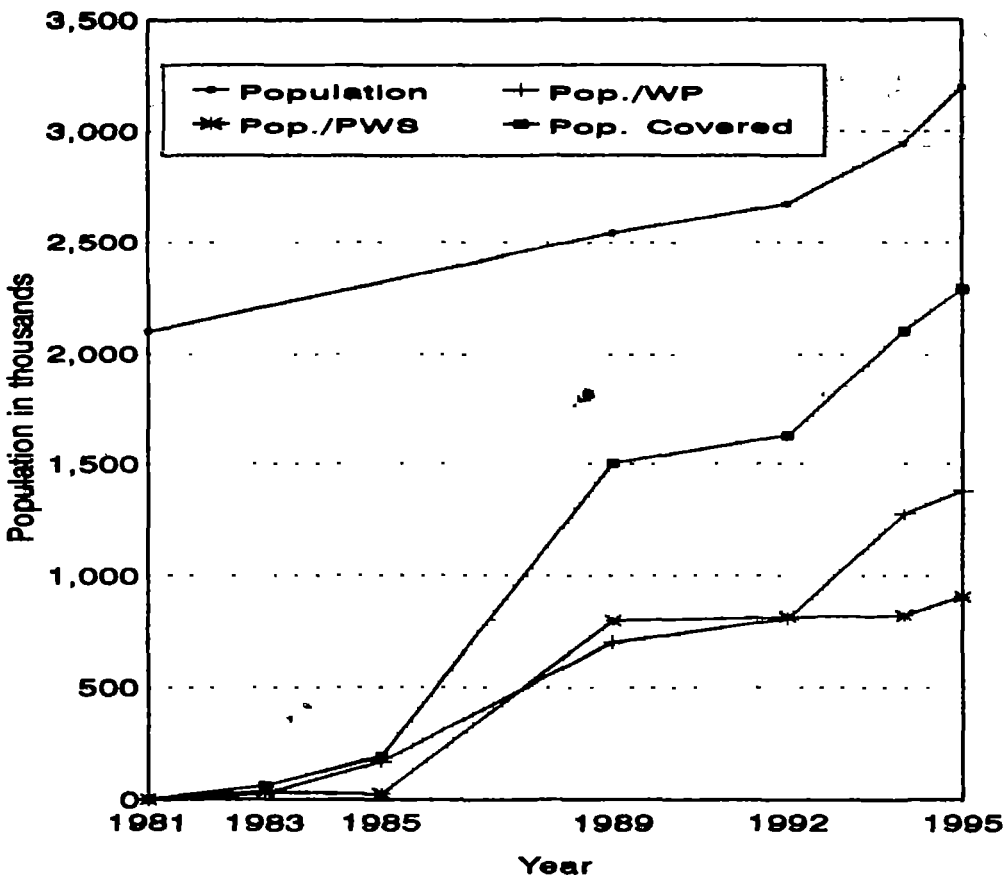
MINISTRY OF LAND RECLAMATION, REGIONAL AND WATER DEVELOPMENT, KENYA

MINISTRY FOR FOREIGN AFFAIRS, FINLAND

KENYA - FINLAND WESTERN WATER SUPPLY PROGRAMME
PROGRAMME COMPLETION REPORT FOR PHASE IV
(MAY 1993 - DECEMBER 1995)

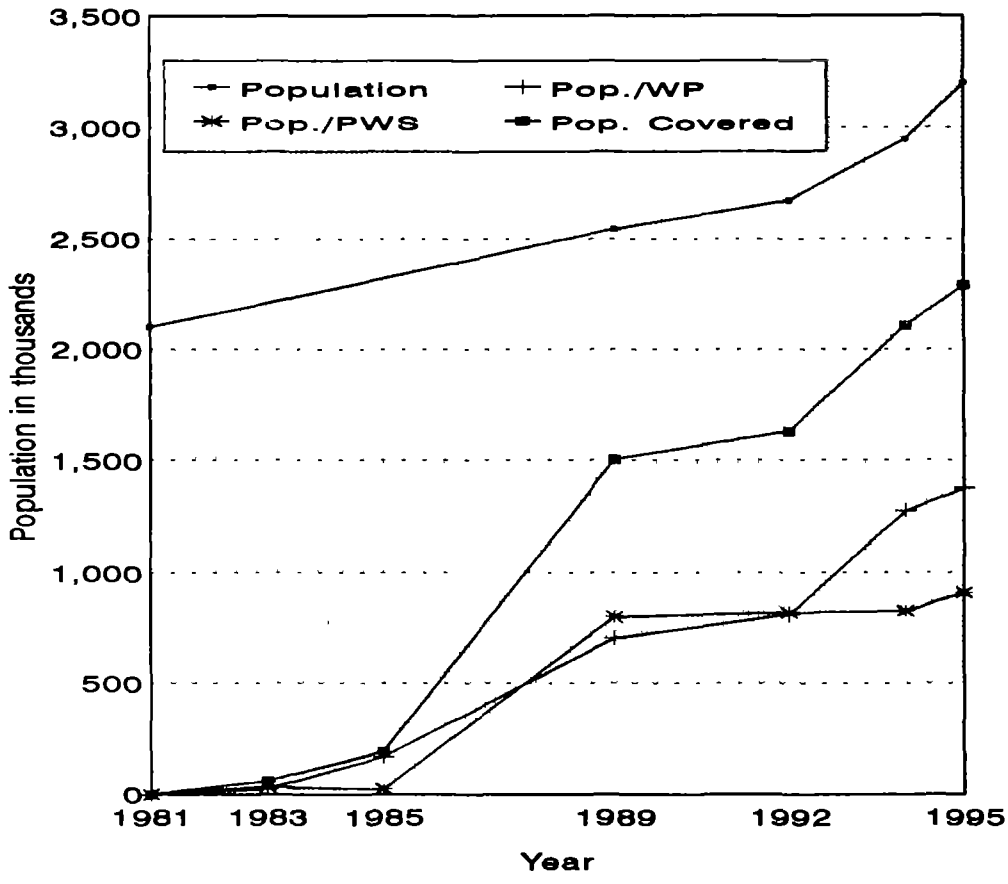


KEFINCO
HELSINKI, FINLAND
KAKAMEGA, KENYA

KENYA-FINLAND WESTERN WATER SUPPLY PROGRAMME

PROGRAMME COMPLETION REPORT FOR PHASE IV

(MAY 1993 - DECEMBER 1995)



KFWWSP COVERAGE IN WESTERN PROVINCE (1981 -1995)

June, 1996

PROJECT FACT SHEET

Project Title	Kenya-Finland Western Water Supply Programme, Phase IV
Project Number	24801803 - 2
Sector	Water development
Project Area	Western Province of Kenya (Kakamega, Busia, Bungoma, Mt. Elgon and Vihiga Districts)
Duration	May 1993 -December 1995
Project Financing	GOK KES 23.76 million GOF FIM 22.30 million Beneficiaries KES 32.49 million
Competent Authorities	Ministry of Land Reclamation, Regional and Water Development, Kenya (MOLRRWD) DIDC and/or Embassy of Finland, Nairobi
Institutional Framework:	
Recipient Country's Implementing Agency	Ministry of Land Reclamation, Regional and Water Development
Development Assistance Consultant	Joint Venture KEFINCO (YIT Corporation - Finnconsult Oy)
Project Coordination:	
Inter-Governmental	Management Committee
Programme Level	Management Group

ACRONYMS AND ABBREVIATIONS

Ab	Above
AET	Adult Education Teachers
AIE	Authority to Incur Expenditure
ASAL	Arid and Semi-Arid Lands
Att.	Attendant(s)
bal.	Balance
BH	Borehole
CC	Community coordinators
CDA	Community Development Assistants
Comp.	Completed
Conf	Conference
CMWS	Community Managed Water Supplies
CWS	Community Water Supply
DDA	Demand Driven Approach
DDP	District Development Plan
DIDC	Department for International Development Cooperation
DSS	Decision Support System
DWE	District Water Engineer
DWEO	District Water Engineers Officer
DWO	Divisional Water Officer
EW	Extension workers
FIM	Finnish Mark
FTC	Farmers Training Centre
GDP	Gross Domestic Product
GOF	Government of Finland
GOK	Government of Kenya
hd	Head
HQ	Headquarters
JICA	Japan International Corporation Agency
Kencom	Kenya Commercial Bank
KES	Kenya shillings
KFWWSP	Kenya - Finland Western Water Supply Programme
KFPHCP/PHCP	Kenya - Finland Primary Health Care Programme
LPO	Local Purchase Order
MBR	Management By Result
MFA	Ministry of Foreign Affairs, Finland
MIS	Management Information System
MOCSS	Ministry of Culture and Social Services
MOLG	Ministry of Local Government
MOH	Ministry of Health
MOLRRWD	Ministry of Land Reclamation, Regional and Water Development
MWS	Ministry Water Supplies
NGO	Non-governmental Organization
NWCPC	National Water Conservation & Pipeline Corporation
PWE	Provincial Water Engineer
PWEO	Provincial Water Engineer's Office
PVC	Poly Vinyl Chloride
ROMS	Result Oriented Management System

RGS	River Gauging Stations
SARAR	Participatory Training Method
SDA	Supply Driven Approach
Sem.	Seminar(s)
SIDA	Swedish International Development Agency
SWOT	Strengths, Weaknesses, Opportunities and Threats
TCL	Tropical Chloride of Lime
USD	United State Dollar
UWKWA	Union of Western Kenya Water Associations
UWUA	Umbrella Water Users Association
WAB	Water Apportionment Board
WASSOMA	Water Supply Operational Management Manual
WPs	Water Points
WRA	Water Resources Authority
W/S	Water Supply
WSDP	Water Supply Development Plan
YIT	YIT Corporation Ltd.

Table of Contents

List of Tables

List of Figures

EXECUTIVE SUMMARY

The Kenya-Finland Western Water Supply Programme (KFWWSP) was launched in February 1981. The Governments of Kenya and Finland were funding jointly the KFWWSP. Phase IV of the Programme was started in May 1993, and was finalized in December 1995. The Ministry of Land Reclamation, Regional and Water Development, Kenya (MOLRRWD) and the Department of International Development Cooperation (DIDC) and Ministry of Foreign Affairs, Finland employed the Consultant, KEFINCO to implement the KFWWSP in cooperation with MOLRRWD. The Programme area of about 7,400 km^2 covers Busia, Bungoma, Kakamega, Mt. Elgon and Vihiga Districts in Western Province. The population of the Programme area was estimated to be 3.2 million in 1995.

During Phase IV, May 1993- December 1995, the KFWWSP supported the implementation of water supplies for about 345,000 people (target 474,000). Water points (434 out of the targeted 450) were constructed for 108,000 consumers, and piped water supplies for 232,000 people. 15 additional water points were completed on full cost recovery. 3 community piped water supplies were completed (target 5), one was deferred and one omitted completely due to lack of funds. Four of the piped water supplies from the previous phase were completed (target 3). Two of the major Ministry operated water supplies were rehabilitated (target 5), the other 3 were not implemented due to lack of funds. Four minor rehabilitations were completed (target 4). Seven full cost recovery water supplies were completed (target 9).

The actual budget for Phase IV was FIM 22.3 million (equal to KES 225 million). During the years 1981-1995, KFWWSP has used FIM 280 million for the improvement of water supply in Western Province. KFWWSP has supported improvement of water supplies for 2.4 million consumers (2.29 million in Western Province and 0.15 million in Siaya District of Nyanza Province). Water points have been constructed for 1.5 million consumers (1.38 million consumers in Western Province and 0.12 million consumers in Siaya District of Nyanza Province) and piped water supplies for 0.9 million consumers (0.87 million in Western Province and 0.03 million in Siaya District).

The strategy for the water projects implemented by the District Water Engineers' Office and supported by the KFWWSP has been based on the genuine demand of the consumer groups, i.e. Demand Driven Approach (DDA) has been applied since the beginning of Phase IV. In addition to the construction of water supplies, the Programme has focused its activities on the transfer of responsibilities to relevant authorities and agencies, and on the improvement of the management and supportive services for water supplies, e.g. a transfer plan for handing over the activities, facilities and equipment, information packages on demand driven approach and a decision support system for piped water supplies performance improvement were prepared. Also the district water laboratories were established, and comprehensive training in technical and managerial skills was done.

The development objectives of Phase IV were satisfactorily achieved. The water supplies constructed or rehabilitated during the earlier phases were consolidated by strengthening their financial management and by giving refreshment training to the staff and the consumers. A good indicator of consumers willingness to develop their water supplies is that although the subsidy was discontinued, the programme received more DDA applications than it was able to implement. During Phase IV practically all water development activities were decentralized to the Districts. By offering management training and handing over of equipment and vehicles to the DWEOs they were able to play the main role of promoting, supporting and supervising

the water sector activities at the district level.

The key constraint during the Phase IV was the severe cut in the original budget allocation that corresponded with the planned Programme activities. The revaluation of the Kenyan shilling in 1994 exacerbated this cut, thus this affected implementation of the work plans. The Programme personnel were reduced from 243 in the beginning of Phase IV to 239 in the beginning of 1994 and to 166 in the beginning of 1995. Nevertheless, the key results: consolidation of water points; consolidation of piped water supplies; clarification of roles, decentralization of activities and transfer of responsibilities; and demand driven water supply development, were achieved adequately.

1 BACKGROUND INFORMATION OF KFWWSP

1.1 Introduction

The Kenya-Finland Western Water Supply Programme (KFWWSP) was started in February, 1981, jointly funded by the Governments of Kenya and Finland. Phase IV started on 1st of May 1993 and was completed at the end of 1995. The Ministry of Land Reclamation, Regional and Water Development (MOLRRWD) of Kenya and the Ministry for Foreign Affairs of Finland, through DIDC, employed KEFINCO to carry out implementation of Phase IV.

The Programme area, in the first three phases covered Busia district, parts of Kakamega and Bungoma districts in Western Province, Ugunja and Ukwala divisions in Siaya district in Nyanza Province. The total area covered in the three phases was 5,230 km^2. In Phase IV, the Programme covered Busia, Bungoma, Kakamega, Mt. Elgon and Vihiga Districts of Western Province with an area of about 7,400 km^2.The population was estimated to be about 3.2 million people in 1995. In addition, some activities were carried out in Ukwala and Ugunja divisions in 1993 before the Programme phased out its activities in Siaya.

1.2 Project Document for Phase IV

During the first three phases, a supply driven approach (SDA) was used. This was found to be non-viable and was changed to a demand driven approach (DDA) in line with the recommendations in the Project Document for Phase IV. The role of Kenyan organizations were to be emphasized. Activities were to be carried out mainly using personnel in the various Ministries and in the Programme. Also private contractors and consultants were to be used actively.

The demand driven approach (DDA) was to be used to implement the activities. In this approach, the benefiting water users were to contribute in materials, labour and cash for development of their water supplies. In addition, the beneficiaries were to be involved in decision making on choice of technologies. After development of the water system they were to take responsibility for operational management. This approach was to lead to sustainable water supplies in the long run.

1.3 Objectives and Key Results for Phase IV

The overall objective of the Programme Phase IV was to support the Kenyan Government's efforts to provide the population with safe and adequate supply of potable water for better health, improved standard of living and better economic opportunities. In the Programme area the more specific long term development objectives were:

- to ensure sustainable functioning of the existing water supplies in the area already covered by earlier phases of the Programme
- to encourage continuous development of water supplies by using the demand driven approach and to improve the water supply situation in Western Province in a sustainable manner
- to clarify the roles of various Programme partners, public sector, private sector and consumers in the water sector development and strengthen the role of public institutions, in particular MOLRRWD, in promoting, supporting and supervising sector activities.

These were the major objectives for Phase IV, out of which the following four key results were developed:

1. Communities are managing their water points producing enough water of acceptable quality
2. Operational level of piped water supplies secures continuous water supply to consumers in a financially self sustaining manner
3. The roles and responsibilities of water and sanitation sector partners are clarified and strengthened
4. Demand driven approach is developed and in use facilitating the development of new water supplies in future

When the above key results were achieved, it was expected that the developed water supplies were sustainable and procedures for new water supplies were replicable. The major responsibility for water development was to be with the local agencies, e.g with DWEO, communities and water users.

2 WORKING CONDITIONS AND PROGRAMME ENVIRONMENT

2.1 Organizational framework in water sector

Water management is vested in the following organizations and bodies (Mwongera 1994):

i) the Minister is responsible for control on every body of water. He appoints local authorities, private organizations, and communities to become water undertakers to manage and develop water supplies on his behalf;
ii) the National Water Board is responsible for issuing all water authorizations and permits;
iii) the Water Basin Boards (Athi, Tana, Lake Victoria North, Lake Victoria South, Northern Ewaso Nyiro, and Rift Valley, JICA 1992a) consider for each catchment basin the applications for water exploitation and recommends them to the National Water Board;
vi) the District Water Boards manage water at the district levels in accordance with the District Focus for Rural Development;
v) the Regional Development Authorities are special bodies established to utilize resources in each particular catchment basin;
vi) National Water Conservation and Pipeline Corporation (NWCPC) is a body established with the objective to improve efficiency of the government developed water projects; and
vii) the Director of Water Development is the technical body of the government on all matters concerning exploitation and conservation of water resources.

In 1974, the Ministry of Water Development (MOWD) was created by Presidential Decree (Caponera 1979). The MOWD duties and responsibilities were transferred to the Ministry of Land Reclamation, Regional and Water Development in 1992. The responsibilities and duties of the MOLRRWD are as follows (Republic of Kenya 1995b):

- assessing the potential of marginal areas;
- development and co-ordination of implementation of suitable integrated development programmes in ASAL;
- administration of the regional development authorities, National Irrigation Board, Turkana Integrated Development Programme and Bura Irrigation and Settlement Scheme;
- administration of the Water Act;
- water development and supplies;
- control of water catchment areas; and
- water quality and water pollution.

The main objectives of the MOLRRWD in the water sector are: the improvement of people's health standard and increase their productivity; increased agricultural livestock and industrial production; and opening up of ASAL areas to development. To achieve these objectives the Ministry will assist in:

i) Development and distribution of water to all rural and urban areas of the country for domestic, agricultural, livestock and industrial usage;
ii) Planning, utilization and conservation of water resources;
iii) Monitoring against the dangers of pollution of the water resources; and
iv) Encouraging the beneficiaries to be involved in the planning, implementation and operation and maintenance of water supplies.

The Water Resources Authority (WRA) was established in 1951. It had wide advisory duties on all aspects of water management under the Minister. The MOWD took over the functions of the Water Resources Authority in 1968, and therefore it is now both an authority of appointing water undertakers and the largest water undertaker together with the NWCPC (JICA 1992a).

The Water Apportionment Board (WAB) issues, monitors and revokes permits for the abstraction of water. MOLRRWD provides the Board with technical advice, personnel for secretariat, and water bailiffs who are the WAB's field workers. The WAB is a subsidiary of MOLRRWD.

In the Provincial Water Office, the Provincial Water Engineer (PWE) is the representative of MOLRRWD and responsible to the Director of Water Development for the development, maintenance, control and supervision of all water related matters in the province (MOLRRWD 1993). In the District Water Office, the District Water Engineer is the representative of the Ministry and responsible to the PWE for the overall planning, control and management of all water related matters in the Districts including financial management.

The District Water Board (DWB) in each district was proposed to have the following functions in collaboration with the DDC and other ministerial agencies (JICA 1992a):

a) Protection, conservation and preservation of all catchment areas within the district.
b) Partitioning, allocations and authorization of all water bodies.
c) Water quality and pollution control activities including the control and prevention of agricultural and industrial pollutants.
d) Management and control of water use.
e) Overseeing and coordinating all water related activities in the district.
f) Assisting in the enforcement of the Water Act.

The District Water Engineer is the secretary in the DWB, and also the technical advisor and the implementor of the Board's decisions.

The legal notice No. 270, the State Corporations Act, Cap 446 defines the duties, powers and functions of the National Water Conservation & Pipeline Corporation established in 1988 as follows:

- manage and develop the water projects specified in the Schedule under the general direction of the Minister responsible for water development;
- in connection with the water projects supply water in bulk to water undertakers, such persons or class of persons as the Minister may, after consultation with the Board of the Corporation, by notice in the Gazette, designate;
- do all such things as may be necessary or advantageous for the management and development of the water projects and securing an adequate supply of water;
- apply for and obtain all such licenses, permits and other authorities required under any written law or as may be desirable; and
- assist the Government in the formulation and execution of national water development policy.

The water undertakers are entrepreneurs and licensed by MOLRRWD to provide water as industry supervised ultimately by MOLRRWD. They include Director of Water Development, local authorities, private persons etc. Self-help water projects by local communities have been supported by non-governmental organizations, and MOWD (MOLRRWD) since early 1970. According to Mwongera (1994), there are some 1,500 water supplies under major operators as follows:

• MOLRRWD	579
• NWCPC	188
• Community	339
• Self-help	243
• Local authority	164
• NGO	53
• No information	213

The Ministry of Culture and Social services (MOCSS) in liaison with relevant ministries has promoted self-help systems in rural areas.

The Ministry of Health (MOH) is responsible for public health under the Public Health Act. It is also responsible for urban and rural sanitation, and has been involved in a demonstration programme for small rural water supply systems. MOH has currently a supervisory and regulatory role on water quality and sanitation.

2.2 Review of national economy

The performance of the economy was significantly better in 1994 than in the previous four years from 1990 to 1993. This was largely due to implementation of macroeconomic reforms, i.e. a tight monetary policy, liberalization of foreign exchange and trade regimes, and to favourable weather. According to Central Bureau of Statistics (1995), the real GDP grew by 3.0 percent in 1994 compared to a revised GDP growth of 0.2 percent in 1993. The agricultural sector growth was 2.8 percent and manufacturing 1.9 percent. Inflation rate was 28.8 percent in 1994 compared to 46.0 percent in 1993.

Table 2.1 shows the exchange rates of the Kenyan shilling to the US dollar (Central Bureau of Statistics 1993 and 1995, Kencom Digest 1995).

Table 2.1 Exchange rates of Kenya shilling for US dollar, 1987-1995

Currency	Mean rates KES 31st Dec								
	1987	1988	1989	1990	1991	1992	1993	1994	1995
FIM	4.158	4.447	5.352	6.673	6.788	6.923	11.780	9.447	11.092
USD	16 515	18 599	21.601	24.084	28.074	36.216	68.163	44.839	55.964*

* Rate for 29/12/95

The consumer price index is given in Table 2.2 (Hukka, Katko and Seppälä 1992, Central Bureau of Statistics 1993 and 1995).

Table 2.2 Consumer price index 1979-1994 (1986=100)

Year	1979	'80	'81	'82	'83	'84	'85	'86	'87	'88	'89	1990	'91	'92	'93	'94
Index	47	52	59	68	79	86	95	100	107	124	141	163	195	248	383	466

Note 1994 provisional

2.3 Water supply coverage

Table 2.3 gives information on water sources by provinces during dry and wet seasons (Central Bureau of Statistics 1993).

Table 2.3 Percentage distribution of households by water sources during the wet and dry seasons

Water Source	Nairobi	Central	Coast	Eastern	North Eastern (Urban)	Nyanza	Rift Valley	Western	National
River	1.12 1 04	24.62 38 76	15.78 16.56	33.42 41.88	18.75 18.75	25.93 29.72	35.52 42.00	14.08 13.97	21.15 25 42
Lake/Pond	0.43 0.09	1 03 2.07	11.04 6 57	7.20 3.85	- -	9.50 9 86	5.59 6.00	1.86 1.42	4.59 3.73
Roof Catchment**	0.17 -	21.21 2.38	4 65 0.35	14.07 1.68	- -	9.17 0.62	8.55 0.50	2.18 -	7.50 0.69
Protected Spring*	- -	1 03 3.49	0.44 3 45	1.42 7.71	- -	10.28 11.93	2 73 3.14	11.24 12.45	3.39 5.27
Unprotected Spring	- -	3.34 3.49	2.02 2.45	9.38 7.71	- -	16.00 16.55	10.41 9.87	20.74 22.06	7.74 7.77
Protected Well*	- -	3.26 3.57	9 11 9.73	1.68 3.27	21.87 21.87	5.17 5.03	7.14 6.96	5.24 5.46	6.68 6.99
Unprotected Well	0.09 0.09	2.78 5.16	2.54 4 21	5.19 5.78	- -	2.90 2.97	4 37 4 09	7.21 6.99	3.14 3 66
Borehole*	0.09 0.17	4.21 5 88	4.12 5.00	0.75 2.85	- -	3.72 6.83	2.77 4.55	17.69 18.67	4 17 5 49
Piped Water*	95.25 97.76	36.93 36 54	49.69 54.60	25.46 28.81	59.37 59.37	12.97 13.59	21.28 20.60	19.21 18.67	40.02 41.24
Others	2.85 0.86	1.59 0.79	0.61 0.09	1.42 2.01	- -	4.28 2.90	1 64 1.64	6.55 0.33	2.37 1.08
*Improved Water Supply	95 51 97.93	66.64 51.86	68.01 73.13	43.38 44.32	81.24 81.24	41.31 38.00	42.47 35.75	55.56 55.25	61.76 59.68

Note: *Improved water supply* compiled by KFWWSP.

The Ministry of Land Reclamation, Regional and Water Development (MOLRRWD), where responsibilities of the Ministry of Water Development (MOWD) were bestowed in 1992, has the revised target to increase the coverage from the current 42 percent (approximately 12 million people) to 69 percent (approximately 28 million) by the year 2010 (Mwongera 1994). This means that water supplies should be implemented annually on an average for 1.0 million people, and annual average coverage increase should be 5.4 percent during 1995-2010.

2.4 Water supply development financing

The overall budget deficit was estimated to be 4.4 percent of GDP in the fiscal year 1990/91, 4.7 percent in 1992/93 and 4.7 in 1993/94 (MOWD 1992, Central Bureau of Statistics 1993 and 1995). The capital investment of the programme to increase the water supply coverage to 69 percent by the year 2010 would be approximately USD 370 million (KES 20,700 million) annually based on the estimates by JICA (1992b). Table 2.4 shows that the development estimates for MOLRRWD and MOLG are annually on an average KES 3,970 million (about USD 70 M) during the years 1994/95... 1997/98 (Republic of Kenya 1994a, 1995b and 1995e).

Table 2.4 Development expenditure estimates of MOLRRWD and MOLG in 1994/95... 1997/98 (KES million)

Year	MOLRRWD	MOLG	Total
1994/95	3,084	608	3,692
1995/96	3,101	1,177	4,278
1996/97	3,944	566	4,510
1997/98	3,174	216	3,390
1994/98	13,303	2,567	15,870

2.5 Water sector policy

The District Focus for Rural Development Policy is used in the implementation of water supplies. Currently a national water sector policy is under preparation. Most obviously it will be partly based on the recommendations of the 1993 Provincial/District Water Engineers Conference (Anon 1993), and on the country position paper prepared for the World Summit for Social Development (Republic of Kenya 1995a). The main recommendations were to gradually hand over water supplies to local communities, and the creation of an enabling environment for full participation of communities.

The government will gradually cease to be the main actor in urban water supplies. The powers will be delegated to local authorities, but only to those who have the necessary organizational structure, required manpower and administrative capacity. The priority will be given to major regional centres with a population of more than 10,000 and to district headquarters in any such transfer (Anon 1993). Up to 1995 the MOLRRWD was to actively promote consumer involvement by:

- supporting consumers in the formation of water communities;
- training communities in the management of water supplies;
- reviewing the training needs of personnel at all levels with particular emphasis on personnel involved in community work;
- handing over immediately water point sources; and
- gradually handing over large full treatment multi-piped systems.

According to the Public Investment Programme (PIP) for the years 1995-98, the MOLRRWD will concentrate on on-going projects and programmes which have been identified as being of high priority through the Budget Rationalization Programme (Republic of Kenya 1995b). The focus will be on the rehabilitation of existing water facilities to improve the utilization of existing capacity and increase coverage. Water conservation measures will also be given increased attention. The MOLRRWD will gradually move away from massive projects to small scale community based projects.

2.6 KFWWSP approach

The most significant change from the previous phases of the Programme was the Demand Driven Approach (DDA) which was introduced during Phase IV. During the earlier phases, a more or less Supply Driven Approach (SDA) was used with a high construction rate which left very little opportunity for community involvement. A community department was established in 1984 and since then, the department gradually changed the approach from SDA to Demand Driven Approach (DDA). DDA was fully realized during Phase IV. The underlying principles of the DDA, especially cost sharing, are those of the District Focus for Rural Development Strategy which the Government of Kenya has been encouraging.

Communities have been contributing in terms of cash, labour and material as opposed to during the earlier phases where they only contributed in terms of labour. In the beginning of the Phase IV, the adoption of the DDA policy was slower than expected, partly due to lack of information among the communities. However, when the communities became aware of the new approach, the progress was very good.

One major change from the earlier phases was that the District Water Engineer's Office (DWEO) became the centre of the water development activities, i.e. the responsibilities were shifted from KFWWSP headquarters (HQ) to the districts. The HQ's role was merely supportive and advisory, and the Resident Engineer's responsibility was to supervise and monitor the Programme activities implemented by the DWEOs.

2.7 Changes affecting programme implementation

The key constraint during Phase IV was the severe cut in the original budget that was allocated for the planned Programme activities. The revaluation of the Kenyan shilling in 1994 exacerbated this cut, and this was reflected in the implementation of the work plans.

One major constraint was the GOK requirement that the Programme pay VAT. This has considerably increased unexpected expenditure.

3 ACHIEVEMENT OF KEY RESULTS

3.1 KEY RESULT I

Communities are managing their water points producing enough water of acceptable quality.

3.1.1 Objectives and indicators

The main objective for this key result was completion of old water points by training of community members in management and maintenance, and establishment of a functioning spare part distribution system. Training and activation of old water point committees is a continuous process and it is not easy to measure the effectiveness. However, the key elements include:

i) Establishment of spare parts distribution system
ii) Training locational repairmen
iii) Monitoring performance of old water points

The following indicators were selected:

- 2,800 water point are managed, operated and maintained in a sustainable way.
- 150 old DDA water points uncompleted during previous years are managed, operated and maintained in a sustainable way.
- 260 of DDA water points are managed, operated and maintained in a sustainable way.
- Communities have access to their water points.
- Communities in each district are capable of repairing and maintaining their water points through pump attendants or major repairs through locational repairmen.
- Spare parts are available at affordable price from private dealers within the districts.
- Communities are willing and able to contribute financially to operate and maintain their water points.
- Water quality and quantity of 300 community water points is good enough.
- DWEO have capacity for quality monitoring.

3.1.2 Achievements of result objectives

Table 3.1 shows the achievements of the result objectives.

Table 3.1 Achievements of result objectives

Description	Target	Actual
Water point committee meetings	400	429
Community exchange visits	10	25
Management training for committee members	88 seminars 3405 participants 1135 WPs	145 seminars 3905 participants 813 WPs
Skill training for points attendants	86 seminars 2865 participants 1433 WPs	106 seminars 2546 participants 1273 WPs
Training of trainers at district level	5	5
Monitoring of water point committees	1,800	1,750
Updating monitoring tools for community water points	5	7
Technical monitoring of old water points	6,700	6,692
Technical monitoring of DDA water points	450	96
Land easement for old water points	1,599 + 323	208
Training of locational repairmen	42	26
Monitoring of spare parts distribution (8 dealers) and establishment of additional spare parts distribution – Not started due to lack of interest from local entrepreneurs	8	8
Sampling and analysis for water quality; sanitary, structural, catchments etc.	300	32

1,599 + 323 – Land easement of old WPs + Land easement target for 1995

Table 3.2 shows the achievements regarding water points monitoring.

Table 3.2 Monitoring of water points committees and hand pumps

Year	Water point committees		Hand pumps	
	Achieved	Target	Achieved (inspections)	Target (inspections)
1993	500	500	2,076	3,850
1994	497	500	4,506	2,400
1995	511	800	110	450
Total	1,508	1,800	6,692	6,700

A new monitoring and evaluation approach and methodology was adopted in 1995. The aim was to strengthen the system to achieve the required result in liaison with technical department. Monitoring reports have been extensively used to improve water point management problems.

It was noted that most water point committees weakened their operations, especially after the Programme decreased its follow up. Quite many committees had management problems and lacked funds for hand pump repairs.

3.1.3 Deviation from Project Document

- More water point committee meetings held to respond to increasing administrative and management problems.
- More community exchange visits for WPs since this was found to be both a very effective problem solving and on site training approach.
- More water points trained due to crush programme 1994 to complete training for old water points.
- More monitoring tools updated to incorporate the needs of the community and simplify the system for self evaluation
- Less monitoring of DDA WPs due to lack of personnel and because locational repairmen were not willing to undertake the work. The concept was changed to training water officers in the Programme.
- Less training of locational repairmen as the existing repairmen proved ineffective and unreliable due to change of priorities for better opportunities. The concept was changed to train MOLRRWD personnel.
- Lack of spare parts in the spare distribution and dealers shops since the business is not viable because of small profit margin and low sales. Main centres not willing to stock the spare parts and dealers not able to distribute to consumers.
- Less water quality analysis due to lack of laboratory reagents and unreliable transport at the DWEOs.

3.1.4 Reasons for deviation and influence on Key Result

- Attempts to establish two more spare part distributors failed due to non viability in the spare parts sales business.
- The number of the spare parts selling shops decreased from eight to six due to financial limitations of the dealers. Spare parts sales monitoring confirmed that hand pumps spare parts are not readily available from private dealers within the districts because the dealers are not able to order and stock the spares.
- Some of the KFPHCP proposed water points were not implemented since the hydrogeological investigation results were negative.
- Training of locational repairmen has not made the water point operations self sufficient since the trained repairmen either demand high charges or leave the area for alternative jobs.

3.2 KEY RESULT II

Operation level of piped water supplies secures continuous water supply to consumers in financially self sustaining manner

The Kenya-Finland Western Water Supply Programme has constructed/ rehabilitated/ augmented 5 ministry water supplies (MWS) and 17 piped community water supplies (CWS).

The Key Result aimed that the communities are able to manage, operate and maintain their piped water supplies and where the ministry managed piped water supplies can be effectively operated so that 75% of operations and maintenance costs could be covered through collected revenues. Figure 3.1 shows some O&M support fittings given to a community water supply.

Figure 3.1 O&M fittings for a community water supply

3.2.1 Objectives and indicators

The main objectives were the following:

i) Community managed piped water supplies are operational and providing water at least 75% of the estimated capacity.
ii) Operating expenditure of community managed piped water supplies are fully recovered with revenue from consumers.
iii) Piped water supplies run by MOLRRWD and constructed/rehabilitated by the Programme are operational and providing water at least 75% of their capacity.
iv) 75% of the operation and maintenance expenditure of the MOLRRWD managed water supplies are recovered by revenue from consumers.

The indicators were selected as follows:

- Organizational model established and in use in all community managed water supplies
- Communities/Operational personnel are able to manage and run their supplies on a self financing basis
- Community water supplies can be financially sustainable
- Organization model established and in use in the ministry managed water supplies. Ministry's water supplies are managed and operated in accordance with ministry's regulations

- Ministry water supplies can be financially sustainable
- Ministry water supplies can be technically sustainable
- Management by result taken into use in ministry water supplies

3.2.2 Achievement of result objectives

The achievement of Key Result II required development of management and organizational procedure and training of community and ministry personnel to operate the water supplies in accordance with the developed procedures. Consequently manuals were developed as highlighted in section 4.13 and trainings were conducted as shown in Table 4.13 to 4.16. In addition, technical and financial monitoring of 17 CWS and 36 ministry or institutional water supplies was done.

The main objectives were achieved as follows:

i) This objective was achieved poorly (32% against 75%).
ii) This objective was achieved well (110% against 100%).
iii) This objective was achieved well (71% against 75%).
iv) This objective was achieved poorly (30% against 75%).

3.2.3 Deviations from Project Document

- Planned rehabilitation of 3 out of 5 major ministry water supplies was not accomplished.
- Ground water level measurements in the observation network and spring discharge measurements were transferred to the districts.
- The target for bacteriological analysis for potable and waste water was not met due to lack of reagents.
- Rehabilitation of river gauging stations was not done.
- The target for repair of electrical units was not achieved.
- The target for repair, testing and calibration of water meters was not met due to lack of spares.
- Check list for daily duties was not completed as a result of personnel reduction.
- As-built drawings were not prepared due to lack of relevant data.

3.2.4 Reasons for deviation and influence on Key Result

- The major reason for not achieving most of the planned activities as mentioned above was due to lack of funds. Also because of decentralization, certain activities were transferred to the districts in accordance with the Transfer Plan.
- Lack of spares as expected from the districts led to the target for water meter repairs not being achieved.
- As-built drawings were not prepared due to lack of proper data and other relevant information from the districts.
- Reduction of personnel led to certain tasks not being fulfilled as planned.

3.3 KEY RESULT III

The roles and responsibilities of water and sanitation sector partners are clarified and strengthened.

3.3.1 Objectives and indicators

The objective of this key result was that all water development activities, in which the KFWWSP has been involved, were transferred to the provincial and district organizations.

- PWEO, DWEOs and other organizations (MOCSS, MOH) involved have taken over the roles and responsibilities in accordance with the Transfer Plan;
- Activities done by KFWWSP are included in the activities of DWEOs, and supervised and monitored by PWEO;
- Roles of the involved parties are clarified;
- Facilities, materials, equipment and machinery of KFWWSP are handed over to and used by the PWEO and DWEOs; and
- PWEO has updated the Water Supply Development Plan (WSDP) for Western Province.

3.3.2 Achievement of result objectives

The objectives of this Key Result have been achieved satisfactorily with the following exception: WSDP has not been finalized. By the end of 1994, all activities were transferred to DWEOs with the Programme acting as a facilitator in the implementation of the work plan.

3.3.3 Deviations from Project Document

There were no major deviations from the Project Document.

- The material for WSDP that was to be collected by the DWEOs and to be handed over to the PWEO was incomplete and not yet processed.
- MBR practice has only been taken into use to a certain extent.
- DWEs are complaining that they do not have enough capacity or resources (financial and transport) to carry out responsibilities transferred to them in accordance with the Transfer Plan.

3.3.4 Reasons for deviations and influence on Key Result

- The inadequate performance of the DWEOs to collect and process the data for the WSDP
- The future forward planning may be inadequate.

3.4 KEY RESULT IV

Demand driven approach is developed further and in use facilitating the development of new water supplies in future

The Demand Driven Approach (DDA) was taken into use in May 1993. Understanding and acceptance of the new approach by consumers was slower than estimated due to the Supply Driven Approach (SDA) during the previous 10 years. It was agreed that the share of communities and institutions from the total cost of a project would vary between 25% to 75%. The interest and willingness increased in 1995 and applications, invoices and payments exceeded the target in March 1995. Thereafter the applicants were encouraged to apply for full cost recovery water supply.

Emphasis has been on handling applications, processing of proforma invoices, selecting appropriate low cost technologies, geophysical investigations, solving problems of land easement and on registration of communities in order to guarantee access to the community members to their water point.

To achieve sustainable development the share in each consumer categories was increased in April 1995 to 100% to cover the implementation costs and to give them more responsibility to implement their own water supply system, under the DWEO's supervision and monitoring.

Community piped water supplies have been completed with emphasis on management and skill training.

3.4.1 Objectives and Indicators

- Main objectives for DDA were to be put into place and to facilitate implementation in accordance with the new strategy.
- Demand driven water supply development were to be introduced to various partners playing a role in water supply development.
- Relevant training materials and forms for demand driven process were to be prepared and distributed to partners concerned.
- New community water points and community managed piped systems were to be implemented according to the demand driven approach with an average community contribution of 30%.
- A limited number of piped systems operated by MOLRRWD were to be rehabilitated and / or expanded providing reliable service for about 200,000 consumers.
- Water supply development plan for Western Province were to be updated and a similar plan for Vihiga district were to be done.
- The DDA procedures were applicable and known by the consumers.
- The applications received were processed and invoices paid.
- 450 DDA water points successfully completed and managed by the owners and were giving enough water of acceptable quality.
- 3 DDA community piped water supplies were successfully completed and managed by the owners and were giving enough water of acceptable quality.
- 7 DDA full cost recovery water supplies were completed and managed by owners.
- 5 Ministry water supplies in process of being handed over to consumers and / or local authorities.

3.4.2 Achievement of result objectives

Table 3.3 shows achievements versus targets. Water supplies included; Sio-Port, Sira-Nyawita, Maturu Lwandeti, Navakholo, Kutere and Kapsokwony.

Table 3.3 Socio-economic assessment, meetings held and consumer days

	Socio-economic assessment		Meetings			Educational days	
Years	Target	Achievement	Type of meetings	Target	Achievement	Target	Achievement
1993	50	50	Tap Committee	11 8	11 4	7	7
1994	50	23	Community Preparation	11	7 30	10	10
1995	50	2	Community Preparation	-	9	15	7

Tables from 3.4 to 3.8 indicate the achievements of DDA.

Table 3.4 Achievement of DDA Projects

Description	Target	Actual
Applications / requests	2,180	1,915
Field investigations	605	388
Preparation of cost estimates	1,378	1,230
Preparation of invoices	1,700	1,205
Tendering	450	422
Construction of WPs	450	461 completed, 15 boreholes drilled on full cost recovery 12 failed
Spring / water point committees (formation and registration)	410	364/46 logistical problems
Water point committee meeting	450	304/146
Land easement for DDA WPs	410 (250)	154/96, 200 on public land
Training of trainers	5	5
Community preparation meetings	100	90
Payments of invoices	918	465
Training for well committee and skill attendants (PA/SA)	410 (450)	232 (218)

Table 3.5 Achievement of DDA during Phase IV

District	Requests (N°)			Invoices (N°)						Completed water points		
				Sent out			Paid					
YEAR	1993	1994	1995	1993	1994	1995	1993	1994	1995	1993	1994	1995
Kakamega	170	284	120	47	191	64	13	68	59	9	63	72
Busia	79	259	50	20	153	39	4	43	17	-	25	32
Bungoma	120	204	100	15	149	10	4	64	30	4	41	54
Vihiga	90	177	60	18	128	45	9	37	19	6	29	35
Mt Elgon	-	58	70	2	60	35	1	35	37	1	29	46
Outside KFWWSP area	16	32	25	21	32	-	11	14		-	5	10
Total	475	1,015	425	123	713	193	42	261	162	20	192	249
	1,915			1,029			465			461		

Table 3.6 Training of committees and attendants

District	WPs	Trained	Balance
Mt. Elgon	76	53	23
Kakamega	144	56	88
Busia	57	33	24
Vihiga	70	24	46
Bungoma	99	66	33
Total	446	232	214

Development of information packages was done in 1994. Testing of these packages was carried out at district and divisional levels in all four districts. Seminars were held for Vihiga and Mt. Elgon districts to introduce DDA activities in the new districts. Further testing was done with extension workers in all districts. A total of 425 completion certificates for the DDA water points were sent to DWEO for delivery.

Updating and corrections were made and final printing done. One newspaper publishing was done in a local publication based in Western Province - 'Nyota ya Magharibi'. Also a radio programme was done. As a result communities started applying for the water facilities, 1,915 requests were received, 1,200 communities assessed, 1,029 invoiced and 465 payments made. 15 full cost water points were completed.

Three DDA community piped water supplies (Ileho, Chepkube, Kambiri) were successfully completed and one (Lwakhakha w/s) is on-going. They are all managed by the consumers. Seven DDA full cost recovery water supplies were completed.

Table 3.7 DDA water points

District	Total WPs Comp.	WPs. Registered		L/Easement		Accounts		Failed projects
		reg	bal.	Reg	bal	opened	bal.	
Kakamega	139	129	10	98	37	16	100	4
Bungoma	102	58	44	44	58	2	97	3
Busia	59	46	13	15	41	7	49	2
Mt. Elgon	73	26	47	49	24	3	70	-
Vihiga	69	67	2	49	20	18	51	-
Total	442	326	116	225	180	46	369	9

3.4.3 Deviation from Project Document

- Less applications received due to lack of subsidy from the Programme after the target was achieved in March 95.
- Less field investigations made because of the high potential for water in the Programme area. Also the investigation fee was unaffordable to some clients.
- Less cost estimates prepared because some clients were not willing to pay when informed of the cost of the project.
- Less water point committee meetings and registrations because some projects are in private compounds, lack of personnel to mobilize for meetings and weak committees.
- Less land easements finalized due to slow process and lack of commitment and cooperation of some clients. 200 water points are on public land and will not be eased.
- Most invoices not paid in time because the community could not afford within the validity period.
- Only 232 water points out of targeted 446 received management and skill training due to budget deficit.
- Less socio-economic assessments, meetings held and consumer days due to cutting down of the activities and the consumers being asked to organize these meetings on their own.
- Monitoring technical functioning of DDA water points was less than targeted (96/434).
- Training of repairmen could not be accomplished due to lack of funds.

3.4.4 Reasons for deviations and influence on key result

- More water points implemented due to increased demand and the ability for the community to finance full cost recovery projects.
- More requests from outside KFWWSP area.
- Less training for management, repairmen and attendants due to lack of funds and increased output.
- Repairmen opted for better jobs.
- Many water points have no trained pump attendants nor management committee.

4 ACTIVITIES AND OUTPUTS

4.1 General

During Phase IV of the Programme, majority of the activities were implemented as planned, and consequently the outputs were obtained. The Programme prepared the reports, studies and manuals as planned. The reports comprised of monthly progress reports, quarterly financial reports, and annual reports. The following manuals were prepared: Management Information System manual, Water supply system operational management manual, Decision support system for piped water supplies performance improvement, Decision support system for community water supplies, and Capital costs and depreciation of fixed assets in water supply systems. The reports include: Institutional and management options for Kenyan water supplies, Environmental impact assessment of Mumias supply. Detailed achievement of outputs is presented in Appendix A.

Figure 4.1 shows the population growth in Western Province and the increase in the water supply coverage in 1981-1995

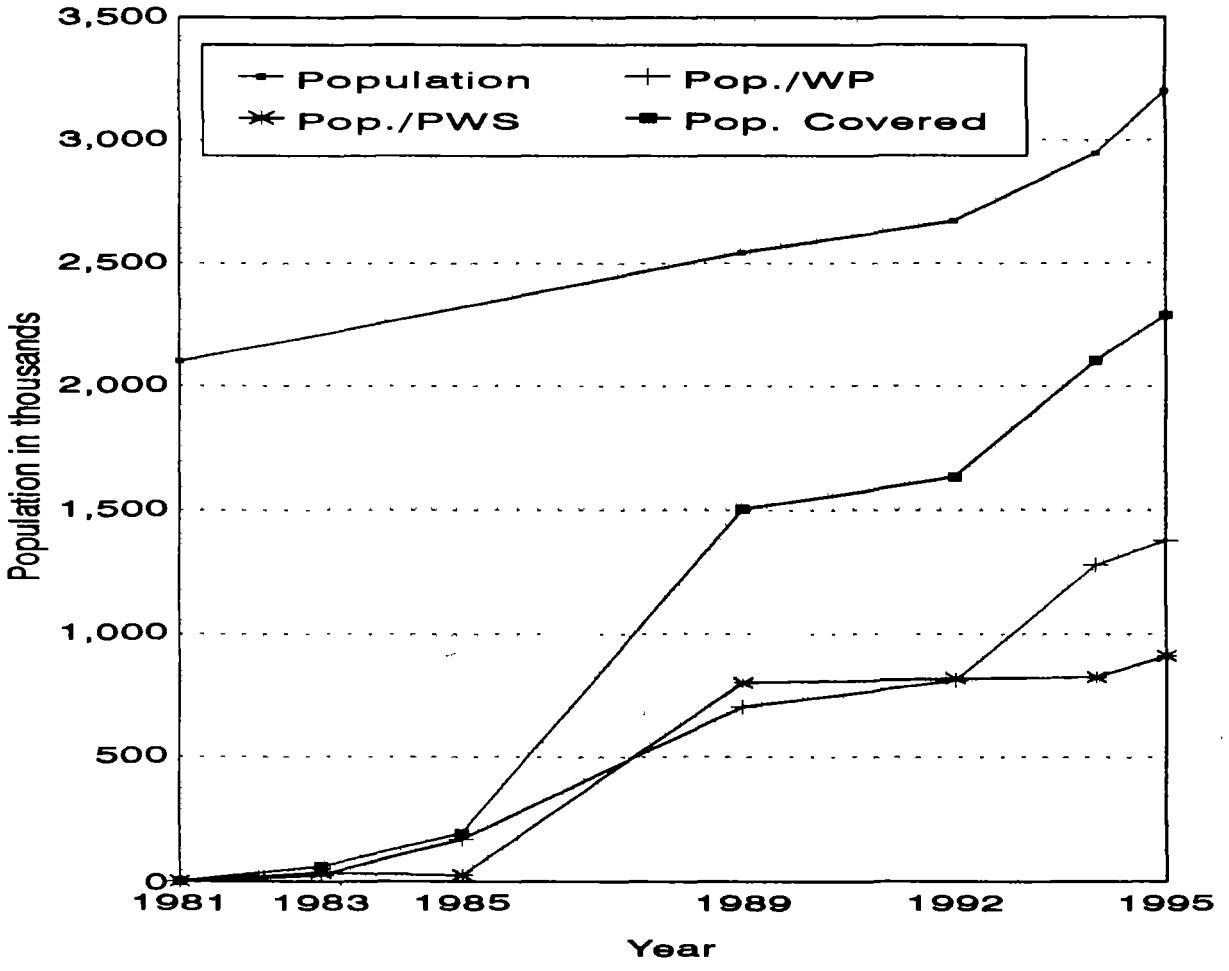


Figure 4.1 Population in Western Province and KFWWSP coverage (1981 - 1995)

4.2 Development of water supplies

4.2.1 Development of piped water supplies

Piped water supplies from Phase III

Three water supplies, namely Soy, Chavavo-Mahanga and Muchi-Milo were completed and handed over to the beneficiaries. Madzuu infiltration well was constructed as an alternative source to serve Madzuu Girls Secondary School (Mudavadi Girls) within the Chavavo-Mahanga area where a borehole (dry) option could not work.

(I) **Soy**

- A full treatment plant comprising 13.5 m^3/hr composite filtration unit
- chlorine and alum dosing equipment mixing chamber
- 50 m^3 clear water tank
- rehabilitation of pump house
- installation of two high lift pump and low lift pump
- testing and repair of the existing rising main for a total length of 2km, repair of the existing 135m^3 ground masonry tank, 1 office/ store block
- 25cm^3 backwash tank, fencing works
- installation of 15 km pipeline ranging from ϕ 160 mm to ϕ 63 mm pipes including 32Nº valve chamber construction.
- The water supply presently serves 10,000 persons. The source of water is River Sergoit. The water supply was completed and handed over in November 1994 to Soy Water Management Committee.

(II) **Chavavo-Mahanga**

- Construction of 3 springs
- Laying of 300m of pipeline
- Rehabilitation of existing 100m^3 ground masonry tank
- Testing and repair of all the existing reticular system of approximate length 3 km.
- Construction of 1 cattle trough and 10 valve chambers
- The population served is 8,000 people
- The water supply was handed over to DWE Vihiga on behalf of the community in November 1994.

(III) **Muchi-Milo**

- Drilling of 1 borehole
- Supply and installation of submersible pump including electrical accessories
- Laying of 200m long rising main and connection to existing Muchi-Milo pipeline
- Construction of 1 power house
- The main electricity service line from the main line to the meter box was the responsibility of DWE - Bungoma
- The water supply was completed and handed over to DWE-Bungoma on October 1994
- Population served: 28,000 people

(IV) **Madzuu Infiltration Wells**

- An infiltration dug well with lateral perforated pipe leading water to it
- An infiltration tube well with screen and graded gravel parking around it
- Two wells were completed and handed over to DWE-Vihiga in October 1994
- Population served: 3,400 people.

Full cost recovery water supply

These were Maseno University borehole, Kibos Salvation Army School, Rang'ala Mission Hospital, Lugulu Mission Hospital, Mululu School, Munana pump installation and Bukura FTC water supplies.

(I) **Maseno University Borehole W/S**

- 2 boreholes drilled
- 2 borehole chamber construction
- 2 gantry installation
- 2 power house construction
- 2 submersible pump installation
- Construction of 460 meters of pipelines to existing storage tanks
- Construction of 2 valve chambers
- Provision and installation of marker post
- Electrical power supply to the borehole including installation of all electrical accessories
- The population served: 2,000 people
- The water supply was completed and handed over to the University Management on May 1993.

(II) **Kibos Salvation Army School for the Blind**

- Drilling and development of one borehole
- borehole chambers construction including installation of gantry bar
- Provision and installation of one submersible pumping unit.
- Electrical works
- Construction of one power house
- Provision of one $10m^3$ elevated steel tank
- Provision and laying of 1 km distribution pipeline
- The source of water is a borehole
- The population served is 1,000 people
- The water supply was completed and handed over to the school in December 1994.

(III) **Rang'ala Mission Hospital**

- Drilling of one borehole
- Construction of one borehole chamber and gantry bar
- Power house construction
- 230 m of pipeline
- Submersible pump installation
- Repair of existing $100m^3$ elevated pressed steel tank to $150m^3$ capacity
- All electricity works

- The population served: 2,600 people
- The source of water is a borehole
- The water supply was completed and handed over to the Mission in July 1994.

(IV) **Lugulu Mission Hospital**

- One borehole drilled
- One chamber and gantry bar
- 200m of raising main pipeline
- Electrical works
- Population served: 750 people
- The water supply was completed an handed over to Mission Hospital in August 1994.

(V) **Mululu School Water Supply**

- One borehole drilled including construction of chamber and gantry bar
- Installation of one single phase pump
- Electricity connection to the borehole and other electrical installation
- Construction of 250m of pipeline
- Installation of 'maji' marker posts and fencing works
- Population served: 1,000 people
- Source of water is a borehole
- The water supply was completed and handed over to the school in October 1994.

(VI) **Munana Pump Installation**

- Rehabilitation of existing pump house
- Installation of one pumping unit
- Electrical works
- Connection to the existing rising main
- Population served: 2,000 people
- Source of water is a dam
- The supply was completed and handed over to DWE - Busia in March 1995.

(VII) **Bukura F.T.C Borehole**

- One borehole chamber construction and gantry bar
- 330 meters of rising main
- Electrical works including control panel
- Connection of $15m^3$ elevated storage tank
- Population served: 1,000 people
- The water supply is connected to existing reticulation system.

MOLRRWD rehabilitated water supplies

(I) **Bungoma Borehole**

- Flushing and cleaning of two boreholes
- Installation of two submersible pumps into the two boreholes
- Construction of two borehole chambers, two gantry bars installation, connection to existing distribution pipelines

- Rehabilitation of existing one pump house and construction of one power house
- Fencing works
- Population served: 7,000 people
- The water supply was completed and handed over to DWE-Bungoma in 1994.

(II) **Port Victoria**

- Renovation of existing pump house
- Renovation of store/office blocks
- Renovation of chamber house
- Construction of one 100m^3 clear water tanks and one 225m^3 main storage tank
- Installation of two high lift pumping units
- Laying of ϕ 150mm rising main, distribution pipelines of different sizes and fencing
- The population covered: 25,070 people
- The source of water is Lake Victoria
- The water supply was completed and handed over to DWE-Busia in April 1995.

(III) **Mbale Water Supply Rehabilitation**

- Construction of a full treatment plant of 120m^3/hr capacity
- Installation of flocculation units
- Construction of sedimentation tank
- Construction of rapid sand filters
- Construction of 90m^3 clear water tank
- Renovation of existing pump house
- installation of one central panel and other electrical works
- The population covered: 82,000 people
- The source of water is River Lunyerere
- The supply was completed and handed over to DEW-Vihiga in May 1995.

(IV) **Busia Show Ground Borehole**

- Drilling and equipping of one borehole
- Installation of one borehole
- Construction of one borehole chamber and power house
- Fencing works
- Provision of central panel and related electrical works
- The population covered: 8,000 people
- The supply was completed and handed over to DWE-Busia in October 1994.

(V) **Lugulu-Malanga**

- Rehabilitation of pump house
- Provision and installation of one engine and pump
- Connection of existing rising main
- The source is a spring
- The population covered: 5,000 people
- The supply was completed handed over to DWE-Busia in May 1995.

(VI) **Budokomi Borehole**

- Drilling of one borehole and equipping with a submersible pump
- Construction of borehole chamber and gantry bar installation
- Provision and laying of 300 meters of pipeline including connection to the existing pipeline
- Construction of power house
- Installation of central panel and related electrical accessories
- Population covered: 3,000 people
- The supply was completed and handed over DWE-Busia May 1995.

Community water supplies under Demand Driven Approach

(I) **Kambiri CWS**

- Construction of intake works
- Construction of five $5m^3$ break pressure tanks
- Construction of three $100m^3$ ground masonry tanks
- Construction of 16 km pipeline of different sizes ranging from ϕ 160mm to 63mm
- Construction of water kiosks by the communities as part of their contribution
- Construction of 40 valve chambers
- The project serves population of 13,000 people
- The supply is 100% gravity.

(II) **Chepkube CWS**

- Construction of intake works
- Construction of 5 break pressure tanks
- Construction of one $100m^3$ ground masonry tank
- Construction of 18 km pipeline of different sizes ranging from ϕ 160mm to 63mm
- Installation of 13 communal stand pipes
- Construction of 18 valve chambers
- The project serves population of 17,000 people
- The supply is 100% gravity.

(III) **Ileho CWS**

- Construction of intake works
- Construction of collection and control chambers
- Construction of one $100m^3$ ground masonry tank
- Construction of 13.5 km pipeline
- Construction of 44 valve chambers
- The project serves population of 10,000 people
- The supply is 100% gravity.

Figure 4.2 Signing of the handing over certificate for Ileho W/Supply

(IV) **Lwakhakha CWS**

- The supply is a gravity one
- The source is combined with Chepkube one
- The supply is 22% completed. The completed structures are:
  - two main storage tanks of 10m^3 capacity and one 50m^3 storage tank
  - five break pressure tanks - hard core filling level
  - pipelines - 18 km done out of planned 27 km.

Original scope of works:

- Construction to completion of two 100m^3 ground masonry storage tank
- Construction of one 50m^3 ground tank
- Construction of five break pressure tanks
- Construction of 27 km of pipelines
- Construction of water kiosks and cattle troughs by the community as part of their 30% community contribution
- Population covered: 30,000 people
- The project to be completed in 1996
- The project was not completed due to lack of funds and missing community contribution of KES 420,000.

Institutional water supplies on 75% category

(I) **Matungu Health Centre**

- Replacement of hand pump with a submersible pump
- Construction of borehole chamber and gantry bar installation
- 500m length pipeline installation
- Installation of 3 stand pipes
- Renovation of existing masonry tank
- Construction of generator house
- Supply and installation of the generator
- Installation of central panel cables to the borehole and other electrical works
- The population covered: 1,000 person
- The supply was constructed to completion and handed over in July 1995.

Table 4.1 shows capital expenditure used for the construction of piped water supplies.

Table 4.1 Capital expenditure for piped water supplies during Phase IV

	Supply	Investment cost (KES)	Consumers served (hd)	Investment per capita (KES/hd)
A	Muchi-Milo	1,500,000	28,000	54
	Chavavo-Mahanga	1,865,001	8,000	233
	Soy	9,300,000	10,000	930
	Madzuu	222,000	3,400	65
B	Kambiri	12,156,596	13,000	935
	Chepkube	11,712,000	17,000	689
	Ileho	9,000,000	10,000	900
C(i)	Mbale	12,366,000	82,000	151
	Port Victoria	7,948,362	25,070	317
C(ii)	Busia Show ground borehole	800,000	8,000	100
	Lugulu Malanga	500,000	5,000	100
	Budokomi	435,996	3,000	145
D	Bungoma borehole	754,040	7,000	108
E	Maseno University BH	1,280,244	2,000	640
	Kibos S A BH	1,214,756	1,000	1,215
	Rang'ala Mission	652,000	2,600	251
	Lugulu Mission	159,000	750	212
	Mululu School	443,250	1,000	444
	Munana	189,000	2,000	95
	Bukura FTC	1,002,175	1,000	1,000
F	Bulimbo School	475,000	1,000	475
	Matungu H/C	780,929	1,000	781
	Total	81,522,349	231,820	352

A – Brought forward from Phase III
B – DDA community piped water supplies
C – (i) Ministry water supplies major rehabilitation
– (ii) Ministry water supplies minor rehabilitation
D – National Water Conservation and Pipeline Corporation W/S
E – Full costs recovery project
F – Institutional water supply (75% category)

hd = head

4.2.2 Development of water points

Legalization of water facilities

Three of the factors that determine communities acceptance and management of water facilities were measured in terms of the consumers ability and willingness to provide free land for facility development and of recognition by the government as self help groups.

Land easement, formation and registration of committees by MOCSS, opening accounts, keeping good records and establishing by-laws were major activities.

As a measure of acceptance, private land where water facilities were to be constructed have to be land eased. However, the land easement is a long procedure, and thus only few easements could be made. Out of 410 land easement planned for the Phase IV, only 154 easements have been registered up to end of 1995. Although the backlog (1,599) from the previous phases were transferred to the respective water boards, very little has been done in this area. Problems of land transfers, inheritance, adjudication, succession etc. continued to hamper easements. A few old water points were handed over to the beneficiaries in 1993.

Spare parts delivery system

During Phase IV the Programme started a spare part distribution system which involved 7 private hardware shops and one women group shop (Mumias Muslim Women Group). Initially the distributors got the spare parts from the Programme and stocked them for sale to the water committees. It was expected that the distributors would be able to buy spares directly from agents or manufacturers once the initial stocks got depleted. There are indications that without further support and strengthening, most of these dealers will give up the business.

Table 4.2 Spare parts delivery system

No	Distributor	Place	District	Sales (KES)	No. of visits
1.	Mumias Muslim Women Group	Mumias Town	Kakamega	8,685.00	10
2.	Nasyanda Shop	Nasyanda Market	Bungoma	357.00	10
3.	Simon Ekeya's Shop	Amukura Market	Busia	2,780 00	10
4	Omena Hardware	Funyula Market	Busia	33,920 00	10
5.	Mayanja Hardware Shop	Mayanja Market	Bungoma	46,965 00	10
6.	Heshima Holding Ltd	Sega	Siaya	2,275.00	10
7	H M Vaghela	Kakamega Town	Kakamega	12,920.00	10
8	Jera Shop	Jera Market	Siaya	11,470.00	10
	TOTAL			119,372 00	80

Table 4.2 shows the sales realized by each of the 8 spare part shops over a period of one year (1995). There is a big variation in the sales amongst the distributors. This mainly resulted from:

(i) Loss of interest in the business by some of the distributors low sales (pumps are still relatively new) and small profit margins (Programme fixed the prices of the spare parts).

(ii) Some of the distributors kept expecting that the Programme was to supply the spare parts once more.
(iii) Some distributors advertised themselves better than others.
(iv) Some distributors stocked high demand spares and only a limited number of pump parts.

A pre-feasibility study on the spare part distribution system was conducted during the 'transition period' and it is expected that the results of the study will form a basis for the next course of action to enhance the spare part distribution system within the Programme area.

World Bank hand pump spare parts components

The following hand-pump components were received from the World Bank for efficiency and durability testing in the field:

- Square and U-seals for Afridev.
- Valve bobbins.
- Fibre rods and centralizers.
- P.V.C pipes for the rising main with stainless steel couplings.

These components were installed in December, 1994 and monthly performance monitoring was very successful. It was observed that the fibre rods were very efficient. No breakage occurred. However, rod centralizer seats wore out quickly and became loose. They wore out within three months subjecting the rod to inevitable friction during operation.

Observation revealed that square and U-Seals have operational life span of about four months. Both valve bobbins and plastic rising mains were found satisfactory, although the latter was just installed in April 1995.

The field testing of the components was quite successful and it is proposed that it should continue during the next Programme for a decisive performance and efficiency conclusion.

Kenya-Finland Primary Health Care Programme sponsored water points

The Programme successfully undertook upgrading and construction works for Kenya-Finland Primary Health Care Programme water points. Table 4.3 shows the completed 18 water points while Figure 4.3 shows the commissioning ceremony of Matungu Health Centre Water Supply.

The projects were sponsored by the KFPHCP for health facilities. Some of the water points proposed for construction were not implemented, since in some cases the hydro-geological investigations gave negative results for ground water occurrence, and some required high financial costs which KFPHCP did not budget for. However, when possible, other water supply sources were considered for these health institutions.

Table 4.3 KFPHCP water points completed 1993 - 1995

No	Name	District	Type	Category
1	Lumakanda Health Centre	Kakamega	Dugwell	75%
2	Shamakhubu Health Centre	Kakamega	Dugwell	75%
3	Matungu Health Centre	Kakamega	Pipeline	75%
4	Shibwe Health Centre	Kakamega	Dugwell	75%
5	Lunganyiro Health Centre	Kakamega	Dugwell	75%
6	Bulondo Dispensary	Bungoma	Dugwell	75%
7	Kaptanai Dispensary	Bungoma	Pipeline	75%
8	Muchimeru Dispensary	Bungoma	Dugwell	75%
9	Tongaren Health Centre	Bungoma	Borehole	75%
10	Amukura Health Centre	Busia	Pipeline	75%
11	Funyula Health Centre	Busia	Pipeline	75%
12	Lugulu Malanga Health Centre	Busia	Pipeline	75%
13	Lukolis Health Centre	Busia	Pipeline	75%
14	Ndalu Health Centre	Busia	Borehole	75%
15	Kocholia Health Centre	Busia	Dugwell	75%
16	Shiru Health Centre	Vihiga	Dugwell	75%
17	Tigoi Health Centre	Vihiga	Borehole	75%. Dry borehole
18	Kilingili	Vihiga	Borehole	75%

Figure 4.3 Commissioning of Matungu Health Centre Water Supply

Mukumu Mission sponsored water points

Mukumu Mission Hospital sponsored construction of 55 water points (springs) for Isukha community in Kakamega District under the DDA.

A high demand for the water point construction was clearly observed during the DDA when the Programme subsidized the cost under 25% category. There was a decline in 1995 as evident in 425 applications received compared to 1015 in 1994. This was due to withdrawal of subsidy in 1995. 22 borehole drilling invoices were prepared under direct cost (DC) 100% category payable to the Provincial Water Engineer for implementation. The highest percentage of invoices paid were prepared under the 25% category.

461 water points were constructed to completion including 20 boreholes drilled (15 were successful while 5 failed) outside the Programme area. Out of the 441 implemented within Western Province, 1 borehole and 6 dugwells failed (1.6%).

Table 4.4 shows comparison of the yearly DDA completed water points from May, 1993 to December, 1995 and the type of DDA water points.

Table 4.4 Completed water points under DDA (May 1993 - December, 1995)

District	Number of water points						
	1993	1994	1995	Total			
				Boreholes	Dugwells	Springs	Total
Kakamega	4	63	72	6	58	72	136
Bungoma	2	45	54	13	72	18	103
Mt Elgon	-	27	46	0	0	73	73
Busia	2	25	33	10	42	7	59
Vihiga	5	28	35	6	29	35	70
Outside KFWWSP area	7	5	8	20	0	0	20
Total	20	193	248	55	201	205	461

Table 4.5 shows the summary of all water points constructed in Western Province by KFWWSP up to the end of 1995. 2,703 water points were constructed earlier under SDA and are operational. 434 operational water points were constructed by the end of 1995 under the DDA Programme. Hence total number of operational water points constructed in Western Province is 3,137. 447 water points were implemented in Siaya District through SDA in earlier phases of the Programme.

Table 4.5 Water points constructed by KFWWSP in Western Province

District	Bungoma		Busia		Kakamega		Vihiga		Mt. Elgon		Total
Water Points	Old WPs	DDA WPs	Old WPs	DDA WPs	Old WPs	DDA WPs	Old WPs	DDA WPs	Old WPs	DDA WPs	
Springs	124	18	219	7	588	72	-	35	55	73	1,191
Dugwells	166	72	288	42	432	58	3	29	6	-	1,096
Boreholes	137	13	309	10	364	6	2	6	10	-	857
	427	103	816	59	1,384	136	5	70	71	73	
Total	**530**		**875**		**1,520**		**75**		**144**		**3,144**

Table 4.6 shows the cost of water point construction and average community contribution.

Table 4.6 Average cost of developing a water point and average community contribution

Water point	Average cost (KES)	Community contribution (KES)			
Borehole	480,000	Labour		7,000	
		Material		5,000	
		Cash		108,000	
			Total	120,000	25%
Dugwell	153,000	Labour		7,500	
		Material		10,000	
		Cash		20,750	
			Total	38,250	25%
Spring	52,000	Labour		2,000	
		Material		6,000	
		Cash		5,000	
			Total	13,000	25%

4.3 Water Supply Development Plans

4.3.1 Water Supply Development Plan for Vihiga District

The Water Supply Development Plan (WSDP) for Vihiga District was completed in 1994. The plan was printed in two volumes. Volume I includes the main text, and Volume II includes the annexes. The WSDP was done as water sector input to the District Development Plan (DDP) and will be the guideline for the development of water resources in the district. The emphasis in the plan is on community participation at all stages of water supply development. This is essential in order to ensure acceptance of the supplies as their own. Social-economic factors have been considered in the WSDP to ensure affordability and sustainability of the various kinds of water supplies.

The WSDP is based on the knowledge of water resources and on the existing situation in the area. The plan includes all rural and urban areas and covers the period from 1993 to 2013. It

shows the implementation schedule and gives priorities that have been determined according to population density and the present water supply coverage.

4.3.2 Updating of Water Supply Development Plan for Western Province

Updating of Water Supply Development Plan for Western Province was to be carried out by the Provincial Water Engineer's Office (PWEO). Draft reports have been received from the districts by the Provincial Water Engineer.

4.4 Planning and design

4.4.1 Feasibility studies

The feasibility studies done during Phase IV were completed in 1994. A total of eight feasibility studies were done out of the fourteen that had been planned for. Several other minor studies from upgrading boreholes to small piped supplies and rehabilitation/augmentation were carried out. The eight main feasibility studies carried out are the following;

- Port Victoria
- Little Nzoia
- Kaimosi rehabilitation
- Mwiruti
- Lwakhakha
- Mbale rehabilitation
- Busia Hills rehabilitation
- Lumakanda

4.4.2 Design reports

Two main design reports were completed during Phase IV. These are Ileho and Lwakhakha. There were several other minor designs for small supplies including minor rehabilitation and augmentation works.

4.5 Management support for water supplies

4.5.1 Decision Support System for MOLRRWD

The Decision Support System (DSS) plays a critical role in planning, financing, building and operating and maintaining a water supply system.

The DSS was completed during 1995 to aid and facilitate the decision making process for both ministry (MWS) and community managed water supplies (CWS). Copies of the DSS were sent to all the DWEs and CWSs within the programme area for this purpose. In addition workshops were conducted on the use of the DSS as shown in Table 4.7.

Table 4.7 DSS training

Date	Type of workshop	Target group	Venue	Participants (Nº)
5/4/95	Management by Result (MBR) and Decision Support System	PWE,DWEs, Heads of O & M	KFPHCP	20
9/10/95-14/10/95	Use of DSS, Organization charts, tariff setting, UWUA	Chairmen and Scheme Managers of CWS	Busia FTC	18
16/10/95-19/10/95	Use of DSS, Organization charts, tariff setting, UWUA	Chairmen and Scheme Managers	Busia FTC	20

A total of 58 people were trained on the use of DSS during 1995.

The Decision Support System developed by the KFWWSP comprises of the following three manuals:

1. Management Information System manual (MIS);
2. Water supply system operational management manual (WASSOMA); and
3. Decision support system for piped water supplies performance improvement (DSS).

The MIS manual was completed in January 1994, and distributed to the PWEO and DWEOs in February 1994. The objective of the MIS manual is to collect and store all relevant data (water resources and quality, water supply situation, operational data of piped water supplies, materials management, vehicles and machinery, community involvement, institutional and human resources development, and finance, budgeting and cost control) related to development and management of water supplies in the Programme area. The collection and storing of information will be done for the further analysis required for decision making. It indicates the flow of the required information and gives guidelines for data processing. It has been tested and used both for the Programme and DWEO activities.

The water supply system operational management manual (WASSOMA) was compiled in December 1994, and distributed to DWEOs. It covers the following seven key topics in water supplies management:

1. Management of water works;
2. Water sources and treatment works;
3. Water pumps and driving motors manual;
4. Pipeline and system appurtenances;
5. Water meters manual;
6. Water rates manual; and
7. Purchasing & storing manual

The decision support system for piped water supplies performance (DSS) improvement manual was developed as a complementary guideline for the MIS and WASSOMA manuals. The DSS manual was completed in December 1994, and distributed to DWEOs in January 1995. The aim of the decision support system is to give guidelines which could be further modified and developed by those involved in the performance improvement for water supply programmes in the districts. The objective of this manual is to improve the life-cycle management through

using a decision support system. The DDS is the system that organizes the processing, analyzing, and delivering of information that is necessary for decision making (Figure 4.4). The DSS includes performance auditing reports (management information reports), measures and indicators for operations and maintenance, and financial management. The manual also covers how to implement a performance-improvement process.

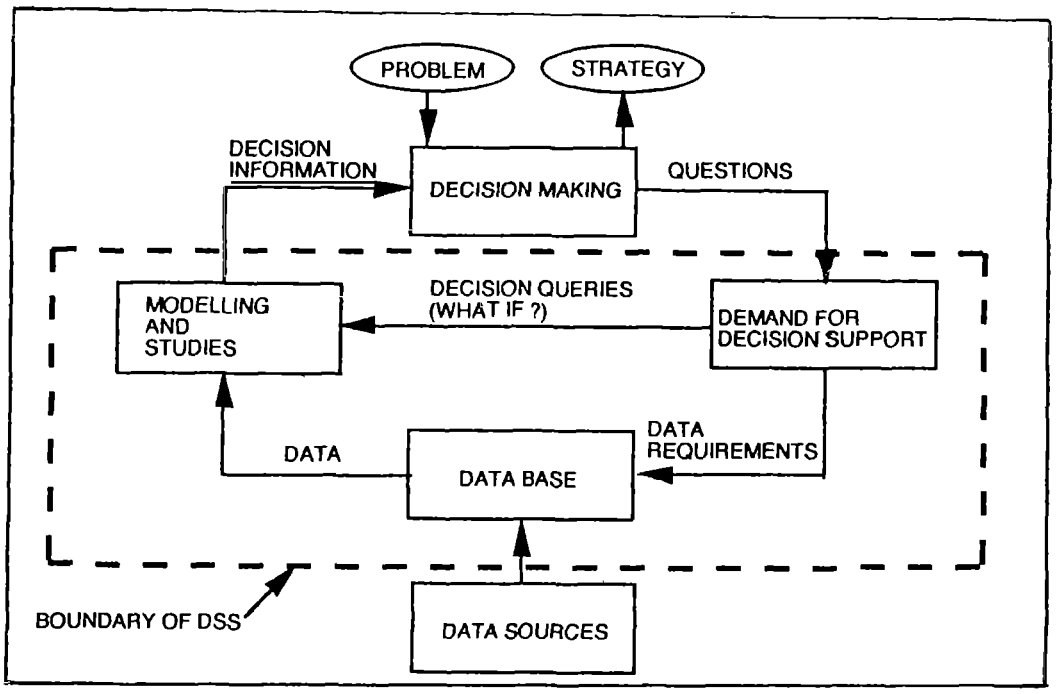


Figure 4.4 Activities of the decision support system

These manuals complement other manuals developed by the Kenya-Finland Western Water Supply Programme, especially the O&M manuals for piped water supplies, and the Demand Driven Approach Information Package Volumes I — VIII. The manuals were used in further development of existing water supplies information management and performance management monitoring during Phase IV of the Kenya-Finland Western Water Supply Programme. The DSS manual were also used in Management By Results-training for the DWEOs.

4.5.2 Decision Support System for community water supply management

A decision support system manual for community water supplies was developed in April 1995. It is a simplified version of the MOLRRWD DSS manual. It contains the following: decision support system; information management for decision support; elements of viable community water system management; and performance management monitoring.

4.5.3 Guidelines for capital costs and depreciation of fixed assets in water supply systems

The guidelines for capital costs and depreciation of fixed assets in water supply systems were prepared in August 1995 to improve financial management of piped water supplies. These guidelines define the following: the field of application and fundamental concepts for calculation of capital costs and depreciation of fixed assets; the methods for calculation of capital costs and depreciation of fixed assets; and accounting of capital costs.

4.5.4 Institutional and management options for Kenyan water supplies

The report on institutional and management options for Kenyan water supplies was prepared in October 1995. This study gives an overview of the water sector in Kenya, and discusses various institutional and management options that have been or are currently being introduced all over the world in water industry. The options according to ownership and operational management are classified as follows: public ownership and public operation; public ownership and private operation; private ownership and private operation; and community and user provision.

4.5.5 Model by-laws for water user association

The model by-laws for water user association was prepared in May 1995. The objective of these model by-laws is to give guidance to the members and leaders of community water supplies regarding the management of such supplies. They define the following: Objective of the association; Membership; Shares; Payment for a share; Connection fee; Additional charge; Member's personal responsibility; Construction of water supply network; Member's obligations; Association meetings; Association general meeting; Call for meeting and other announcements; Board of Directors; Meetings of Board of Directors; Manager; Authority to sign on behalf of association; Fiscal year and closing of accounts; Audit and auditors' report; Liabilities; Transfer of share and right of recipient; Right of assignee of deceased member; Discharge of member; Dissolution of association; Division of assets in dissolution of association; Arbitration; Amending and revoking of by-laws.

4.5.6 Model for code of ethics for water supply employees

The model for code of ethics for water supply employees was developed in August 1995. The aim is to give guidance for general principles of ethics and obligations required from water supply employees.

4.5.7 Management by Result Training

Management by Result (MBR) training was given for the key personnel of the KFWWSP, PWEO and DWEOs. An MBR training expert held a four day seminar in June 1993 and a six day seminar on the principles of MBR in February-March 1994. The MBR workshops were held in March and October 1995. The objective of this training was to give the key personnel an advanced management tool that could be used in the performance improvement of water supplies development and management, and in the planning of the key activities in the PWEO and in the DWEOs in Western Province.

In the October workshop, the DWEOs presented how they had used the MBR in their respective districts for the fiscal year 1995/96.

4.5.8 Establishment of umbrella water user's association

The Union of Western Kenya Water Associations (UWKWA) was formed in November 1995 with the aim of giving technical and financial management assistance to the member CWS. Through this union, it is expected that there will be sharing of knowledge and pooling of resources which will enhance sustainability of community water supplies.

Activities of the union will include monitoring, collection, analysis and dissemination of information regarding community water supplies. Assistance in form of loans based on shares will also be given by UWKWA to enable emergency repairs of member water supplies.

4.5.9 Handing over of MWS to consumers

A total of 16 MWS were proposed for handing over to the consumers to operate and maintain. The proposed water supplies were as follows:

Bungoma District

- Chwele water supply
- Old Kibichori water supply
- Muchi-Milo water supply

Kakamega District

- Butere water supply
- Malava water supply
- Lumakanda water supply

Vihiga District

- Hamisi water supply
- Chavavo-Mahanga water supply
- Sosiani water supply
- Vihiga water supply

Busia District

- Busia Hills water supply
- Amagoro water supply
- Munana water supply
- Wakhungu water supply
- Sio Port water supply

The handing over process will be pursued during the next Programme.

4.6 Transfer Plan

One of the main targets of the Programme was that all activities related to regional water development and activities under the responsibility of MOLRRWD will be executed through the District Water Engineers Offices (DWEOs) under Provincial Water Engineer's (PWE) control and supervision.

There are also areas where collaboration with other sector partners will be required. Some of the areas include community mobilization which will be spearheaded by the Ministry of Culture and Social Services in collaboration with the provincial administration.

The Transfer Plan which has been prepared to support local authorities to carry out their duties and responsibilities, presents responsibilities of water sector partners, the main activities carried out by the KFWWSP and how they should be integrated into the various organizations. It has been prepared for:

i) "internal use" to summarize water development activities and responsibilities of the parties involved.
ii) the competent authorities to inform them how the responsibilities of the Programme were transferred to the various organizations.
iii) monitoring the activities, duties and responsibilities; and
iv) future planning, (Chapter 4 presents how the Programme finds the water development in Western Province in future).

Transfer of responsibilities and handing over of equipment and machinery to the MOLRRWD, DWEs and PWE started during 1994 and continued up to the end of Phase IV. Handing over certificates have been prepared for all items that have been handed over. The originals have been given to the PWE, respective DWE and the Embassy of Finland, Nairobi. The Transfer Plan gives a comprehensive guideline for the entire transfer process. The Programme has also prepared a tool on how to monitor implementation of the Transfer Plan. Two workshops on monitoring of the Plan have been held.

The Transfer Plan consists of four parts:

i) overall presentation of the KFWWSP, objectives of Phase IV during which the duties and responsibilities were to be transferred.
ii) description of duties and responsibilities of all parties involved.
iii) handing over and disposal of vehicles, tools, equipment, machinery and materials; and
iv) the plan on implementation and financing the water supply development after the Programme has been completed.

"The National Water Policy Paper" on the water development strategy is still under preparation by the MOLRRWD. When the policy has been approved it may affect the development plan proposed by the Programme and the appropriate revisions and amendments, especially regarding Chapter 4, should be done accordingly.

4.7 Financial planning and budgeting in water supplies

The KFWWSP gave training to revenue clerks and/or system managers (Table 4.8) on:

- Role of management committees
- Revenue collection
- Tariff setting
- Book keeping
- Budgeting
- Meetings

Table 4.8 Training on financial management

Date	Venue	Participants (Nº)
21/2/95-3/3/95	Bungoma FTC	12
18/4/94-22/4/95	Busia FTC	18
26/6/95-30/6/95	Kakamega	20

4.8 Mechanical workshop and stores

The Programme fleet availability was on an average of 79% during Phase IV. The targets set for the section were met and exceeded except in the repair of water meters due to non-availability of funds in the year 1995. The meter repair percentage was 72% of the target.

152 technicians were trained in various engineering aspects by the section. The transfer plan has been followed strictly and 51 vehicles, motorbikes, a rig, tractors and trailers have been handed over to MOLRRWD.

The total fleet cost, local procurement and invoicing of other related projects were KES 30.4 million, 18 million and 7.5 million respectively. These costs are in line with the budget estimates for Phase IV. Table 4.9 shows the detailed analysis for the phase, and Table 4.10 shows expenditure and income.

Table 4.9 Activities of mechanical workshop and stores

		May-Dec 1993	Jan-Dec 1994	Jan-Oct 1995	Grand Total Phase IV
1	Fleet Availability	Ab 80%/78% Ab-Above	Ab 75%/76%	Ab 75%/82%	Ab 75%/79%
2	No of new job cards	Cont/1412	Cont/1777	Cont/809	Cont/3998
3.	Water meters repaired, tested and calibrated	400/534	600/449	500/107	1500/1090
4	Water projects: monitored, inspected by mobile teams	Cont/39 Projects	Cont	Cont	Cont
5	Overhauling and repairing pumping sets and maintenance of electrical systems	187/241	280/371	232/172	699/784
6	Supply of tools and spare kits to DWEs.	4/4 Districts	-	-	4/4 Districts
7.	Handed over vehicles, M/bikes,tractors and trailers to MOLRRWD	7 Units	18 Units	26 Units	51 Units

Table 4.10 Expenditure and income - mechanical workshop and stores

Period	Fleet cost (KES)	Local procurement (KES)	Invoicing (KES)
May-Dec, 1993	12,952,690.00	9,150,155.00	2,620,941.00
Jan-Dec, 1994	11,984,198.60	5,777,622.30	2,429,115.60
Jan - Oct, 1995	5,427,152.95	3,090,352.00	2,475,526.40
Total	30,364,041.55	18,018,129.30	7,525,573.00

4.9 Creation of awareness

During the report period 1993-1995, a number of activities were undertaken to fulfil the objectives planned. These included creation of awareness, mobilization and information packages, socio-economic studies, training, monitoring of performance of existing water supplies and water points, transfer of responsibilities and clarification of roles.

To create awareness in water users, water committees, government officers, non governmental organizations, Programme personnel and private sector on their responsibilities, various strategies were employed.

Awareness creation was done due to change of the strategy for the Phase IV. It was important that the beneficiaries were enlightened on the concepts of DDA and already functioning supplies were advised on self reliance and sustainability matters. To achieve the targets, the communities were reached through community preparation meetings.

In 1994 and 1995 the strategy of creating awareness through zonal and tap committees was changed to community preparation meetings at water supplies. This was a better way of discussing and solving water supplies problems, since it only involved the beneficiaries.

In order to reach the target groups and be able to mobilize and involve them in all aspects of their water supply development, several methods were used. These included socio-economic assessments on communities, siting meetings, zonal committee meetings, water point committee meetings and consumers' days. Both extension workers at the grassroots level, the district staff and the programme staff at the provincial level mobilized resources towards meeting this target.

To harmonize information flow regarding the new strategy, eight information packages were developed and distributed to opinion leaders and community members. These provided a whole range of information on the policy issues, steps and stages of community preparation, technological options, guidelines on development and maintenance of CWS, importance of health education, back-up support system, guidelines on O&M and training of user groups and authorities involved.

The number of meetings held for awareness creation decreased as there arose a need to concentrate on particular committees. Therefore activities involving public and activation meetings were minimized. Other related awareness campaigns strategies such as community exchange visits and monitoring and evaluation activities were intensified.

4.9.1 Consumers' (educational) days

The aim of educational days in the piped water systems was to mobilize all the consumers into discussion and making decisions on how to improve the management of the water supply. The Programme, MOLRRWD and all other extension staff in the water supplies area were called upon to facilitate on issues that were seen to foster self-reliance and sustainability of the water supply.

4.9.2 Community exchange visits

Community exchange visit were organized to enhance committees' capability of handling their own water supplies. It was aimed at exposing the management committees to various community self management issues and developing their own management. Due to the expenses involved in the preparation of this activity, visits were made to the existing community water supplies in the programme area, and involved only 14 visits during Phase IV (Table 4.11).

Community exchange visits to water points were introduced towards the end of Phase IV to help enhance awareness of committees on self-help management techniques. It was realized that many water committees were either dormant, had management problems or could not sustain themselves financially. Ten such visits were done on pilot basis to test the effectiveness of the activity. This was found to be more effective than other awareness campaigns. Due to high demand of such visits, ten additional community exchange visits were organized.

Table 4.11 Awareness creation / committee meetings and exchange visits

Year	Committee meetings		Exchange visit old and new	Public meetings	Activation meetings
	Old	New			
1993	204	11	-	1,113	1,088
1994	144	189	-	975	139
1995	132	108	14	-	87
Total	480	308	14	2,088	1,314

4.10 Training

Various forms of training were carried out during Phase IV.

4.10.1 Training of community piped water supplies committees and personnel

Training of the owners in administrative and managerial skills was aimed to enable these supplies reach the desired performance levels. During the period all DDA water supplies constructed had their management committees trained in administrative and managerial skills except Lwakhakha Water Supply.

Skill upgrading for plant operators was done in operations and maintenance aspects by attaching the operators and plumbers to MOLRRWD water supplies, for on-the-job training.

Table 4.12 shows the type of training for management committees and personnel of CWS.

Table 4.12 Type of training for management committee and personnel of CWS

Type of training	Participants (Nº)					
	1993		1994		1995	
	Target	Achieved	Target	Achieved	Target	Achieved
Revenue clerks/Accountants	6	15	12	0	70	50
Training of trainers (DWOs)	28	28	-	-	32	35
MBR (ROMS)	22	28	1 Conf	1 Conf	28	28
Decision Support System	25	0	-	-	58	58
Water Supply Operators	20	23	40	20	10	8
Organization charts and tariff settings	6	7	3	7	38	38

Figure 4.5 Presentation of certificates during a revenue clerks training

4.10.2 Training of water point committees

Each water committee comprises of a chairman, secretary, treasurer and from six to nine committee members. Training of the water committees in operation and maintenance matters continued to enable the owners of water projects manage their facilities efficiently. Table 4.14 shows the numbers of seminars held.

Table 4.13 Training of water point committees

Year	Number of seminars	Attendants		
		Women	Men	WPs
1993	32	627	832	292
1994	75	963	482	289
1995 (DDA)	23	1,328	337	223
Total	145	2,243	1,662	813

Note: * Due to the budget limitations training seminars planned and budgeted for 1995 (old water points) were done together with those planned for the year 1994.

4.10.3 *District and extension personnel training*

During the report period, decentralization of community services and activities were intensified in the districts. The aim was to integrate these activities into the normal development activities thus empowering ministries to continue after the KFWWSP.

By the end of 1994 all district coordinators and surveyors who were directly employed were replaced with ministry personnel from either Ministry of Culture and Social Services (MOCSS) or Water Development Department. In addition the directly employed extension workers were replaced by Community Development Assistants (CDAs) and Adult Education Teachers (AETs) from the MOCSS. Table 4.15 shows their involvement.

The involvement of CDAs and AETs was discontinued at the end of 1994 in accordance with the Transfer Plan. In 1995 very few CDAs and AETs were actively assisting the rural communities in matters related to water development.

To involve extension workers in water development, especially in the DDA strategy, each district had monthly meetings in which the principles of DDA were discussed. A total of 92 meetings were held to train the CDAs / AETs in DDA matters. In addition each district team was monitored to assess its performance.

During the report period, the district personnel and extension workers were trained on SARAR Participatory Methodology to help them to understand and apply the acquired skills to involve the communities effectively in water point management. Table 4.14 shows the training of extension workers.

Table 4.14 Training of extension workers

Year	Nº of extension workers	Type of training and target group	
1993	22	Extension workers (Participatory Skills)	60
1994	92	Extension Workers (Participatory skills)	92
1995	-	Community coordinators (Participatory skills)	14
1993-95	106	EWs + CCs	166

A total of 5 seminars were held for the above training with attendance of 166 personnel. In addition eight personnel at the headquarters were trained on SARAR Methodology for two days.

4.10.4 Training of water points attendants

This was done to reinforce the technical skills of pump and spring attendants. The attendants were trained to repair and carry out preventive maintenance works at their water points. Table 4.15 shows the achievements during the report period.

Table 4.15 Training of water point attendants

Year	Number of seminars	Attendance		
		Men	Women	WPs covered
1993	25	188	842	515
1994	62	326	1,300	813
1995	19	-	404	232
TOTAL	106	514	2,546	1,560

4.11.5 Community training

Community training was done as refresher courses at water point site for some of the water committees which had continued to have managerial and technical problems. This activity was discontinued at the end of 1993. A total of 314 people (180 women and 134 men) attended. The training covered 16 locations. Skill training was conducted for 28 participants in Vihiga district.

4.10.6 Training of MOLRRWD water supplies personnel

The following personnel were trained:

- 23 water meter repairmen
- 14 plant and pump mechanics
- 2 turners
- 51 water supply operators
- 72 meter readers
- 62 revenue clerks/accountants
- 56 line patrollers
- 42 water supply managers

4.10.7 Training of contractors

The Programme continued to use local small scale contractors to carry out repairs and construction works of water points. Skill improvement training was conducted for 13 contractors (10 from Kakamega District and 3 from Vihiga District).

The training approach changed during the year 1995, and directly employed trainers were replaced by local facilitators in the community and relevant ministries with only a Programme coordinator monitoring and controlling the activities. This was to transfer the skills to local trainers.

4.11 Field Investigations

Field Investigation consisted of surveying proposed drilling sites and test pumping of drilled boreholes. Auger drilling was carried out for shallow well survey.

The resistivity method was used to investigate borehole sites unlike in the past when shallow refraction seismic was the main method used. This was because the seismic instrument was out of order most of the time. Also, the electromagnetic method was used to determine fractured zones, particularly in the crystalline rocks. 56 boreholes were drilled out of the 83 sites investigated. The breakdown is shown in Table 4.16.

Table 4.16 Investigated and drilled boreholes

District	1993		1994		1995		Total	
	Inves.	Drilled	Inves.	Drilled	Inves.	Drilled	Inves.	Drilled
Kakamega	-	1	13	3	4	2	17	6
Bungoma	7	3	30	5	6	4	43	12
Busia	3	2	-	5	3	3	6	10
Vihiga	-	2	9	-	6	6	15	8
Outside KFWWSP area	-	9	-	7	2	4	2	20
Total	10	17	52	20	21	19	83	56

Out of 165 sites recommended and test drilled for shallow wells, 138 were successful while 27 were unsuccessful. The breakdown is shown in Table 4.17.

Table 4.17 Investigated and dug shallow wells

District	1993		1994		1995		Total	
	Succ	Unsucc	Succ	Unsucc	Succ	Unsucc	Succ	Unsucc
Kakamega	15	9	16	3	8	-	39	12
Bungoma	1	1	7	-	4	-	12	1
Busia	10	3	27	-	5	1	42	4
Vihiga	11	1	20	9	13	-	44	10
Outside KFWWSP area	-	-	1	-	-	-	1	-
Total	37	14	71	12	30	1	138	27

KEY: Succ= Successful Unsucc = Unsuccessful

To investigate ground water occurrence at normal shallow depths (usually less than 20m) test drilling by hand auger was carried out. A total of 167 sites were investigated using this method and 140 were successful and 27 were unsuccessful. The breakdown is shown in Table 4.18.

Table 4.18 Auger drilled sites

District	1993		1994		1995		Total	
	Succ	Unsucc	Succ	Unsucc	Succ	Unsucc	Succ	Unsucc
Kakamega	15	9	16	3	9	-	40	12
Bungoma	1	1	7	-	3	-	11	1
Busia	10	3	27	-	2	1	39	4
Vihiga	11	1	20	9	18	-	49	10
Outside KFWWSP area	-	-	1	-	-	-	1	-
Total	38	1	71	12	31	1	140	27

KEY: Succ= Successful Unsucc = Unsuccessful

The duration of test pumping depended on the yield of the borehole. Low yielding holes for hand pumps were tested for 6 hours, and high yielding ones for 24 hours. Step-draw-down tests was used to find out the optimum yield of each borehole before performing the 24 hour aquifer test. A total of 46 boreholes were test pumped during Phase IV. A breakdown is shown in Table 4.19.

Table 4.19 Boreholes test pumped

District	1993	1994	1995	Total
Kakamega	_	3	3	6
Bungoma	1	3	8	12
Busia	-	5	4	9
Vihiga	-	-	5	5
Outside KFWWSP area	3	8	3	14
Total	4	19	23	46

4.12 Monitoring of performance of existing water supplies

4.12.1 Piped water supplies monitoring

Water committees for piped water supplies were monitored to establish their performance, managerial and technical functioning. Figure 4.5 shows an inspection team at the intake of one of the gravity schemes.

Figure 4.6 An inspection team at the intake of Ileho Water Supply

(ii) Some of the distributors kept expecting that the Programme was to supply the spare parts once more.
(iii) Some distributors advertised themselves better than others.
(iv) Some distributors stocked high demand spares and only a limited number of pump parts.

A pre-feasibility study on the spare part distribution system was conducted during the 'transition period' and it is expected that the results of the study will form a basis for the next course of action to enhance the spare part distribution system within the Programme area.

World Bank hand pump spare parts components

The following hand-pump components were received from the World Bank for efficiency and durability testing in the field:

- Square and U-seals for Afridev.
- Valve bobbins.
- Fibre rods and centralizers.
- P.V.C pipes for the rising main with stainless steel couplings.

These components were installed in December, 1994 and monthly performance monitoring was very successful. It was observed that the fibre rods were very efficient. No breakage occurred. However, rod centralizer seats wore out quickly and became loose. They wore out within three months subjecting the rod to inevitable friction during operation.

Observation revealed that square and U-Seals have operational life span of about four months. Both valve bobbins and plastic rising mains were found satisfactory, although the latter was just installed in April 1995.

The field testing of the components was quite successful and it is proposed that it should continue during the next Programme for a decisive performance and efficiency conclusion.

Kenya-Finland Primary Health Care Programme sponsored water points

The Programme successfully undertook upgrading and construction works for Kenya-Finland Primary Health Care Programme water points. Table 4.3 shows the completed 18 water points while Figure 4.3 shows the commissioning ceremony of Matungu Health Centre Water Supply.

The projects were sponsored by the KFPHCP for health facilities. Some of the water points proposed for construction were not implemented, since in some cases the hydro-geological investigations gave negative results for ground water occurrence, and some required high financial costs which KFPHCP did not budget for. However, when possible, other water supply sources were considered for these health institutions.

Table 4.3 KFPHCP water points completed 1993 - 1995

No	Name	District	Type	Category
1	Lumakanda Health Centre	Kakamega	Dugwell	75%
2	Shamakhubu Health Centre	Kakamega	Dugwell	75%
3	Matungu Health Centre	Kakamega	Pipeline	75%
4	Shibwe Health Centre	Kakamega	Dugwell	75%
5	Lunganyiro Health Centre	Kakamega	Dugwell	75%
6	Bulondo Dispensary	Bungoma	Dugwell	75%
7	Kaptanai Dispensary	Bungoma	Pipeline	75%
8	Muchimeru Dispensary	Bungoma	Dugwell	75%
9	Tongaren Health Centre	Bungoma	Borehole	75%
10	Amukura Health Centre	Busia	Pipeline	75%
11	Funyula Health Centre	Busia	Pipeline	75%
12	Lugulu Malanga Health Centre	Busia	Pipeline	75%
13	Lukolis Health Centre	Busia	Pipeline	75%
14	Ndalu Health Centre	Busia	Borehole	75%
15	Kocholia Health Centre	Busia	Dugwell	75%
16	Shiru Health Centre	Vihiga	Dugwell	75%
17	Tigoi Health Centre	Vihiga	Borehole	75%, Dry borehole
18	Kilingili	Vihiga	Borehole	75%

Figure 4.3 Commissioning of Matungu Health Centre Water Supply

Mukumu Mission sponsored water points

Mukumu Mission Hospital sponsored construction of 55 water points (springs) for Isukha community in Kakamega District under the DDA.

A high demand for the water point construction was clearly observed during the DDA when the Programme subsidized the cost under 25% category. There was a decline in 1995 as evident in 425 applications received compared to 1015 in 1994. This was due to withdrawal of subsidy in 1995. 22 borehole drilling invoices were prepared under direct cost (DC) 100% category payable to the Provincial Water Engineer for implementation. The highest percentage of invoices paid were prepared under the 25% category.

461 water points were constructed to completion including 20 boreholes drilled (15 were successful while 5 failed) outside the Programme area. Out of the 441 implemented within Western Province, 1 borehole and 6 dugwells failed (1.6%).

Table 4.4 shows comparison of the yearly DDA completed water points from May, 1993 to December, 1995 and the type of DDA water points.

Table 4.4 Completed water points under DDA (May 1993 - December, 1995)

District	Number of water points						
	1993	1994	1995	Total			
				Boreholes	Dugwells	Springs	Total
Kakamega	4	63	72	6	58	72	136
Bungoma	2	45	54	13	72	18	103
Mt. Elgon	-	27	46	0	0	73	73
Busia	2	25	33	10	42	7	59
Vihiga	5	28	35	6	29	35	70
Outside KFWWSP area	7	5	8	20	0	0	20
Total	20	193	248	55	201	205	461

Table 4.5 shows the summary of all water points constructed in Western Province by KFWWSP up to the end of 1995. 2,703 water points were constructed earlier under SDA and are operational. 434 operational water points were constructed by the end of 1995 under the DDA Programme. Hence total number of operational water points constructed in Western Province is 3,137. 447 water points were implemented in Siaya District through SDA in earlier phases of the Programme.

Table 4.5 Water points constructed by KFWWSP in Western Province

District	Bungoma		Busia		Kakamega		Vihiga		Mt. Elgon		Total
Water Points	Old WPs	DDA WPs	Old WPs	DDA WPs	Old WPs	DDA WPs	Old WPs	DDA WPs	Old WPs	DDA WPs	
Springs	124	18	219	7	588	72	-	35	55	73	1,191
Dugwells	166	72	288	42	432	58	3	29	6	-	1,096
Boreholes	137	13	309	10	364	6	2	6	10	-	857
	427	103	816	59	1,384	136	5	70	71	73	
Total	**530**		**875**		**1,520**		**75**		**144**		**3,144**

Table 4.6 shows the cost of water point construction and average community contribution.

Table 4.6 Average cost of developing a water point and average community contribution

Water point	Average cost (KES)	Community contribution (KES)		
Borehole	480,000	Labour	7,000	
		Material	5,000	
		Cash	108,000	
		Total	120,000	25%
Dugwell	153,000	Labour	7,500	
		Material	10,000	
		Cash	20,750	
		Total	38,250	25%
Spring	52,000	Labour	2,000	
		Material	6,000	
		Cash	5,000	
		Total	13,000	25%

4.3 Water Supply Development Plans

4.3.1 Water Supply Development Plan for Vihiga District

The Water Supply Development Plan (WSDP) for Vihiga District was completed in 1994. The plan was printed in two volumes. Volume I includes the main text, and Volume II includes the annexes. The WSDP was done as water sector input to the District Development Plan (DDP) and will be the guideline for the development of water resources in the district. The emphasis in the plan is on community participation at all stages of water supply development. This is essential in order to ensure acceptance of the supplies as their own. Social-economic factors have been considered in the WSDP to ensure affordability and sustainability of the various kinds of water supplies.

The WSDP is based on the knowledge of water resources and on the existing situation in the area. The plan includes all rural and urban areas and covers the period from 1993 to 2013. It

shows the implementation schedule and gives priorities that have been determined according to population density and the present water supply coverage.

4.3.2 Updating of Water Supply Development Plan for Western Province

Updating of Water Supply Development Plan for Western Province was to be carried out by the Provincial Water Engineer's Office (PWEO). Draft reports have been received from the districts by the Provincial Water Engineer.

4.4 Planning and design

4.4.1 Feasibility studies

The feasibility studies done during Phase IV were completed in 1994. A total of eight feasibility studies were done out of the fourteen that had been planned for. Several other minor studies from upgrading boreholes to small piped supplies and rehabilitation/augmentation were carried out. The eight main feasibility studies carried out are the following;

- Port Victoria
- Little Nzoia
- Kaimosi rehabilitation
- Mwiruti
- Lwakhakha
- Mbale rehabilitation
- Busia Hills rehabilitation
- Lumakanda

4.4.2 Design reports

Two main design reports were completed during Phase IV. These are Ileho and Lwakhakha. There were several other minor designs for small supplies including minor rehabilitation and augmentation works.

4.5 Management support for water supplies

4.5.1 Decision Support System for MOLRRWD

The Decision Support System (DSS) plays a critical role in planning, financing, building and operating and maintaining a water supply system.

The DSS was completed during 1995 to aid and facilitate the decision making process for both ministry (MWS) and community managed water supplies (CWS). Copies of the DSS were sent to all the DWEs and CWSs within the programme area for this purpose. In addition workshops were conducted on the use of the DSS as shown in Table 4.7.

Table 4.7 DSS training

Date	Type of workshop	Target group	Venue	Participants (Nº)
5/4/95	Management by Result (MBR) and Decision Support System	PWE,DWEs, Heads of O & M	KFPHCP	20
9/10/95-14/10/95	Use of DSS, Organization charts, tariff setting, UWUA	Chairmen and Scheme Managers of CWS	Busia FTC	18
16/10/95-19/10/95	Use of DSS, Organization charts, tariff setting, UWUA	Chairmen and Scheme Managers	Busia FTC	20

A total of 58 people were trained on the use of DSS during 1995.

The Decision Support System developed by the KFWWSP comprises of the following three manuals:

1. Management Information System manual (MIS);
2. Water supply system operational management manual (WASSOMA); and
3. Decision support system for piped water supplies performance improvement (DSS).

The MIS manual was completed in January 1994, and distributed to the PWEO and DWEOs in February 1994. The objective of the MIS manual is to collect and store all relevant data (water resources and quality, water supply situation, operational data of piped water supplies, materials management, vehicles and machinery, community involvement, institutional and human resources development, and finance, budgeting and cost control) related to development and management of water supplies in the Programme area. The collection and storing of information will be done for the further analysis required for decision making. It indicates the flow of the required information and gives guidelines for data processing. It has been tested and used both for the Programme and DWEO activities.

The water supply system operational management manual (WASSOMA) was compiled in December 1994, and distributed to DWEOs. It covers the following seven key topics in water supplies management:

1. Management of water works;
2. Water sources and treatment works;
3. Water pumps and driving motors manual;
4. Pipeline and system appurtenances;
5. Water meters manual;
6. Water rates manual; and
7. Purchasing & storing manual

The decision support system for piped water supplies performance (DSS) improvement manual was developed as a complementary guideline for the MIS and WASSOMA manuals. The DSS manual was completed in December 1994, and distributed to DWEOs in January 1995. The aim of the decision support system is to give guidelines which could be further modified and developed by those involved in the performance improvement for water supply programmes in the districts. The objective of this manual is to improve the life-cycle management through

using a decision support system. The DDS is the system that organizes the processing, analyzing, and delivering of information that is necessary for decision making (Figure 4.4). The DSS includes performance auditing reports (management information reports), measures and indicators for operations and maintenance, and financial management. The manual also covers how to implement a performance-improvement process.

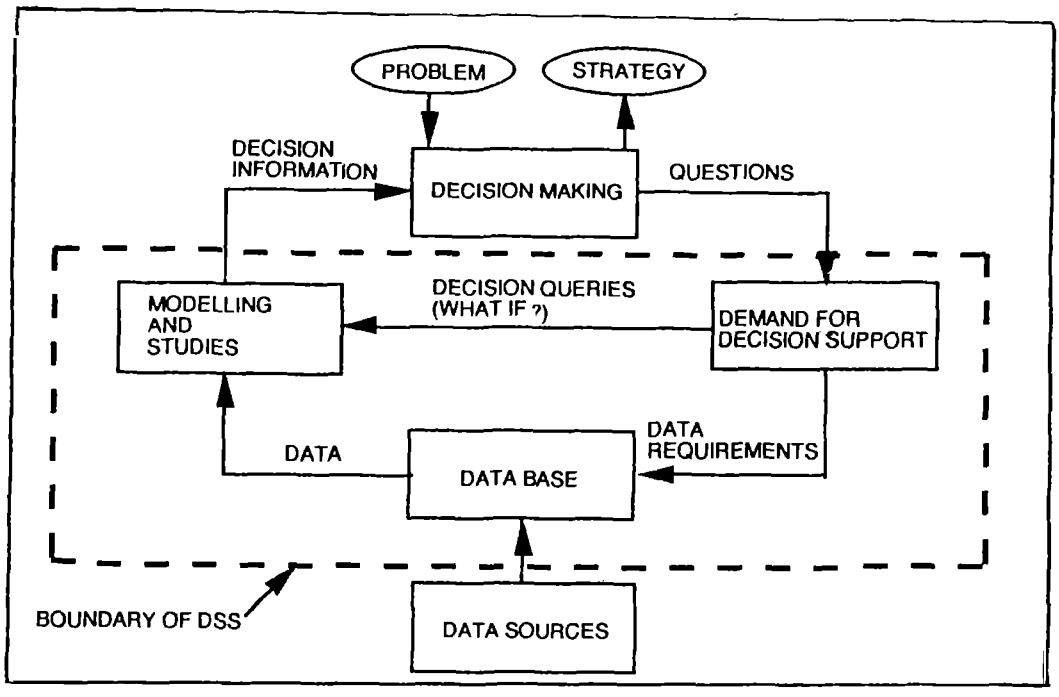


Figure 4.4 Activities of the decision support system

These manuals complement other manuals developed by the Kenya-Finland Western Water Supply Programme, especially the O&M manuals for piped water supplies, and the Demand Driven Approach Information Package Volumes I — VIII. The manuals were used in further development of existing water supplies information management and performance management monitoring during Phase IV of the Kenya-Finland Western Water Supply Programme. The DSS manual were also used in Management By Results-training for the DWEOs.

4.5.2 Decision Support System for community water supply management

A decision support system manual for community water supplies was developed in April 1995. It is a simplified version of the MOLRRWD DSS manual. It contains the following: decision support system; information management for decision support; elements of viable community water system management; and performance management monitoring.

4.5.3 Guidelines for capital costs and depreciation of fixed assets in water supply systems

The guidelines for capital costs and depreciation of fixed assets in water supply systems were prepared in August 1995 to improve financial management of piped water supplies. These guidelines define the following: the field of application and fundamental concepts for calculation of capital costs and depreciation of fixed assets; the methods for calculation of capital costs and depreciation of fixed assets; and accounting of capital costs.

4.5.4 Institutional and management options for Kenyan water supplies

The report on institutional and management options for Kenyan water supplies was prepared in October 1995. This study gives an overview of the water sector in Kenya, and discusses various institutional and management options that have been or are currently being introduced all over the world in water industry. The options according to ownership and operational management are classified as follows: public ownership and public operation; public ownership and private operation; private ownership and private operation; and community and user provision.

4.5.5 Model by-laws for water user association

The model by-laws for water user association was prepared in May 1995. The objective of these model by-laws is to give guidance to the members and leaders of community water supplies regarding the management of such supplies. They define the following: Objective of the association; Membership; Shares; Payment for a share; Connection fee; Additional charge; Member's personal responsibility; Construction of water supply network; Member's obligations; Association meetings; Association general meeting; Call for meeting and other announcements; Board of Directors; Meetings of Board of Directors; Manager; Authority to sign on behalf of association; Fiscal year and closing of accounts; Audit and auditors' report; Liabilities; Transfer of share and right of recipient; Right of assignee of deceased member; Discharge of member; Dissolution of association; Division of assets in dissolution of association; Arbitration; Amending and revoking of by-laws.

4.5.6 Model for code of ethics for water supply employees

The model for code of ethics for water supply employees was developed in August 1995. The aim is to give guidance for general principles of ethics and obligations required from water supply employees.

4.5.7 Management by Result Training

Management by Result (MBR) training was given for the key personnel of the KFWWSP, PWEO and DWEOs. An MBR training expert held a four day seminar in June 1993 and a six day seminar on the principles of MBR in February-March 1994. The MBR workshops were held in March and October 1995. The objective of this training was to give the key personnel an advanced management tool that could be used in the performance improvement of water supplies development and management, and in the planning of the key activities in the PWEO and in the DWEOs in Western Province.

In the October workshop, the DWEOs presented how they had used the MBR in their respective districts for the fiscal year 1995/96.

4.5.8 Establishment of umbrella water user's association

The Union of Western Kenya Water Associations (UWKWA) was formed in November 1995 with the aim of giving technical and financial management assistance to the member CWS. Through this union, it is expected that there will be sharing of knowledge and pooling of resources which will enhance sustainability of community water supplies.

Activities of the union will include monitoring, collection, analysis and dissemination of information regarding community water supplies. Assistance in form of loans based on shares will also be given by UWKWA to enable emergency repairs of member water supplies.

4.5.9 Handing over of MWS to consumers

A total of 16 MWS were proposed for handing over to the consumers to operate and maintain. The proposed water supplies were as follows:

Bungoma District

- Chwele water supply
- Old Kibichori water supply
- Muchi-Milo water supply

Kakamega District

- Butere water supply
- Malava water supply
- Lumakanda water supply

Vihiga District

- Hamisi water supply
- Chavavo-Mahanga water supply
- Sosiani water supply
- Vihiga water supply

Busia District

- Busia Hills water supply
- Amagoro water supply
- Munana water supply
- Wakhungu water supply
- Sio Port water supply

The handing over process will be pursued during the next Programme.

4.6 Transfer Plan

One of the main targets of the Programme was that all activities related to regional water development and activities under the responsibility of MOLRRWD will be executed through the District Water Engineers Offices (DWEOs) under Provincial Water Engineer's (PWE) control and supervision.

There are also areas where collaboration with other sector partners will be required. Some of the areas include community mobilization which will be spearheaded by the Ministry of Culture and Social Services in collaboration with the provincial administration.

The Transfer Plan which has been prepared to support local authorities to carry out their duties and responsibilities, presents responsibilities of water sector partners, the main activities carried out by the KFWWSP and how they should be integrated into the various organizations. It has been prepared for:

i) "internal use" to summarize water development activities and responsibilities of the parties involved.
ii) the competent authorities to inform them how the responsibilities of the Programme were transferred to the various organizations.
iii) monitoring the activities, duties and responsibilities; and
iv) future planning, (Chapter 4 presents how the Programme finds the water development in Western Province in future).

Transfer of responsibilities and handing over of equipment and machinery to the MOLRRWD, DWEs and PWE started during 1994 and continued up to the end of Phase IV. Handing over certificates have been prepared for all items that have been handed over. The originals have been given to the PWE, respective DWE and the Embassy of Finland, Nairobi. The Transfer Plan gives a comprehensive guideline for the entire transfer process. The Programme has also prepared a tool on how to monitor implementation of the Transfer Plan. Two workshops on monitoring of the Plan have been held.

The Transfer Plan consists of four parts:

i) overall presentation of the KFWWSP, objectives of Phase IV during which the duties and responsibilities were to be transferred.
ii) description of duties and responsibilities of all parties involved.
iii) handing over and disposal of vehicles, tools, equipment, machinery and materials; and
iv) the plan on implementation and financing the water supply development after the Programme has been completed.

"The National Water Policy Paper" on the water development strategy is still under preparation by the MOLRRWD. When the policy has been approved it may affect the development plan proposed by the Programme and the appropriate revisions and amendments, especially regarding Chapter 4, should be done accordingly.

4.7 Financial planning and budgeting in water supplies

The KFWWSP gave training to revenue clerks and/or system managers (Table 4.8) on:

- Role of management committees
- Revenue collection
- Tariff setting
- Book keeping
- Budgeting
- Meetings

Table 4.8 Training on financial management

Date	Venue	Participants (Nº)
21/2/95–3/3/95	Bungoma FTC	12
18/4/94–22/4/95	Busia FTC	18
26/6/95–30/6/95	Kakamega	20

4.8 Mechanical workshop and stores

The Programme fleet availability was on an average of 79% during Phase IV. The targets set for the section were met and exceeded except in the repair of water meters due to non-availability of funds in the year 1995. The meter repair percentage was 72% of the target.

152 technicians were trained in various engineering aspects by the section. The transfer plan has been followed strictly and 51 vehicles, motorbikes, a rig, tractors and trailers have been handed over to MOLRRWD.

The total fleet cost, local procurement and invoicing of other related projects were KES 30.4 million, 18 million and 7.5 million respectively. These costs are in line with the budget estimates for Phase IV. Table 4.9 shows the detailed analysis for the phase, and Table 4.10 shows expenditure and income.

Table 4.9 Activities of mechanical workshop and stores

		May-Dec 1993	Jan-Dec 1994	Jan-Oct 1995	Grand Total Phase IV
1	Fleet Availability	Ab 80%/78% Ab-Above	Ab 75%/76%	Ab 75%/82%	Ab 75%/79%
2	No. of new job cards	Cont/1412	Cont/1777	Cont/809	Cont/3998
3.	Water meters repaired, tested and calibrated	400/534	600/449	500/107	1500/1090
4	Water projects: monitored, inspected by mobile teams	Cont/39 Projects	Cont	Cont	Cont
5.	Overhauling and repairing pumping sets and maintenance of electrical systems	187/241	280/371	232/172	699/784
6.	Supply of tools and spare kits to DWEs.	4/4 Districts	-	-	4/4 Districts
7.	Handed over vehicles, M/bikes,tractors and trailers to MOLRRWD	7 Units	18 Units	26 Units	51 Units

Table 4.10 Expenditure and income - mechanical workshop and stores

Period	Fleet cost (KES)	Local procurement (KES)	Invoicing (KES)
May-Dec, 1993	12,952,690.00	9,150,155.00	2,620,941.00
Jan-Dec, 1994	11,984,198.60	5,777,622.30	2,429,115.60
Jan - Oct, 1995	5,427,152.95	3,090,352.00	2,475,526.40
Total	30,364,041.55	18,018,129.30	7,525,573.00

4.9 Creation of awareness

During the report period 1993-1995, a number of activities were undertaken to fulfil the objectives planned. These included creation of awareness, mobilization and information packages, socio-economic studies, training, monitoring of performance of existing water supplies and water points, transfer of responsibilities and clarification of roles.

To create awareness in water users, water committees, government officers, non governmental organizations, Programme personnel and private sector on their responsibilities, various strategies were employed.

Awareness creation was done due to change of the strategy for the Phase IV. It was important that the beneficiaries were enlightened on the concepts of DDA and already functioning supplies were advised on self reliance and sustainability matters. To achieve the targets, the communities were reached through community preparation meetings.

In 1994 and 1995 the strategy of creating awareness through zonal and tap committees was changed to community preparation meetings at water supplies. This was a better way of discussing and solving water supplies problems, since it only involved the beneficiaries.

In order to reach the target groups and be able to mobilize and involve them in all aspects of their water supply development, several methods were used. These included socio-economic assessments on communities, siting meetings, zonal committee meetings, water point committee meetings and consumers' days. Both extension workers at the grassroots level, the district staff and the programme staff at the provincial level mobilized resources towards meeting this target.

To harmonize information flow regarding the new strategy, eight information packages were developed and distributed to opinion leaders and community members. These provided a whole range of information on the policy issues, steps and stages of community preparation, technological options, guidelines on development and maintenance of CWS, importance of health education, back-up support system, guidelines on O&M and training of user groups and authorities involved.

The number of meetings held for awareness creation decreased as there arose a need to concentrate on particular committees. Therefore activities involving public and activation meetings were minimized. Other related awareness campaigns strategies such as community exchange visits and monitoring and evaluation activities were intensified.

4.9.1 Consumers' (educational) days

The aim of educational days in the piped water systems was to mobilize all the consumers into discussion and making decisions on how to improve the management of the water supply. The Programme, MOLRRWD and all other extension staff in the water supplies area were called upon to facilitate on issues that were seen to foster self-reliance and sustainability of the water supply.

4.9.2 Community exchange visits

Community exchange visit were organized to enhance committees' capability of handling their own water supplies. It was aimed at exposing the management committees to various community self management issues and developing their own management. Due to the expenses involved in the preparation of this activity, visits were made to the existing community water supplies in the programme area, and involved only 14 visits during Phase IV (Table 4.11).

Community exchange visits to water points were introduced towards the end of Phase IV to help enhance awareness of committees on self-help management techniques. It was realized that many water committees were either dormant, had management problems or could not sustain themselves financially. Ten such visits were done on pilot basis to test the effectiveness of the activity. This was found to be more effective than other awareness campaigns. Due to high demand of such visits, ten additional community exchange visits were organized.

Table 4.11 Awareness creation / committee meetings and exchange visits

Year	Committee meetings		Exchange visit old and new	Public meetings	Activation meetings
	Old	New			
1993	204	11	-	1,113	1,088
1994	144	189	-	975	139
1995	132	108	14	-	87
Total	480	308	14	2,088	1,314

4.10 Training

Various forms of training were carried out during Phase IV.

4.10.1 Training of community piped water supplies committees and personnel

Training of the owners in administrative and managerial skills was aimed to enable these supplies reach the desired performance levels. During the period all DDA water supplies constructed had their management committees trained in administrative and managerial skills except Lwakhakha Water Supply.

Skill upgrading for plant operators was done in operations and maintenance aspects by attaching the operators and plumbers to MOLRRWD water supplies, for on-the-job training.

Table 4.12 shows the type of training for management committees and personnel of CWS.

Table 4.12 Type of training for management committee and personnel of CWS

Type of training	Participants (Nº)					
	1993		1994		1995	
	Target	Achieved	Target	Achieved	Target	Achieved
Revenue clerks/Accountants	6	15	12	0	70	50
Training of trainers (DWOs)	28	28	-	-	32	35
MBR (ROMS)	22	28	1 Conf	1 Conf	28	28
Decision Support System	25	0	-	-	58	58
Water Supply Operators	20	23	40	20	10	8
Organization charts and tariff settings	6	7	3	7	38	38

Figure 4.5 Presentation of certificates during a revenue clerks training

4.10.2 Training of water point committees

Each water committee comprises of a chairman, secretary, treasurer and from six to nine committee members. Training of the water committees in operation and maintenance matters continued to enable the owners of water projects manage their facilities efficiently. Table 4.14 shows the numbers of seminars held.

Table 4.13 Training of water point committees

Year	Number of seminars	Attendants		
		Women	Men	WPs
1993	32	627	832	292
1994	75	963	482	289
1995 (DDA)	23	1,328	337	223
Total	145	2,243	1,662	813

Note: * Due to the budget limitations training seminars planned and budgeted for 1995 (old water points) were done together with those planned for the year 1994.

4.10.3 District and extension personnel training

During the report period, decentralization of community services and activities were intensified in the districts. The aim was to integrate these activities into the normal development activities thus empowering ministries to continue after the KFWWSP.

By the end of 1994 all district coordinators and surveyors who were directly employed were replaced with ministry personnel from either Ministry of Culture and Social Services (MOCSS) or Water Development Department. In addition the directly employed extension workers were replaced by Community Development Assistants (CDAs) and Adult Education Teachers (AETs) from the MOCSS. Table 4.15 shows their involvement.

The involvement of CDAs and AETs was discontinued at the end of 1994 in accordance with the Transfer Plan. In 1995 very few CDAs and AETs were actively assisting the rural communities in matters related to water development.

To involve extension workers in water development, especially in the DDA strategy, each district had monthly meetings in which the principles of DDA were discussed. A total of 92 meetings were held to train the CDAs / AETs in DDA matters. In addition each district team was monitored to assess its performance.

During the report period, the district personnel and extension workers were trained on SARAR Participatory Methodology to help them to understand and apply the acquired skills to involve the communities effectively in water point management. Table 4.14 shows the training of extension workers.

Table 4.14 Training of extension workers

Year	Nº of extension workers	Type of training and target group	
1993	22	Extension workers (Participatory Skills)	60
1994	92	Extension Workers (Participatory skills)	92
1995	-	Community coordinators (Participatory skills)	14
1993-95	106	EWs + CCs	166

A total of 5 seminars were held for the above training with attendance of 166 personnel. In addition eight personnel at the headquarters were trained on SARAR Methodology for two days.

4.10.4 Training of water points attendants

This was done to reinforce the technical skills of pump and spring attendants. The attendants were trained to repair and carry out preventive maintenance works at their water points. Table 4.15 shows the achievements during the report period.

Table 4.15 Training of water point attendants

Year	Number of seminars	Attendance		
		Men	Women	WPs covered
1993	25	188	842	515
1994	62	326	1,300	813
1995	19	-	404	232
TOTAL	106	514	2,546	1,560

4.11.5 Community training

Community training was done as refresher courses at water point site for some of the water committees which had continued to have managerial and technical problems. This activity was discontinued at the end of 1993. A total of 314 people (180 women and 134 men) attended. The training covered 16 locations. Skill training was conducted for 28 participants in Vihiga district.

4.10.6 Training of MOLRRWD water supplies personnel

The following personnel were trained:

- 23 water meter repairmen
- 14 plant and pump mechanics
- 2 turners
- 51 water supply operators
- 72 meter readers
- 62 revenue clerks/accountants
- 56 line patrollers
- 42 water supply managers

4.10.7 Training of contractors

The Programme continued to use local small scale contractors to carry out repairs and construction works of water points. Skill improvement training was conducted for 13 contractors (10 from Kakamega District and 3 from Vihiga District).

The training approach changed during the year 1995, and directly employed trainers were replaced by local facilitators in the community and relevant ministries with only a Programme coordinator monitoring and controlling the activities. This was to transfer the skills to local trainers.

4.11 Field investigations

Field Investigation consisted of surveying proposed drilling sites and test pumping of drilled boreholes. Auger drilling was carried out for shallow well survey.

The resistivity method was used to investigate borehole sites unlike in the past when shallow refraction seismic was the main method used. This was because the seismic instrument was out of order most of the time. Also, the electromagnetic method was used to determine fractured zones, particularly in the crystalline rocks. 56 boreholes were drilled out of the 83 sites investigated. The breakdown is shown in Table 4.16.

Table 4.16 Investigated and drilled boreholes

District	1993		1994		1995		Total	
	Inves.	Drilled	Inves.	Drilled	Inves.	Drilled	Inves.	Drilled
Kakamega	-	1	13	3	4	2	17	6
Bungoma	7	3	30	5	6	4	43	12
Busia	3	2	-	5	3	3	6	10
Vihiga	-	2	9	-	6	6	15	8
Outside KFWWSP area	-	9	-	7	2	4	2	20
Total	10	17	52	20	21	19	83	56

Out of 165 sites recommended and test drilled for shallow wells, 138 were successful while 27 were unsuccessful. The breakdown is shown in Table 4.17.

Table 4.17 Investigated and dug shallow wells

District	1993		1994		1995		Total	
	Succ	Unsucc	Succ	Unsucc	Succ	Unsucc	Succ	Unsucc
Kakamega	15	9	16	3	8	-	39	12
Bungoma	1	1	7	-	4	-	12	1
Busia	10	3	27	-	5	1	42	4
Vihiga	11	1	20	9	13	-	44	10
Outside KFWWSP area	-	-	1	-	-	-	1	-
Total	37	14	71	12	30	1	138	27

KEY: Succ= Successful Unsucc = Unsuccessful

To investigate ground water occurrence at normal shallow depths (usually less than 20m) test drilling by hand auger was carried out. A total of 167 sites were investigated using this method and 140 were successful and 27 were unsuccessful. The breakdown is shown in Table 4.18.

Table 4.18 Auger drilled sites

District	1993		1994		1995		Total	
	Succ	Unsucc	Succ	Unsucc	Succ	Unsucc	Succ	Unsucc
Kakamega	15	9	16	3	9	-	40	12
Bungoma	1	1	7	-	3	-	11	1
Busia	10	3	27	-	2	1	39	4
Vihiga	11	1	20	9	18	-	49	10
Outside KFWWSP area	-	-	1	-	-	-	1	-
Total	38	1	71	12	31	1	140	27

KEY: Succ= Successful Unsucc = Unsuccessful

The duration of test pumping depended on the yield of the borehole. Low yielding holes for hand pumps were tested for 6 hours, and high yielding ones for 24 hours. Step-draw-down tests was used to find out the optimum yield of each borehole before performing the 24 hour aquifer test. A total of 46 boreholes were test pumped during Phase IV. A breakdown is shown in Table 4.19.

Table 4.19 Boreholes test pumped

District	1993	1994	1995	Total
Kakamega	-	3	3	6
Bungoma	1	3	8	12
Busia	-	5	4	9
Vihiga	-	-	5	5
Outside KFWWSP area	3	8	3	14
Total	4	19	23	46

4.12 Monitoring of performance of existing water supplies

4.12.1 Piped water supplies monitoring

Water committees for piped water supplies were monitored to establish their performance, managerial and technical functioning. Figure 4.5 shows an inspection team at the intake of one of the gravity schemes.

Figure 4.6 An inspection team at the intake of Ileho Water Supply

Community water supplies

The concept of managing water supplies by the community is rather new in Kenya. The challenge is even greater considering that these community water supplies have to be financially sustainable. The advantage, however, is that most of the community water supplies are small and therefore involve low capital costs. If beneficiaries are directly involved in the project from the beginning, there is bound to be more responsible management of the scheme. During 1995, a survey was carried out on CWS. Table 4.20 gives the findings.

Table 4.20 indicates that most of the CWS are in a pathetic situation. Only 7 out of 18 have an average grade of more than 2.5. Tariff levels and other charges, revenue collection, financial management and reporting are the critical problems for most of the facilities. Since most of the systems are new, their condition and service levels are quite good. These aspects may, however, deteriorate very soon if financial management is not improved.

Table 4.20 Community water supplies: performance summary sheet

CWS	Management Committee	Personnel	Financial Management	Revenue Collected	Tariff/ Other Charges	Report	Facility Condition	Operation & Maintenance	Service level & Efficiency	Lack of Political Interference	Total Grade	Average Grade	Remarks
Sigomere	5	5	4	4	3	2	4	4	4	2	37	3 7	Extra Storage tank & Extension Required
Khwisero	3	3	4	4	4	2	4	4	4	4	36	3 6	Extension required, salaries very poor
Maturu Lwandeti	4	4	2	2	0	2	4	3	3	2	27	2 7	Tariffs too low Extra storage required
Kapsokwony	3	3	2	1	1	3	3	3	3	2	23	2.3	More material required, Reduce unpaid bills
Ugunja	4	4	3	3	4	2	4	4	3	3	35	3 5	Slow handing over
Sira Nyawita	3	3	2	2	1	3	4	4	4	3	31	3 1	More storage required and tariff too low
Navakholo	2	2	1	0	1	5	1	2	1	2	13	1.3	Supply not operational
Sio Port	3	2	2	2	1	1	3	2	4	3	23	2.3	Extension required
Chavavo Mahanga	1	1	2	1	0	1	3	2	1	3	15	1.5	Production capacity too low
Kabuchai	0	1	0	0	0	1	1	0	2	1	5	0 5	Extra storage required, new management required
Kutere	1	1	0	0	0	0	2	0	2	0	6	0 6	Mobilization of community required
Soy	3	2	2	2	5	0	3	2	2	3	27	2 7	Alternative source needed
Kambiri	1	2	2	1	0	3	3	1	2	3	18	1.8	No master meters & ball valves
Chepkube	1	2	2	1	0	3	3	1	3	1	14	1 4	No master meters & ball valves
Much Milo	4	2	-	-	-	0	1	-	-	2	11	2.2	Un-operational, community mobilization
Ileho	5	3	3	1	3	2	4	2	4	4	32	3.2	Management training needed
Lwakhakha	4	3	-	-	-	3	1	-	-	1	12	2 4	Incomplete
Ingotse	3	0	-	-	-	3	1	-	-	3	9	1.8	Rehabilitation necessary
Total Grades	50	43	31	24	23	37	49	34	42	42		2.3	
Average Grade	2.8	2 4	2 1	1.6	1 5	2 1	2 7	2.3	2.8	2.3	2.3		

Grades 5 - Excellent 4- Very Good 3- Good 2- Fair 1- Poor 0- Very Poor

4.12.2 Monitoring of water points

Monitoring of water facilities was done in liaison with the community extension workers, location repairmen, MOLRRWD personnel (Table 4.21). The purpose of monitoring was to follow up the operations and functions of the hand pumps and the water committees to ensure sustainability of the water points.

Table 4.21 Community management status for water points

District	Oper. WPs	Reg. WPs	WPs land eased & public	Total WPs not l/eased	WPs with a/ct's	WPs without a/c's	WPs with no good records	WPs without by-laws	WPs with inactive comml.
Kakamega	1,324	1,324	602	722	412	912	662	586	666
Bungoma	457	457	231	226	234	223	308	287	324
Busia	879	879	539	340	313	566	593	542	595
Mt Elgon	79	79	31	48	7	72	63	58	58
Vihiga	5	3	3	1	0	4	4	4	4
Grand total	2,744	2,742	1,406	1,338	966	1,778	1,631	1,478	1,648

Note. 447 water points are in Siaya District.

Towards the end of the Phase IV formation of committees, funds collection, opening of accounts and various income generating activities improved.

Hand pumps monthly inspections and performance efficiency have been very irregular during 1995. Locational repairmen were not willing to do the inspections as they complained of low payment rate. The Programme used to pay KES 10 for every site inspected, but this was stopped in December 1994. Table 4.22 shows the monitored hand pump operations, monthly inspections and repairs in 1995. The operations percentage in this context is the total number of inspections less unrepaired breakdowns divided by the total number of inspections expressed as a percentage.

Table 4.22 Hand pumps operation, monthly inspections, breakdowns and repairs for 1995

Month	Inspections	Break downs	Repairs	Operation (%)
January	Nil	Nil	5	0
February	Nil	Nil	Nil	0
March	Nil	Nil	Nil	0
April	58	11	10	98.3
May	69	Nil	Nil	100
June	185	9	3	96 8
July	156	4	4	100
August	64	7	1	90.6
September	58	4	Nil	93 1
October	10	5	Nil	50
November	-	-	-	-
December	-	-	-	-
Total	600	29	23	99

4.13 Monitoring of water resources

4.13.1 Surface water

Monitoring of the hydrological network continued. A total of 193 discharge measurements and 164 check readings were carried out against the targeted 186 and 276 respectively. Rehabilitation of River Gauging Stations (RGS) was not carried out due to lack of funds. The network requires urgent rehabilitation, if appropriate hydrological data (needed for proper planning of water resources) is to be obtained. The break down of the activities is shown in Table 4.23 while Figure 4.6 shows the exercise of discharge measurements in one of the rivers.

Table 4.23 Monitoring of hydrological network

Activities	1993		1994		1995		Phase IV	
	Tar	Ach	Tar	Ach	Tar	Ach	Tar	Ach
River discharge measurement	60	41	66	60	60	92	186	193
Monitoring of the hydrological network	60	31	120	125	96	164	276	320
Rehabilitation of River Gauging Stations	31	3	28	-	28	-	31	3

KEY Tar = Target Ach = Achieved

Figure 4.7 Discharge measurements in a river using the wading method

4.13.2 Ground water

Ground water monitoring in the Programme was based on a control point network comprising of 12 observation boreholes, 87 hand dug wells and 32 springs. These activities were transferred to the District Water Engineers in 1994.

4.13.3 Water quality

Water quality was monitored by the Provincial (Central) Water Laboratory until 1994 when district water laboratories were established. The water quality monitoring programme had the following objectives which were not fully achieved:

- to act as water quality surveillance programme.
- to be a yard stick in improvement of the Kenya Finland Western Water Programme.
- to provide water quality data for preparation of the water supply development
- to determine suitability of various designs of the water points.

The Programme established district water laboratories in Bungoma, Busia and Vihiga districts after assessment of the existing facilities (i.e infrastructure, personnel and equipment). These laboratories were handed over to the respective District Water Engineers in 1994. Each of the laboratory was equipped with a pH, Turbidity and Conductivity meters, desiccators and a refrigerator except Busia which had an old faulty one.

Apparatus like glassware were also provided. The laboratories are operational apart from Vihiga. They can perform physico-chemical tests, but they were waiting for funds to procure bacteriological and some chemical reagents.

The Programme also continued to maintain the central laboratory until 1994 when it was handed over to the Provincial Water Engineer.

A microscope was stolen and a weighing balance, stirrer and turbidity machine were out of order. The central laboratory is better equipped than the district laboratories and serves Kakamega district as well. It is also the referral centre and training venue for water supplies personnel. The Programme provided each laboratory with 50kg chlorine (TCL) for disinfection of contaminated wells.

The number of samples analyzed in the report period was 1,208. The number tested for bacteriological quality was 649 out of which 461 (71%) were free from contamination. The average water quality data showed that on an average spring water has the best chemical properties and dug well water is the second. The borehole water is bacteriologically the safest and dugwell is the second safest.

The personnel could not effectively monitor the bacteriological quality of both point and piped water supplies due to lack of bacteriological culture media. Advice on remedial measures e.g disinfection of contaminated wells and proper application of chemicals in full treatment water supplies was given when necessary. The section also recommended that all well slabs should be provided with outlets for disinfection purposes. Iron removal study was completed and a draft report compiled.

A summary of bacteriological analysis of water quality is presented in Table 4.24.

Table 4.24 Bacteriological analysis

Faecal Col./100ml	Boreholes		Dugwells		Protected Springs		Piped schemes		PHCP		Total	
	Nº	%	Nº	%	Nº	%	Nº	%	Nº	%	Nº	%
0	41	93.1	87	77.7	68	63	263	69.6	2	28.6	461	71.0
1-10	1	2.3	13	11.6	11	10.2	44	11.6	4	57.1	73	11.2
11-25	1	2.3	2	1.8	3	2.8	18	4.8	1	14.3	25	3.9
26-50	-	-	2	1.8	1	0.9	6	1.6	-	-	9	1.4
> 50	1	2.3	8	7.1	25	23.1	47	12.4	-	-	81	12.5
Total	44	100	112	100	108	100	378	100	7	100	649	100

KEY: PHCP - Kenya Finland Primary Health Care Programme

4.14 Performance of water laboratories

The laboratory in Kakamega was jointly established and run by KFWWSP and MOLRRWD until late 1994, when it was handed over to the Provincial Water Engineer. The handing over greatly affected the smooth running of the laboratory as there were no bacteriological and waste water reagents in the laboratory when it was handed over. These could not be bought by the Ministry since the annual financial allocations had already been made.

The chemicals have been made available at the central laboratory in Nairobi and are awaiting collection. This should guarantee a smooth operation in the future since it would give a basis to start charging for services rendered.

In Busia District, the equipment and apparatus were provided by the Programme for the existing building in the District Headquarters. The District Water Engineer provided the required bacteriological reagents. All physico-chemical tests are carried out except for total hardness and alkalinity, because chemical reagents required have not been provided.

In Bungoma District, the equipment and apparatus were also provided by the Programme for the existing building in the District Headquarters. Chemicals and bacteriological reagents have never been provided. Conductivity, pH, turbidity and residual chlorine were the only tests carried out.

Equipment and apparatus in Vihiga District were provided by the Programme to be installed in one of the water supplies in the district. They are currently in a store at Kaimosi Water Supply awaiting installation.

4.15 Computerization

4.15.1 Water points register

The water points register is a database containing all relevant information of water points. It contains the location, water quality, condition of the structure, pump information (where applicable) and also community participation information. It consists of several database files: springs, shallow wells and boreholes databases. A water points system is used in updating of the water point register. The system produces various kinds of reports.

During Phase IV of the Programme 461 (DDA) water points were added to the register. The total number of water points in the register was 4,202. This database has been handed over to the PWEO.

4.15.2 Water supply register

The water supply register is a database containing information on water supplies and water treatment plants. It consists of several database files.

Water supplies operations and organization charts system

The purpose of this system is to monitor and provide evaluation information on performance of water supplies. The databases in use are operation database and organization charts database. The operation database consists of metered and flat rate connections, chemicals used, revenue collected etc. among others.

Water treatment plant system

The purpose of this system is to maintain database of water treatment plants and devices. It also reports on status of machinery and equipment in these plants. The structure of the databases is presented in Figure 4.7

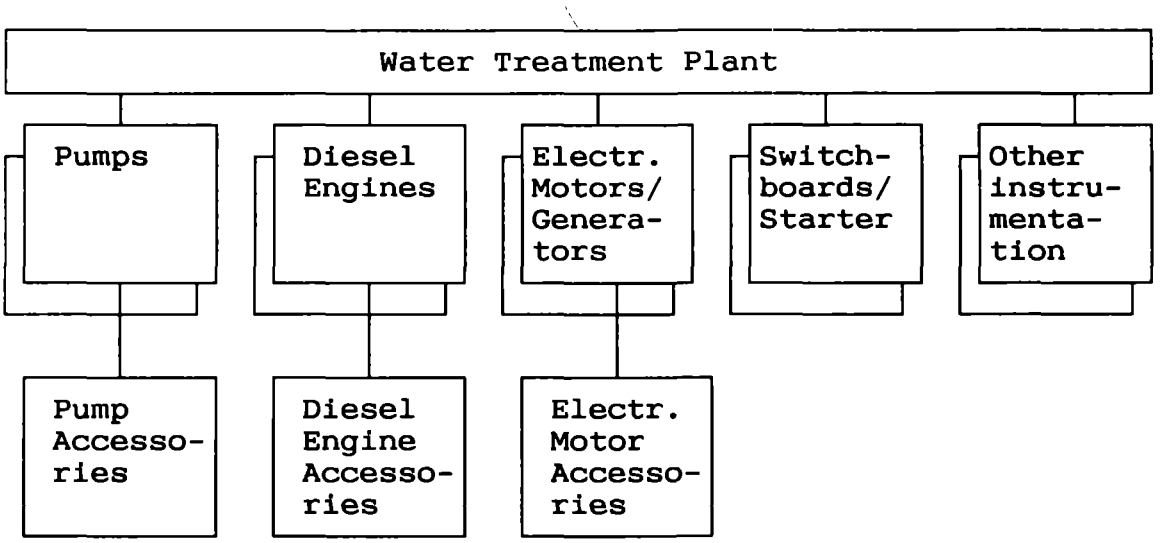


Figure 4.8 Structure of water treatment plants database

4.15.3 Computer hardware and programs

There are 14 commercial programs and 18 applications created by the Programme (Tables 4.25 and 4.26). The computers used in the Programme are old and outdated. Only 13 desktop computers, 2 laptop computers, 1 plotter, 4 laser printers and 10 dot matrix printers were functional.

Table 4.25 Commercial Packages used in the Programme

WordPerfect 5.1	Word processing
Lotus 1-2-3 R 3.1	Tables, calculations and graphics
Harvard Graphics 3.0	Graphics
dBASE IV	Databases and program development
GW BASIC	Plotting program developing
GW1,...GW6	Ground water analysis
Grundfos Caps	Piped System Calculations
GSX-86	Seismic Operations
MS-DOS	Disk Operating System
MS-Mouse	Pointing Device System
GSFSEISMO	Analysis of refraction seismic
TV-menu	System menu
Sidekick	System file and program writing
Norton Utilities 4.5	Extension utilities to DOS
PC Tools 4.0	Extension utilities to DOS
Virus Scan 8.4B89	Anti-virus system
Dr Solomon's Toolkit	Anti-virus system

Table 4.26 Applications created by the Programme

Water Point Register	.....	4000 boreholes, shallow wells & springs
- water points		depth, pump, yield, location, etc.
- water quality samples		
- water committees		
Development Plan - WP	.....	up to the year 2005, sub-location level
Development Plan - Vihiga	.....	up to the year 2013, sub-location level
Water Source Coverage	.....	on sub-location level, 406 sub-locations
Undeveloped Springs	.....	3300 known springs
Water Treatment Plants	.....	100 plants
- pumps		
- electrical motors		
- diesel engines		
Water Treatment Plant Rehabilitation Costs	.....	450 records, sub-location approach
Manpower System	.....	1100 persons
Population Forecast	.....	on sub-location level
Seismic Interpretation	.....	for borehole sitting
Cash Ledger	.....	for reporting and cost control
Invoice Control	.....	LPO's, invoices and payments
Proforma Invoicing	.....	Invoices and payments
Cost Control	.....	budgeting and reporting
Store Control Systems	.....	6700 different items
Vehicle Cost System	.....	DIDC financed vehicles & m-bikes
Well Contractor System	.....	Subcontractors
Payroll	.....	KFWWSP + MoWD + Trainees

4.16 Socio-economic studies

The key objective in the development of sector activities entailed the completion of pending rehabilitation and repairs of piped water systems from the previous phase. Also improvement of O&M and management procedures including financial management and revenue collection for both community and MOLRRWD managed water supplies were to be done.

To ensure the involvement of beneficiaries in development and management of the water supplies, Socio-economic activities were to provide a linkage between the Programme implementors and the benefiting communities. It was necessary to carry out awareness campaigns and socio-economic assessment of communities to determine their socio-economic feasibility. Special studies to define the benefiting communities' needs and remedies were also carried out.

To reach the target groups and to involve them in all aspects of water supply development, several methods were used. These included community preparation meetings, zonal committee meetings, tap committee meetings, consumers' days and study tours exchange visits between different water supplies.

Socio-economic assessments were done to establish the willingness and ability of the communities to have their water facilities implemented under DDA. These assessments were based on the fact that certain communities applied for water and yet they were not able to pay

or delayed the payment. Some community water points were applied by private persons hiding behind the community.

Two socio- economic and ethic studies were carried out to assess the impact of the DDA approach and to recommend measures for improvement, especially in low coverage areas. The findings indicated that the most needy communities never benefitted from the DDA due to time factor and lack of funds.

5 ASSESSMENT OF FULFILMENT OF PROGRAMME OBJECTIVES AND PROSPECTS FOR SUSTAINABILITY

5.1 General

The major deviations have been presented in Chapter 3. The overall assessment is that the Programme has succeeded quite well with a few exceptions mainly due to short implementation period of the Phase IV, shortage of personnel and funds.

The environmental monitoring committee was never constituted. It was said that its stipulated duties were being performed by other government organizations. Rehabilitation of river gauging stations (RGS) was not accomplished due to lack of funds. Current meter gauging and monitoring of the hydrological network improved greatly due to proper transport coordination during the Phase. District laboratories were established in 3 districts. Although they have no reagents, this will enhance water quality monitoring in the long run.

Achievement of Programme objectives by key results is presented in Section 5.2 while prospects for future sustainability of projects are discussed through SWOT analysis in Section 5.3.

5.2 Achievement of objectives by Key Results

Key Result I

Water point training and monitoring targets were over ambitious due to outstanding training from the previous phase. Therefore more than 200 water points and 1 CWS were not trained causing insecurity for operation and maintenance. More training and action based on monitoring results should have been done.

Most of the old water points are still operational (80%) and in good shape. Availability of spare parts has been a problem which has unfortunately not been solved yet. Thefts of hand pumps have also been on the increase and will need attention.

Technical monitoring of water points did not progress very well due to lack of personnel and unwillingness of the repairmen to undertake the works without payment. However, community monitoring and inter-community exchange visits were very successful and helped to make committees to improve their performance in management by sharing information.

Key Result II

Status reports for the water supplies show that the financial sustainability is possible but still need changes in the management structures, the attitudes towards paying for water and follow-up after training.

Technical designs and implementation budgets should be carefully done to avoid unexpected costs and problems in water supply operations as has been the case in a number of water supplies implemented by the Programme.

Key Result III

Through the Transfer Plan the roles and responsibilities of all parties have been well clarified. The personnel of the PWEO and DWEOs have been trained and are capable of carrying out the duties. However, the community activities, monitoring duties and development planning need to be emphasized through logistical support by MOLRRWD.

MBR practice could have been better applied and taken into use. It has been introduced as a management, planning and working tool, but its importance seems not to be fully understood.

The WSDP has not been updated as planned which hampers future water supply improvement and implementation. It should have been updated or modified to correspond to the national water supply policy and to give direction to future implementations.

DDA Community mobilization, participation and contribution in material, labour and cash was very successful and targets were achieved in early 1995, but the duration was too short and there arose confusion for the beneficiaries as the subsidy was discontinued.

Key Result IV

The DDA was successfully introduced and more applications were received than the Programme was able to implement for the subsidized water points. The change in subsidy from 75 % to 0% was too rapid causing a lot of disappointment among the 'slow' communities. The communities were confused when the Programme gave them invoices on full cost recovery after organizing themselves and collecting funds thinking that the subsidy still existed. To introduce and take into use a new approach needs more time than 2.5 years.

Community piped water supplies took off well, but their completion was much slower and more complicated than expected. The issue of how to make a community and a contractor cooperate smoothly still needs to be addressed.

Generally the communities' commitment to their water supplies has been satisfactory. The Programme started to implement Lwakhakha piped water system before the community had met their financial obligations, and the project is still under construction.

5.3 SWOT analysis: Prospects for future sustainability

The Programme has supported development of water supplies in Western Province since 1981. The service coverage of these water supplies was approximately 2.3 million people by the end of the year 1995. The lessons learnt for the sustainable operations of the implemented supplies and the development of the existing and new supplies are discussed through SWOT (Strength-Weaknesses-Opportunities-Threats) analysis.

5.3.1 Strengths

Water point supplies operations

Use of village level operation and maintenance (VLOM) technology and adequate training the communities in terms of both technical and financial management are the major strengths for sustainability in the operation of both water points and piped water supplies

Water supplies development

Adequate local skills, availability of materials and equipment coupled with an enabling policy of the MOLRRWD greatly enhance chances for sustainability in terms of both water points and piped water supplies (both community and ministry) development.

Personnel

There exist experienced staff who can handle responsibilities effectively since the personnel attached to the Programme were drawn from MOLRRWD.

5.3.2 Internal weaknesses

Water supplies operations

Poor revenue collection and financial mismanagement are the strongest weaknesses in operation of both water points and piped water supplies. For water points, this leads to sub-standard maintenance and replacements. In piped water supplies they often fail to implement necessary service line expansions and end up having intermittent and inadequate supply of water. Poor tariff structures and flat rate connections are rampant. In some cases, tariffs are not introduced at all. Personnel are therefore poorly remunerated and often leave in search of 'greener pastures' or they just do not perform well.

Water point supplies development

Consumers are in most cases willing and are able to collect funds for development, but only if there is a subsidy. Lack of subsidy is therefore a problem. In some cases, consumers prefer technologies they cannot afford and therefore end up relying on traditional water sources. Collection of funds for extensions, rehabilitations, replacements or for new piped water supplies is either too slow or quite difficult in most cases. Communities also tend to over rely on the government and other agencies for water supply development. Development of ministry water supplies is mainly hampered by lack of adequate funds to cope with the demand.

Personnel

The future stoppage of most allowances currently applicable could affect personnel morale. Ministry personnel who have not been attached to the Programme have not yet identified the Programme activities as part of the ministry's activities.

5.3.3 Opportunities

Water supplies operations

Awareness of the importance of safe water, acceptability of the concept of a supportive umbrella organization and community willingness to manage their water supplies are notable opportunities for sustainable operations of both point and piped water supplies. Readily available trained water point contractors are an opportunity specific to water points while GOK enabling policy and MOLRRWD positive attitude towards revenue collection improvement the districts will assist in the operation of ministry water supplies.

Water point supplies development

Wide acceptability of the DDA, good reputation of water supply development system in Western Province and the concept of a supportive umbrella organization will go a long way to assist in the development of point and piped water supplies. GOK commitment to provide safe water to its citizens and MOLRRWD positive attitude towards revenue collection improvement the districts will specifically assist in the development of ministry water supplies.

5.3.4 External threats

Water supplies operations

Non-availability of pumps and spare parts, lack of clear policy on water point management and presence of piped water supplies in the vicinity of water points are threats to the operation of water points.

Vandalism of water supplies, unclarified land rights, management committees which are not legal entities, pollution of water sources and external interference are all threats to the operation of both water points and piped community water supplies.

Major threats in piped ministry water supplies include; inadequate institutional framework to support financial self sufficiency, over staffing at the bottom and under staffing at the top level in the water supplies, low salaries and lack of incentives for the staff, lack of powers by field staff to make decisions especially on financial matters and declining water tariffs in relation to operation and maintenance costs.

Water point supplies development

The major threats to water supplies development are, inaccessibility to credit facilities by consumers, lack of clear policy on community water supply development, sub-standard designs and construction works, cumbersome bureaucracy in land easement and persistent need for subsidy.

7 LESSONS LEARNT

7.1 Personnel

The capacity to replicate water development activities exist in Western Province. There was a tendency for personnel (both directly employed and ministry personnel) to view the Programme as performing separate duties from those of the ministry. This misconception created a negative attitude which affected the smooth running of transferred responsibilities as the Programme gradually reduced the directly employed personnel.

7.2 Water point supplies operations

Many clients were enthusiastic in applying for water development but when invoiced they could not pay by the end of the guarantee period, because of their inability to pay the share of contribution and expectation for subsidy. Availability of other water sources (not necessarily safe for drinking) and the programme's rigidity on physical targets also hindered realization of more point source supplies.

Some sponsors and well-to-do people financed community projects which were implemented on their land. In some cases it become difficult for the community to utilize those facilities and this left the community with low spirit, no ownership and leadership problems. As a result of this misuse of the system, the number of beneficiaries per water point has in some cases been reduced from 250 persons to only one family (10-15 persons). The hand dug wells were more prone to this problem mainly due to the convenience with which they can be located within homesteads.

In some cases the implementing officers were partial and had interests in some projects that eroded the element of trust, professionalism, accountability and subsequently led to lack of confidence of the beneficiaries. These challenges showed how important it was to put in place guidelines and precautions prior to the implementation of the new approach (DDA). The introduction of DDA in May, 1993 was both too late in the Programme's duration and too sudden as there was not enough preparation period for change of approach.

NGOs and well-to-do individuals became increasingly interested in supporting vulnerable groups to improve their welfare as the subsidy from the Programme decreased. While this led to a dependency syndrome in some communities, there is hope for communities that are committed to improve their water supply system on DDA sponsorship.

The socio-economic and adhoc studies indicated that the poorest of the poor did not benefit from the DDA as they could not afford to raise their contributions. The approach gave more advantage to a few enlightened individuals and groups who understood the short validity of the proforma invoices.

It has been observed that the more the users the less commitment from the individual consumer towards the operation and maintenance of the water supply (hand pump). More care and consideration is taken in water points run by a family or a few related house holds. This is because the ownership is easily understood in the latter where they feel more privileged with the exclusive use of the facility. However, in the rural community where the coverage is low it would not be logical as the target groups may not be reached. It is only in the pre-urban set

up where families prefer to have their water sources within homesteads for even higher cost. Such communities are involved in using the facility for domestic and extra activities like; vegetable garden irrigation, keeping zero grazing animals, block making and poultry keeping.

7.3 Water point supplies development

The planning stage is very important for attainment of high performance since the beneficiaries identify their priority and thus understand the long term objective of the project. It was observed that most communities were caught unprepared especially during Phase IV. This resulted to many inactive or weak water point committees who either despaired or succumbed to individuals who took their advantage in the name of sponsorship.

The implementation approach of the entire project must be well understood by both the implementing agencies and the users. There were cases were the implementing staff gave contradicting information to the beneficiaries thereby confusing them. In some cases communities showed lack of understanding on their role particularly on the issue of cost sharing and ownership.

Illiteracy though may be a factor of delay in implementation, does not necessarily denote inability to participate in the project's decision making. Where the user committees were given adequate training the sense of ownership and commitment to the O&M of their water facility has been more pronounced regardless of whether they were literate or not.

Training the community members to operate and maintain the water supply and providing them with the necessary tools is a crucial step in ensuring sustainability and continuity of the system. The importance of this should thus be spelt at the initial stages of programme implementation as late introduction has been accepted with some hesitation.

Use of locally available materials and cheaper technological option leads to affordability by the community. Where the type of point source developed needed materials out of reach of the community like screens and casing in the case of borehole or concrete rings for high cost shallow well option, the beneficiaries response was comparatively low.

Change from SDA to DDA was too drastic. It was difficult to change communities' attitude from free water to cost sharing. The 'transition' period should have been longer to give communities adequate time to adapt to the new situation. In fact it came as shock to most of the communities and as a result only 20 water points were implemented in the first 8 months of introduction of the approach.

Validity of the DDA proforma invoices was extended from 30 days to 60 days. Even the 60 days seemed too short for the community to collect funds, but on the other hand it could not be longer due to change of prices. To update the invoice confuses the community. The changes also gave some expectations that there might be further extensions of the payment period.

7.4 Community water supplies development

Implementation of community water supplies was slow, but when communities were fully involved in planning they attained a sense of ownership and self reliance as opposed to public water supplies. For smooth implementation the beneficiaries should be fully aware of their contribution and all the steps to be taken in order to follow implementation agreement. This helps in building a sense of willingness and commitment to perform their tasks otherwise they tend to be slow and fail to actively participate.

External influence may affect the progress of the community effort towards projects because of reliance on the government to provide services. Politicians misunderstanding the implementation strategy and giving misleading or false promises delay implementation. Poor workmanship causes delay in the taking over process.

7.5 Community water supplies operations

It has been difficult to change implementation committees to management committees. They have become powerful and influential and this affect the performance of the project negatively, since the constitutions are ignored and decisions manipulated by leaders. Training the community members to operate and maintain the water supply and providing them with the necessary tools is a crucial step in ensuring sustainability and continuity of the system. The overall cost of maintaining water source/supply is reduced if it is undertaken by the community themselves. Theft, vandalism and "Mali ya Uma" (public utility) attitude is reduced in community water supplies and thus reduce running costs as well as increases the life of the system.

Studies carried out in community water supplies indicated that most water supplies collected revenue that covered their running costs whereas a few made losses and no expansion took place since they took over the supplies. Personnel is often poorly paid, and this causes poor performance. Cooperation between the community, working in 'harambee' spirit, and a profit making contractor has proved difficult. Three different models have been tested but a solution has not been found.

7.6 MOLRRWD piped water supplies operations

It has been observed that with proper staffing and efficient revenue collection, most of the Ministry water supplies would be self sustaining. As indicated in Table 7.1, it is clear that the operating income does not cover operating expenditures. There are cases where the collected revenue is less than 2% of the estimated revenue. Revenue collection seems to be poor because among other factors, the communities expect free services from the government. However, there is high potential to increase revenue if billing and collection performance is improved, and meter programs executed properly as required.

Technical performance is generally poor. Plant capacities do not meet present demands and O&M costs are always high. There is a general trend of employees absenteeism in the treatment works. With the high rate of population growth, supply areas require extensions and consequently increased production capacities. However, the quality of water supplied is generally good especially if operated as stipulated in the operators' guideline manuals.

The importance of record keeping and monthly reporting seems not to be understood. The water supplies are sometimes exposed to insecurity due to the misconception of 'Mali ya Uma' attitude by the public.

Table 7.1 Financial performance of selected water supplies in Western Province

Name of Supply	Billed revenue % of operating expenditure	Collected revenue % of operating expenditure	Collected revenue % of billed revenue	Billed revenue % of estimated revenue	Collected revenue % of estimated revenue	Operating expenditure % of estimated revenue
Chwele*	19	6	31	6	2	29
Maseno*	17	17	92	6	6	39
Mumias*	72	65	90	59	59	82
Chesikaki*	NA	27	NA	NA	1	4
Busia Mundika*	30	29	97	30	29	101
Busia District 1994	42	32	77	14	11	34

* January—July 1995

7.7 MOLRRWD piped water supplies development

The Feasibility studies and design reports have not always been up to the expected quality. Communities are not sometimes involved in selecting technology and source of water supplies. In most cases, the sources are far from consumers because the expected output is high. Consequently the water supplies are usually large with an overstretched supply area, which does not meet the demand of the intended beneficiaries.

Most water supplies are full treatment thus making high capital cost and require use of sophisticated equipment. The pre-qualification requirements by MOLRRWD for Mbale contract may have increased the costs but may have improved the quality of workmanship. Implementation generally has been relatively fast and workmanship has been of acceptable standards.

The Local component funds should have been channelled through the Programme for the development of new facilities.

8 RECOMMENDATIONS

8.1 General

- Water quality monitoring for both point and piped water supplies should be a continuous and routine exercise integrated into operation and maintenance activities to avoid possible contamination of the water sources. Funding for this activity should be generated from the consumers.

8.2 Water point supplies operations

- Development of a revolving fund to support the spare part delivery system or government subsidy in terms of waving duties on pump spare parts, should be considered for continuity of the projects.
- The 'jua kali' artisans should be encouraged to improve on quality to avoid side effects to other hand pump components.
- Spare parts distribution system may be further improved if provision is made to stock the spare parts locally and assist the dealers to procure them for sale

8.3 Water point supplies development

- Land easement of the source of a water supply if not on public land should be acquired before the project is started as "letters of no objections" have proved to be inadequate in legal land cases.
- Communities should be involved at the planning stage of the project so that;
  - their own talents are utilized, traditions, taboos and cultural practice of the particular community are considered.
  - different technological options are considered with the view to adopt the most appropriate and cost effective ones with room for future change (adaptability).
- The water project should be linked with other needs of the community like health, agriculture, education, sanitation etc and should never be undertaken in isolation.

8.4 Community managed piped water supplies operations

- Consumers should be educated regarding the importance of payment for water and on their rights and responsibilities.
- Managers should be given further training to carry out the essential planning, e.g. on assets management plans, consumer education plans and water conservation plans.
- Preventive maintenance should be emphasized.
- Roles and responsibilities of the operational personnel must be clearly defined.
- Members of the management committee should be elected based on their capability but not for political reasons or status in the community.
- An alternative borehole source is required for Soy water supply since the treatment works may soon prove too expensive for the community to manage.
- The problematic intake structure at Soy water supply requires rehabilitation.
- Master meters and ball valves are required for Soy, Kambiri, Chepkube and Ileho water supplies.
- The DWE's office should regularly monitor the performance of all community water supplies within the district. Copies of returns should be sent to the PWEO for analysis and documentation.

- The DWE together with the provincial administration (DO, chief etc.) should be empowered to intervene and even dissolve incompetent management committees where necessary. If MOLRRWD could nominate them as undertakers, then the minister would have that power. Under such circumstances the DWEO should manage the water supply for a period not exceeding 3 months. During this period fresh elections should be organized.
- A standard system of record keeping and tariffs as recommended by the Programme should be adopted by all CWS.
- Remuneration for personnel should be improved if qualified personnel are to be retained by the water supplies.
- Constitutions should be strictly followed.
- Each water supply should have its assets well documented so that auditing and drawing of balance sheets can be done annually.
- The Union of Western Kenya Water Associations (UWKWA) should be given both technical and logistic assistance to enable it manifest itself well within the Province over the coming 3 years.
- Communities should be encouraged to see water as an economic good and to seriously involve themselves in income generating activities.

8.5 Community managed piped water supplies development

- The authorities should act promptly regarding land easement when required.
- Communities should be involved at the planning stage of the project so that; their own talents are utilized, traditions, taboos and cultural practice of the particular community are considered.
- Different technological options should be considered with the view to adopt the most appropriate and cost effective ones with room for future change (adaptability).
- The water project should be linked with other needs of the community like health, agriculture, education, sanitation etc. and should never be undertaken in isolation.
- It has to be made very clear to the beneficiaries that they must meet the cost of construction and operation & maintenance and ask for assistance only in areas they are unable.
- There has to be legal protection for the management committee in setting tariffs and other regulations.
- Some consideration is required for the vulnerable groups who might not be able to pay their dues. This may be given by the government, donor agencies or an umbrella association in terms of subsidizing for such groups.
- Implementation of community water supply takes a long time since a lot of preparation and ground work is required in the early stages of the project. Therefore giving physical targets by assisting agencies or government may result in rushing the communities to own water supplies which they are not ready for. The works should not be started until the community has fully met its financial obligations. If the community realizes during the implementation that it can't afford meeting its obligations, the water supply will never be completed, although both the community and the co-financing partner have already invested for the implementation.
- Rarely do the beneficiaries think of saving for long term capital investment for e.g. rehabilitation of a borehole, buying new submersible pump, upgrading a borehole from point source to pumping system etc. Early consideration for such investments must be incorporated in the initial capital cost so that spare equipment, pumps or cash is reserved for such eventualities which the beneficiaries may not be able to meet.
- The hydrological network should be rehabilitated in order to have an up to date surface water resources availability in case of surface water abstractions.

8.6 MOLRRWD managed piped water supplies operations

- Customer registration, metering, billing and collection should be improved drastically.
- Work performance should be improved considerably.
- The hydrological network should be rehabilitated in order to have an up to date surface water resources availability in case of surface water abstractions.
- Each district laboratory should be provided with an autoclave for sterilization of bacteriological apparatus and reagents.
- Necessary reagents should always be made available through financial allocations to ensure continuity of operations.
- Vihiga laboratory should be located at the District Headquarters for easy monitoring and security.

8.7 Budgeting

- It has been very difficult to control the use of local component. Therefore it is recommended that in future the local component be budgeted at component level, and on a monthly basis.
- To follow the actual unit costs e.g. in construction, it is recommended that income received should not be recorded under the same cost code as expenses but coded and controlled separately.
- Emphasis should be laid on proper budgeting, proper technical drawings and feasibility studies. Obviously some training is needed.

8.8 Personnel and management

- The Programme should retain most of the personnel that has been on the Programme during the new Programme.
- The District Water Engineers should selectively prepare their personnel since they will take over Programme's activities.
- The personnel for community activities should be strengthened.
- MBR should be taken into use.
- Work plans and budgets should be prepared separately for each District and PWEO.
- Working tools and methods to be developed further.
- Personnel should be trained more on use of computers.

9 PROGRAMME BUDGET AND EXPENDITURE

9.1 Programme budget

The revised budget was slightly different from the original budget (Table 9.1). The budget was revised according to availability of funds from DIDC and justified changes and revisions of the work plans. An additional funding of FIM 450,000 was allocated to provide health centres and dispensaries implemented by the KFPHCP with water facilities. An additional funding of FIM 850,000 was allocated to the Programme to compensate for the changes in the exchange rate. The final DIDC contribution was FIM 22.3 million.

Table 9.1 Original and actual budget (DIDC contribution in FIM)

Year	Original	Revised	Additional funds
1993	9,740,000	7,500,000	
1994	7,020,000	7,300,000	450,000
1995	4,240,000	6,200,000	850,000
1993 - 1995	21,000,000	21,000,000	1,300,000

The exchange rate varied during the reporting period from 1 FIM=KES 8.85 to 1 FIM=KES 13.68. The mean rates are shown in Table 9.2.

Table 9.2 Mean exchange rates

Period	5-12.1993	1994	1995
Mean rates	12.323	10.767	10.584

9.2 Programme expenditure

The actual Programme expenditure as shown in Table 9.3 and in detail in Table 9.4 was FIM 21,568,414. FIM 731,585 left over from Phase IV, is going to be used to complete some outstanding works and clear all pending payments.

Table 9.3 Programme expenditure (DIDC contribution)

	5-12.1993	1994	1995	Used by DIDC
FIM	7,465,523	7,841,185	6,217,552	44,153
KES	92,001,212	84,455,198	65,915,623	

Table 9.4 Actual Cost/FIM

	5-12/1993	1994	1995	Total Phase IV
Administration	285,580.25	635,847 97	407,601.13	1,347,029 35
Planning & Design	366,917.89	727,700.08	-*	1,094,617 97
Construction	2,325,992 48	1,923,858.61	3,297,243.01	7,547,094.10
Operation & Maintenance	1,516,608 45	823,395.00	484,681.66	2,824,685.11
Community & Training	443,302.07	726,694.07	187,284 40	1,357,280.54
Indirect Cost	293,880.14	344,362.13	315,773,30	954,015.57
Technical Assistance	2,233,242.44	2,641,327.44	1,524,969.05	6,399,538 93
Total FIM KES DIDC Expenses	7,465,523.72 92,001,212.00	7,841,185.30 84,455,198.70	6,217,552.55 65,915,623.90	21,524,261.57 44,153 00
Grand Total (FIM)				21,568,414.51

* Planning and Design activities were handed over to MOLRRWD

9.3 Income

The Programme income has been reported in four categories: community contribution, sale of workshop services, sale of uneconomical equipment and other e.g.rent of houses and equipment, SIDA funding, private driving etc. Total income collected during the reporting period was KES 59,619,963 (FIM 5,439,974). The breakdown is shown in Table 9.5.

Same cost codes have been used for both expenditure and income, when they were under the same component. Only a summary of the income has been prepared separately. In order to control the actual unit costs, the auditors recommended that all income should be recorded separately by establishing new cost codes for the expected income.

Table 9.5 Programme Income/KES

	5-12.1993	1994	1995
Workshop services	2,536,372	4,312,166	1,701,387
Sales	1,858,457	7,189,652	3,412,036
Other Income		10,284,031	3,108,666
Community contribution	6,122,286	11,110,744	7,984,164
Total KES FIM	10,517,117 853,454	32,896,593 3,055,316	16,206,253 1,531,203

9.4 Local component

In the Project Document the local component was determined to be KES 23.76 million and it should have consisted of salaries of the professional and skilled personnel attached to the Programme. In addition a local component of KES 1 million annually was to be used to

rehabilitate MOLRRWD water supplies.

The total amount of salaries including medical and house allowances paid by the MOLRRWD was KES 20,036,648.

Table 9.6 Local component / salaries

	5-12.1993	1994	1995	Total
KES	6,805,538	6,469,125	6,761,125	20,036,648

The amount of Authority to Incur Expenditure (AIE) or other GOK contribution are not possible to estimate because the Programme does not have access to the district accounts and the DWEs have not reported on the use of GOK funds.

9.5 Auditing

The auditing for the calendar year 1994 was carried out by Coopers & Lybrand in August 1995. The final report is available in DIDC. The audit was the first one in the Programme's history.

The general observation was that the Programme has used adequate procedures and that the management information system ensures proper monitoring of the Programme activities and use of funds. However, some recommendations and improvements were proposed:

- expenditure and expected income to be budgeted and controlled separately
- implementation of construction works needs more accurate cost estimates and better cost control
- variation orders within the construction works to be minimized
- record keeping in the stores needs better controls
- imprest record to be established
- procedure for planning and use of the local component funds to be clarified

10 PERSONNEL

Table 10.1 presents the Programme regular personnel. The figures are showing the situation at the beginning of the year. The personnel continued to be reduced gradually in accordance with the work plans.

Table 10.1 Personnel during Phase IV

Year	Consultants	MOLRRWD	MOCSS	KFWWSP
1993	5	63	21	154
1994	4	105	2	128
1995	2	92	4	68

The situation of personnel during October - December 1995 is presented in Table 10.2

Table 10.2 Personnel in December 1995

Consultants	MOLRRWD	MOCSS	KFWWSP
2	72	2	41

Monthly allowances for the MOLRRWD personnel decreased considerably during the phase. Besides the financial constraints, the reduction was viewed as a necessary measure to enable the personnel adjust to the civil servants allowance structures for future sustainability. The ultimate aim was to retain such allowances as over-time and night-outs commonly applicable.

11 PROJECT COORDINATION

11.1 Programme management

The Project Manager was responsible for overall coordination and implementation of the Programme activities and personnel. The Assistant Project Manager was responsible for the construction activities under control of the Resident Engineer (RE) from the PWE Office.

The Programme has a Programme Management Group which meets every two weeks dealing with monitoring of the performance of the Programme. The meetings were chaired by the PM or a Deputy Project Manager and attended by the PWE, RE, Head of Personnel, all department heads and key personnel in charge of particular activities. The minutes of the meetings have been distributed to the MOLRRWD, DIDC, Consultant's Home Office and DWEs to keep all parties involved well informed on important matters.

The Project Manager reported to the Management Committee, chaired by the Permanent Secretary (PS) or his representative. Meetings were called at least twice a year or when a special need arose. MOLRRWD, Treasury, DIDC, PWE and the Programme send their representatives to the Meetings. The institutional arrangements of KFWWSP are presented in Figure 11.1

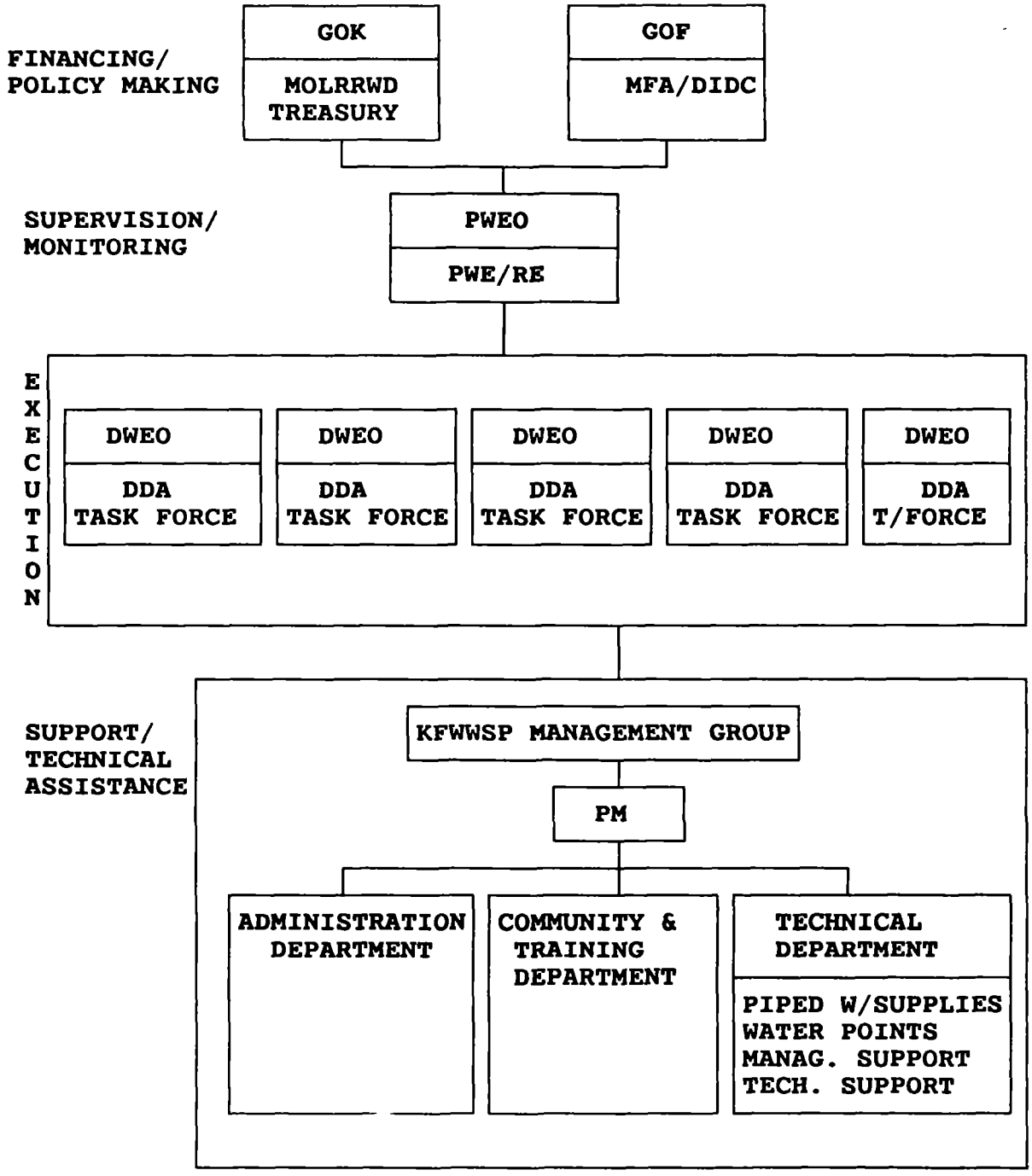


Figure 11.1 KFWWSP institutional arrangements

11.2 District coordination

The Programme covered five districts where most of the activities have been decentralized. The DWEs in the districts were responsible for all activities in the respective districts. Activities and performance of districts' staff have been coordinated and monitored through the monthly District Coordination Meetings chaired by the DWE, and attended by the DDA task force, Heads of Departments, Heads of Sections and the Project Manager or the Deputy Project Manager.

11.3 Departmental coordination

All departments had their internal monthly meetings where the performance, progress of activities and personnel matters were discussed and monitored. Minutes have been distributed to the Programme Management Group.

12 REPORTING

12.1 Monthly report

The progress of the Programme was followed in the Monthly Reports and they showed the achievement of Key Results by Key Result, deviations and reasons and actions needed from all parties. Monthly reports have been distributed to MOLRRWD, DIDC, Consultant's Home Office, DWEs and Programme management.

12.2 Annual report

The Annual Report summarized the Programme's principal achievements, the changes in the original work plan, financial performance and lessons learnt. The Annual Report for 1993 covered only eight months because Phase IV started on 1st May, 1993. Annual Report for 1994 covered the whole calendar year while the Annual Report for 1995 was compiled in the Final Report of Phase IV.

12.3 Quarterly financial report

The Quarterly Financial Reports provided information on project cost control, estimate on future costs, budget revisions and deviations from the original budget. They were prepared on quarterly basis and distributed to MOLRRWD and DIDC.

12.4 Technical reports and documents

All reports, documents, designs and drawings done during the Programme's period have been listed and handed over to the PWE. The list of technical reports is found in Appendix B.

13 TRANSITION PERIOD

13.1 Introduction and objective

According to the original plan, Phase IV was expected to be predominantly a consolidation phase to ensure the achievements that had been made during the previous phases are sustainable. However, due to unavoidable circumstances it was not possible to complete all activities in accordance with the Project Document within the agreed period. Therefore a transition period of six months was proposed. The objective of the transition period was to complete all outstanding works from the KFWWSP, Phase IV and enhance a smooth start for the new programme. The transition period started by 1st March and was completed by June 30th, 1996. The activities and achievements are explained here below.

13.2 Consolidation activities

Training on use of computers and data handling

25 ministry personnel to be trained in use of computer programmes

- 15 ministry personnel were trained in DBase, WordPerfect, Lotus and DOS. The number of staff trained was less than originally planned due to unavailability of computers in the districts. It was not found reasonable to train people who don't have access to computers in their daily work.

DDA Water point training

To complete the outstanding community training of 141 of well committees and 87 of spring committees as well as spring and pump attendants for the same water points. A total of 228 DDA water points to be trained.

- 151 well committees trained. Target exceeded because 10 committees of the old water points were included in the training programme.
- 2 pump attendants for 151 water points were trained. Reason for exceeding the target is as above.
- 87 spring committees trained.
- 2 spring attendants for 87 springs trained.

Preparation of pre-feasibility study on storage and distribution of spare parts

To prepare a fact finding report of storage, distribution and recommendations for further action to enhance a sustainable availability of hand pump spare parts.

- Report prepared and distributed.

Improvement of ground water observation network

Establishment of 3 ground water observation points in 35 divisions

- 3 water points in 30 divisions have been identified in the water point register. Investigations on their suitability as observation point has been done in 8 divisions. Most of the water points require some structural improvements before monitoring exercise can commence. Implementation has not been possible due to lack of GoK funds.
- Implementation will be carried out by the PWEO

13.3 Construction activities

Improvement of Chepkube community water supply

Construction of 5 break pressure tanks and installation of 11 ball valves.

- Works completed in accordance with the work plan.
- Final inspection and release of retention money will be carried out by the PWE in December 1996.

Completion of Lwakhakha community water supply

Completion of the remaining pipe works; 837 m of GI pipes, 508 m of PVC pipes and 8000 m of distribution lines. Construction of 3 water tanks, 5 break pressure tanks, valve chambers and support pillars.

- Works completed in accordance with the work plan.
- One branch line was not completed due to lack of pipes. Community used the pipes for other purposes. Therefore it is the community's responsibility to complete the works.
- The remaining community contribution of KES 370.000 were not paid in full
- Final inspection and release of retention money will be carried by the PWE in December 1996.

Improvement of Mbale Township water supply

Purchase and installation of one high lift pumping unit. Construction of a retaining wall

- Construction of the retaining wall started.
- Purchase and installation of the pumping unit not possible due to lack of GoK funds.
- Works to be completed by the DWE Vihiga.

Finalization of As-built drawings

Preparation of as-built drawings for 15 community water supplies.

- Survey of the selected water supplies was ongoing when writing this report.
- Drawings were not possible to finalize within the agreed schedule because the GoK funds were not released in time.
- Works to be completed by the PWEO.

13.3 Budget

The total budget for the transition period was KES 28,317,000 and it consisted of four sources of funds as shown in Tables 13.1 and 13.2.

Table 13.1 Budget contributions

GoF KFWWSP FIM	GoF New Proj. FIM	GoK Personnel KES	GoK Investment KES	Total KES
731,000	1,164,000	2,385,000	1,950,000	28,317,000

Table 13.2 Actual costs and GoK contribution

	GoF/Total FIM	GoK/Personnel KES	GoK/Investments KES
Budget	1,895,000	2,385,000	1,950,000
Actual costs*	1,323,860		
Actual GoK contribution	1,590,000	645,000	

* as per 31.5.1996

14 REFERENCES

Anon. 1993. Water engineer confer. Kenya Engineer. Vol. 14, No.5. pp. 12–13

Caponera, D.A (ed.). 1979. Water law in selected African countries. Legislative study No. 17. FAO. Rome. pp. 120–148.

Central Bureau of Statistic, 1993. Economic survey 1993. Republic of Kenya. Nairobi 199p.

Hukka, J.J., Katko, T.S. and Seppälä, O. 1992. Kenya water sector – a position paper. Report to DIDC. Tampere University of Technology. Department of Civil Engineering. Institute of Water and Environmental Engineering. Occasional Paper No. C 44. 94p.

Japan International Cooperation Agency. 1992a. (Draft). The study on the national water master plan. Sectoral report(P). Laws and institutions. 96 p.

Japan International Cooperation Agency. 1992b. (Draft). The study on the national water master plan. Executive summary. 55p.

Kencom Digest. 1995. Statistical annex. Table B: Foreign exchange rates of the Kenya shilling against selected currencies. January 1994.

Kenya – Finland Western Water Supply Programme. 1994. Transfer Plan. 21 p.+ Annexes.

Ministry of Land Reclamation, Regional and Water Development. 1993. Directory of the Ministry of Land Reclamation, Regional and Water Development. 1st July 1993. Nairobi. 86 p.

Mukhwana, J.S. and Hukka, J.J. 1995. Sustainability of community water supplies. 21st WEDC Conference: Sustainability of water and sanitation systems. Kampala, Uganda, 4th – 8th September 1995. Conference Pre-prints. pp. 162–163

Mwongera, E.K. 1994. Exploitation and conservation of water resources: Kenyan experience. pp. 1–5 in: All African Engineers' Conference on the role of the engineer in sustainable development. Annex document 1. 14th – 16th December 1994. Nairobi, Kenya. Federation of African Organizations of Engineers. 18p.

Republic of Kenya. 1995a. Country position paper. World Summit for Social Development. Copenhagen, Denmark. 64p.

Republic of Kenya. 1995b. Public investment programme 1995/96 – 1997/98. 248 p.

15 APPENDICES

APPENDICES

APPENDIX	A	Achievement of the work plan (1993 - 1995)
APPENDIX	B	List of reports prepared by KFWWSP (1981 - 1996)

APPENDIX A

KEY

ACH – Achieved
Art – Articles
att – Attendants
C – Course
C.L – Check List
Cht – Charts
Com – Communities
Comt – Committees
Con – Contractors
CR – Check Readings
Des – Design
dist – District
Doc – Documents
DoS – Done on Schedule
Dst – Distributors
E – Evaluations
Eff – Effected
Ele – Electricians
Ins – Inspections
M – Meeting
Man – Manuals
Mas – Managers
MC – Mechanics
Me – Measurements
mts – Meters
op – Operators
P – Participants
P.S – Piped Scheme
Per – Persons
Pl – Plan
Prg – Programs
Ps – Pumps
R – Reports
S – Sessions
Sm – Seminars
Smp – Samples
St – Stations
Sts – Studies
TAR – Target
Ten – Tenders
Test – Tested
Tr – Trained
ts – Tools
Vst – Visits
WP – Workplan

3.1 KEY RESULT 0. - GENERAL

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
0 GENERAL	0.1. Work Plan	Planning activities	2	2	1	1	-	1
	0.2. Management Committee	Meetings	2	2	2	1	2	2
	0.3. Supervisory Board	Meetings	3	2	4	-	-	-
	0.4. Coordination Meetings	Meetings	37	36	48	48	36	24
	0.5. Monthly Meetings	Meetings	40	40	60	60	-	-
	0.6. Management Group Meetings	Meetings					24	31
	0.7. Review / Evaluation	Review / Evaluation	1	0	1	0	1	1
	0.8. Reporting	Monthly Report	8	8	12	12	12	12
		Quarterly financial report	2	2	4	4	4	4
		Annual reports	-	-	1	1	1	1
		Final report, third phase	1	1				
		Final report, fourth phase					1	1
	0.9. Information Sessions on Phase IV for Districts.	Informal meetings	8	5	5	2	-	-
	1.0. Training on MBR	Implementation	1 C 22 P	1 C 28 P		1	2	2
	1.1. Management information system MIS/Decision support System (DSS)	Training	25 P	0			1	1
		Testing						done
		Review						done
		MIS in use				cont.	cont..	cont..

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
0 GENERAL (cont'd)	0 12 Support by Programme Workshop	1. Offering transport pool services	cont.	cont.	cont.	cont..	cont.	cont.
		2. Servicing and repairing vehicles, plants, etc.	cont.	cont.	cont.	cont..	cont.	cont.
		3. Procurement of spares and materials	cont.	cont.	cont.	cont..	cont.	cont.
		4. Training of mechanics	Ok	Ok	6	6	–	–
		5. Fabrication of small engineering components			cont.	cont..	cont.	cont.
		6. Handing over of vehicles plant etc to GoK				As planned		completed
		7. Disposal of unserviceable vehicles, plants etc				As planned		completed
		8. Selling of equipments & vehicles			KES 12.7 Million	KES 9.87 Million		KES 3.41 Million

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
0. GENERAL (cont'd)	0.12 Training	1. Training of water repairmen	8	12	–	–	–	–
	a) *On-the-job training* of staff in District and Provincial Workshops	2. Plant and pump mechanics training to repair centrifugal and submersible pumps.	18	14	12	8	4	0
		3. Training seminar for electricians.	1	1	1	0 (No funds)	–	–
		4. Training seminar for store keepers.	1	1	1	0	–	–
		5. Turners trained on machining	2	2	1	1	–	–
		6. Mechanics trained on overhauling engines	6	10	4	4	–	–
		7. Seminar on electric and electronic maintenance and repair	1	0	1	0 (No funds)	–	–
		8. Training on tachographs for MoLRRWD staff			2 per	2 per	–	–

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
0. GENERAL (cont'd)	0.12 (cont'd) b) Operators	1. Three week training course for water supply operators at WECO (for operators with no previous professional training)	20 op	23 op	40 op	20	10	8
		2. Three month training course at KEWI on three different levels; basic intermediate, advanced.	10 per	1	10 per	–	–	–
	c) Line patrollers and meter readers	1 Two day training courses for meter readers and billing personnel	60 per	61 per	40 per	11	–	–
		2. One day courses for line patrollers	–	–	80 per	56	–	–
	d) Water point contractors	1. Two month training course on technical aspects in construction of water points	20 con	13 con	15 con	15	–	–
		2. Three day training course on management skills	20 con	20 con	20 con	0	20 con	20
	e) Extension workers and CDAs	1. Training extension workers in participatory training skills.	3C. 90per	2C. 60per	2C. 60Per	2C. 92Per	–	–
		2. Training of CDAs & DWOs in monitoring tasks (on job training)	–	–	90 P	92 P	–	–
		3. Training Community Coordinators (Participatory Skills)	–	–	–	1 sem. 60per	2sem. 60per	1 semi. 14per

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
0. GENERAL (Cont'd)	0.13 Monitoring programme for performance of water points	1. Updating of appropriate monitoring tools for community water supplies	2	2	1	0	2	2
		2 Involvement of community on monitoring through district coordinating team	500	500	600	600	800	805
		3. Monitoring of water points on their technical functioning	2400	2076	2400	3341	1600	1275
		4. Monitoring of spare parts distribution system	8	7	7	8	8	8
		5. Monitoring the performance of the extension workers.	22	22	92	92	–	–
		6. Monitoring of water point committees	500	500	500	497	800	805
		7. Water points inventory	cont.	cont.	cont.	cont.	cont.	cont.

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
0 GENERAL (Cont'd)	0.13 (cont'd) Monitoring programme for performance of piped schemes	1. Rehabilitation of Regular River Gauging Stations (RGS)	30	3	28	0	–	–
		2 River discharge measurements on the hydrometeorological network	60	0	66	60	60	71
		3. Maintaining databases, computer systems and computer hardware	cont.	cont.	cont.	cont.	cont.	cont.
		4 Monitoring of the hydrometeorological network	NEW		120	126	96	69
		5. Carry out water sampling, bacteriological and physico–chemical analysis of potable and waste water and advice on remedial measures as necessary	200	237	300	104	300	32
		6. O & M data for piped schemes collected, recorded and reported monthly				Information not available from Scheme Managers		
		a. MoLRRWD w/s /month	14	14	16		20	7
		b. Community w/s /month	7	7	7	6	10	10
		7. Monitoring the perfomance of community water associations.	NEW		8	7	10	6

3.2 KEY RESULT 1. – CONSOLIDATION OF WATER POINTS

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
1 CONSOLIDATION/ WATER POINTS	1.1 Preparation and distribution of training manuals	1. Water point attendant training manuals a. preparation b. printing c. distribution	150	150	–	–	–	–
		2. Water Committee training manuals a preparation b. printing c distribution	150	150	–	–	–	–
	1.2 Training of water point attendants and the trainers	1. On-the-job training of DWE's technical staff to be trainers for water point attendants	28	28	–	–	–	–
		2. Water point attendant training seminars for old water points	28 Sem. 840 att	28 Sem. 1065 att.	36 Sem. 1080 att.	62 sem. 1626 att.	–	–
		3. Retraining of water supply attendants	–	–	–	–	400	–
	1.3 Management training for water committees	1. Water committee training in O & M matters	cont.	cont.	cont.	cont.	cont.	cont.
		2. Water committee training seminars for old water points	28 Sem 360 comt	13sem 169 comt	42 Sem. 546 comt	75 sem. 1445 comt	–	–
	1.4 Community commitment to old facilities	1. Registration of old well committees	NEW	425	60	40	–	–
		2. Old Land easements	NEW	98	105	108	DWB	55
	1.5 Selection of additional spare part distributors	1. Selection of additional spare parts distributors	3	1	2	postponed to 1995	2	–

3.2 KEY RESULT 1. - CONSOLIDATION OF WATER POINTS

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK		1993		1994		1995	
				TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
1 CONSOLIDATION /WATER POINTS	1 6 Development of water quality and environmental monitoring facilities	1.	Constitute an environmental monitoring and protection committee	1	0	–	–	–	–
		2.	Assess current situation/facilities (infrastructure, staff, equipment, etc.)		done	–	–	–	–
		3	Carry out Iron Removal study	Prog. Rep.	done	–	–	–	–
		4	Carry out water sampling and analysis; check sanitary conditions, structural defects, catchment protection, etc, and advise on remedial measures	320	317	300	439	300	32
		5.	Spring discharge measurement in the observation network	32	32	32	32	32	No Reports from DWEs
		6	Measure groundwater levels in the observation network *(per month)*	120	120	120	120	120	88 (Total)
		7.	Quarterly Environmental Committee meetings	2	0	4	committee not established	–	–

3.3 KEY RESULT 2. - CONSOLIDATION OF PIPED SCHEMES

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
2. CONSOLIDATION/ PIPED SCHEMES	2.1 Training of the owners in administrative and managerial skills (community operated water supply systems)	1. Training of management committees and scheme managers	4	4	7	7	5	5
		2. Training of revenue clerks/ accountants	6	15	12	0	12	12
	2.2 Development of financial planning and budgeting (community operated water supply systems)	1. Cash flow control and management	6	6	6	7	50	50
		2. Budgeting and financial reporting in water supplies	6	6	9	7	50	50
		3. Set up auditing procedures in water supplies	6	0	3	7	50	50

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
2. CONSOLIDATION/ PIPED SCHEMES	2.3 Improving revenue collection/ billing	1. Assist water committees install water meters	160	231	240	509	240	360
		2. Water meters repaired and calibrated	400	534	600	364	600	107
	2 4 Organization charts and job descriptions	1. Water supply organization charts with responsibilities and duties for MoLRR&WD	40	40	20	20	15	0
		3. Organizational charts and responsibilities for community operated water supplies	6	7	3	7	20	18
	2.5 Development of proper preventive and corrective maintenance system	1. Prepare check list for daily duties	37	12	20	13	20	10
		2. Carry out maintenance activities as scheduled	26	21	12	12	-	-
		3. Maintenance of electrical systems	160	140	240	170	240	164
		4. Overhauling and repair ofpumps	27	14	40	57	40	43

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
2. CONSOLIDATION/ PIPED SCHEMES	2.6 O & M Manuals and instructions	1. Water supply operator's handbook a. preparation b. printing c. distribution	150	150	–	–	–	–
		2. Preparing general O & M guidelines	1	1	–	–	–	–
		3. Divisional Water Officers introduced to guidelines	1	0	1	0	–	–
		4. Preparation of scheme O & M manuals	6	6	5	8	4	4
		6. Community Scheme Managers are introduced to use of O & M manuals.	6	0	6	7	2	2
	2.7 Strengthen District maintenance teams	1. Tools and spare part kits supplied to District Water Engineers.	4	4	–	–	–	–
	2.8 Development of water quality control system	1. Identify, establish, and equip a lab in one water supply per district.	4	0	4	4	–	–

3.4 KEY RESULT 3.- CLARIFICATION OF ROLES

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
3. CLARIFICATION OF ROLES	3.1 Institutional development strategy, decentralization and transfer plan for responsibilities	1. Strategy discussed and established by meetings	4	4	–	–	–	–
		2. Plan for the transfer of responsibilities and decentralization	P	–	1	1	2	2
		3. Approval of plans	–	–	1	–	1	–
	3.2 Implementation of the decentralization and transfer plan	1. Operations in Siaya District phased out	1	Done	–	–	–	–
		2. Operations in Bungoma District decentralized	–	–	1 dist	1 dist	–	–
		3. District operations in Busia and Kakamega decentralized	–	–	2 dist	2 dist	–	–
	3.3 Creation of awareness.	1. Water point committee meetings	140	120	140	140	288	216
		2. Consumers' days	7	7	10	10	7	7
		3. Community exchange visits piped water supplies	NEW	–	5	5	8	8
		4. Community exchange visits water points	NEW	–	5	5	10	20

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
3. cont'd CLARIFICATION OF ROLES	3.4 Cooperation with MoCSS, MoH, KFPHCP and NGOs.	1. Selection & involvement of extension workers in project activities	48	22	92	92	–	–

3.5 KEY RESULT 4. - DEMAND DRIVEN WATER SUPPLY DEVELOPMENT SYSTEM

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
4 DEMAND DRIVEN WATER SUPPLY DEVELOPMENT	4.1 Development & distribution of information packages	1. Testing in the Districts	Done	Done	-	-	-	-
		2. Updating and effecting corrections	Done	Done	-	-	-	-
		3. Printing and distribution	-	-	800	800	-	-
	4.2 Implementation of promotional campaigns through mass media, public gatherings.	1. Distribution and discussion of health education material to schools,churches, women groups and Health Centres	20	0	40	40	-	-
		2. Radio programs	3	1 prg.	2 prg.	2prg	-	-
		3. Newspapers/newsletters	10	1 art.	20 art.	1 art.	-	-
		4. Promotion of hygiene education through film shows on health aspects	-	NEW	10 films	9 films	10 films	5 films

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
4.DEMAND DRIVEN WATER SUPPLY DEVELOPMENT SYSTEM.	4.3 DWEs implement development projects as per feasible requests.							
	4.3a. Point water sources	1. Receiving of requests	160	500	500	980	200	425
		2. Field investigations assessment	New	–	430	631	175	250
		and Technical surveys	55	26	220		175	71
		3. Construction						
		a. Full cost recovery	10	–	10	9	20	27
		b. Community	35	20	155	176	150	190
		c. Institutional	10	–	35	10	55	31
	4.3b. Piped Scheme	1. Feasibility studies Economic, Social and Technical data	8	8				
		2. Case studies for community managed piped schemes			3	0		
	4.3b(i) Rehabilitation of MoLRRWD Scheme	1. Major rehabilitation of MoLRRWD/NWCPC w/s	New	–	3	0	2	2
		A. Mbale						
		a. Surveying & Design		on-going	completed	completed		
		b. Tendering			done	done		
		c. Construction				on-going	completed	completed
		B. Port Victoria						
		a. Surveying & Design		on-going	completed	completed		
		b. Tendering			done	done		
		c. Construction				on-going	completed	completed
		C. Kaimosi						
		a. Surveying & Design		on-going	completed			
		b. Tendering				deferred	omitted	omitted
		c. Construction				deferred	omitted	omitted
		D. Busia Hills						
		a. Surveying & Design		on-going	completed	completed		
		b. Tendering			deferred	deferred	omitted	omitted
		c. Construction					omitted	omitted
		E. Little Nzoia						
		a. Surveying & Design		on-going	completed	completed		
		b. Tendering				deferred	omitted	omitted
		c. Construction					omitted	omitted

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
4 DEMAND DRIVEN WATER SUPPLY DEVELOPMENT SYSTEM	4.3b(ii)cont'd Community managed w/s	2. Minor rehabilitation of MoLRRWD/NWCPS	1	1	1	1	2	2
		A. Busia showground borehole	completed	completed				
		B. Lugulu Malanga					completed	completed
		C. Budokomi					completed	completed
		D. Bungoma borehole			completed	completed		
		Community managed w/s			3	1	2	2
		A. Kambiri						
		a. Surveying & Design		on–going	completed	completed		
		b. Community work and training		on–going	completed	completed		
		c. Tendering			done	done		
		d. Construction			completed	completed		
		B. Chepkube						
		a. Surveying & Design	completed	completed				
		b. Community work and training		on–going	completed	completed		
		c. Tendering			done	done		
		d. Construction			completed	on–going	completed	completed
		C. Lwakhakha						
		a. Surveying & Design	completed	completed				
		b Community work and training			on–going	on–going	completed	on–going
		c Tendering					done	done
		d. Construction					on–going	on–going
		D. Lukolis						
		a. Surveying & Design	completed	completed				
		b. Community work and training			deferred		omitted	omitted
		c. Tendering			deferred		omitted	omitted
		d. Construction				deferred	omitted	omitted
		E. Ileho						
		a. Surveying & Design			completed	completed		
		b. Tendering			completed	completed		
		c. Construction					completed	completed

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
4 DEMAND DRIVEN WATER SUPPLY DEVELOPMENT SYSTEM	4.3c Piped scheme from previous phase	Construction of w/s carried from phases III	3	–	3	2	1	2
		A. Muchi-Milo		on-going	completed	completed		
		B. Soy		on-going	completed	on-going	completed	completed
		C. Chavavo Mahanga		on-going	completed	completed		
		D. Madzuu			completed	completed		
	4.3d Construction of w/s on full cost recovery	Construction of w/s on full cost recovery as per feasible request.	1	1	4	4	2	2
		(a) Maseno University W/S	completed	completed				
		(b) Kibos S. Army borehole W/S		on-going	completed	completed		
		(c) Ranga'ala Mission b/hole W/S		on-going	completed	completed		
		(d) Lugulu Mission borehole W/S		on-going	completed	completed		
		(e) Mululu School borehole			completed	completed		
		(f) Munana pump installation				on-going	completed	completed
		(g) Bukura FTC W/S					completed	completed

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
4 DEMAND DRIVEN WATER SUPPLY DEVELOPMENT SYSTEM	4.3e Upgrading				3	–	–	–
	4.4 Creation of awareness.	1. Socio-economic assessment on demanding communities	50	50	80	23	–	2
		2. Siting meetings	50	50	–	–	–	–
		3. Community preparation meetings	NEW	–	185	30	50	46
		4. Zonal committee meetings	11	50	11	7	10	11
		5. Water point committee meetings	140	120	140	144	140	134
	4.5 Community commitment to the proposed facility	1. Formation of water Associations/Union	2	0	6	–	2	1
		2. Formation and registration of well committees	50	7	200	186	100	182
		3. Formation of tap committees	8	4	16	8	8	8
		4. Land easement	80	10	200	40	150	55
		5. Community contribution for the proposed water point construction	KES 3.55 Million	KES 6.12 Million	KES 5.04 Million	KES 11.1 Million	–	KES 7.98 Million

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
4 DEMAND DRIVEN WATER SUPPLY DEVELOPMENT SYSTEM	4.6 Promoting of local pump and lifting device manufacture	1. Design of low cost hand pump for shallow and medium deep wells	Report	Report	–	–	–	–
		2. Testing of pilot locally manufactured pumps	10	5	5	4	–	–

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
4 DEMAND DRIVEN WATER SUPPLY DEVELOPMENT SYSTEM	4.7 Preparation of Water Supply Development Plan for Vihiga District	1. Plan Development; the organization for plan preparation.		Done				
		a. Study of the national policy, DDP, NWMP and the present WSDP.		Done				
		b. Hold meeting to identify & assign roles. Agree on format.		Done				
		c. Establish time schedule, resources & supportive networks.		Done				
		2. Data collection, research and investigations			Done	Done		
		a. Determination of Admin. boundaries.		Done				
		b. Carry out economic, social & cultural studies.			Done	Done		
		c. Data collection on existing water supply systems, coverage and water supply management.		Done				
		d. Study of the area's water resources.			Done	Done		
		e. Data collection on water demand in the area.			Done	Done		
		f. Determination of W/S options & cost implications.			Done	Done		
		g. Hold workshop for parties to note progress and present data, present planning criteria.			1 work shop			

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
4 DEMAND DRIVEN WATER SUPPLY DEVELOPMENT SYSTEM	4 7 (cont'd) Preparation of Water Supply Development Plan for Vihiga District	3. Data storage and handling; the Management of databases.			Done	Done		
		a. Determine the development programme.		Done				
		b. Carry out economic & financial analysis.		Done				
		c. Compiling of data & preparation of report.		Done				
		d. Preparation of maps for WSDP			Maps	4		
		e. Hold workshop to present draft WSDP			1 Workshop	–		
		f. Finalize WSDP			WSDP ready	1		
		g. Checking/approval/submission of WSDP			Done	Done		
		h. Presentation of WSDP			Approved Presented	Approved		

KEY RESULT	MAJOR ACTIVITIES	DETAILED ACTIVITY/TASK	1993		1994		1995	
			TARGET	ACHIEVED	TARGET	ACHIEVED	TARGET	ACHIEVED
4 DEMAND DRIVEN WATER SUPPLY DEVELOPMENT SYSTEM	4.8 Update of Water Supply Development Plan for Western province	1. Plan development; the organization for the plan preparation.					PWEO	–
		Established time schedule, resources & supportive networks.					PWEO	–
		2. Data collection, research and investigations. Collect updated data/information on:–					1 Updated WSDP	on–going
		a. Admin. boundaries changes.					done	done
		b. New water supply systems.						
		c. Water demand in the area						
		d. Determination of w/s options & cost implications.						
		3. Data storage and handling; the Management of databases.						
		a. Carry out economic & financial analysis						
		b. Compiling of data & preparation of report.						
		c. Preparation of maps.						
		d. Hold workshop to present draft WSDP					1	–
		e. Finalize WSDP					1	–
		f. Checking/approval/submission of WSDP						
		g. Presentation of WSDP					1	–

APPENDIX B

APPENDIX B

LIST OF REPORTS PREPARED BY THE KFWWSP 1981-1996

Published	Publisher	Title
Technical Reports		
1996	Kefinco	Pre-feasibility Study for hand pump spare part distribution
1994	Kefinco	Decision Support System for Piped Water Supplies Performance Improvement
1993	Kefinco	Development Plan (Main Report)
1992	Kefinco	Computerized Water Point System
1992	Kefinco	Malava Tank Water Supply
1991	Kefinco	Activities Done by Electrical Section
1991	Kefinco	Brief Guideline Design for Borehole Construction
	WB	Community Piped Water Supply systems - planning Manual
1991	Kefinco	Fisheries Project for KFWWSP
1991	Kefinco	General Report Aug.1988 Ground Water Development Slides
1991	Kefinco	Hardware Used in Programme
1991	Kefinco	Determination of Levels of Heavy Metals & Fluoride found in Western Kenya Borehole Water Report No. 91/10 Dr. J. E. Oluke for KFWWSP
1990	Kefinco	Data Collection Interim Report
1990	WRAP	How to Prepare a District Water Dev. Plan Course from Sept. 16-22'90 by Wrap for Kefinco
1990	Kefinco	Hydrological Survey Report - North Marama
1988	Kefinco	Development Planning Data Entry sheet for Water Resources Assessment Project
1988	Kefinco	Draft for Educational Film Plan Oct.
1988	Unesco	Ground Water In Hard Rocks
1987	Kefinco	Interim Report for Review Mission on Hand pump Maintenance & Development (May)
Operation and Maintenance Manuals		
1994	Kefinco	Manual for Piped Water Supplies
1993	Kefinco	Sigomere W/S
1993	Kefinco	Likuyani Health Centre
1992	Kefinco	Peoples Review Newspaper
1992	Kefinco	Bungoma - Kibabi
1992	Kefinco	Busia Hills W/S
1992	Kefinco	Busia Town Borehole

1992	Kefinco	Busia - Mundika
1992	Kefinco	Butere
1992	Kefinco	Chesikaki
1992	Kefinco	Eregi
1992	Kefinco	E.R.T 28 School
1992	Kefinco	Funyula - Nangina
1992	Kefinco	Hamisi
1992	Kefinco	Kabuchai
1992	Kefinco	Kabuchai Vol. I
1992	Kefinco	Kakamega W/S Vol. II
1992	Kefinco	Kakamega W/S Vol. I
1992	Kefinco	Khwisero
1992	Kefinco	Malava
1992	Kefinco	Maseno
1992	Kefinco	Sega
1992	Kefinco	Ugunja
1992	Kefinco	Ukwala
1992	Kefinco	Webuye
1992	Kefinco	Alupe
1992	Kefinco	Amagoro
1992	Kefinco	Amukura Complex
1992	Kefinco	Bar-Ober
1992	Kefinco	Bukhalalire
1992	Kefinco	Bungoma
1992	Kefinco	Butula
1992	Kefinco	Chemoge - Kibichori
1992	Kefinco	Kakamega General Hospital
1992	Kefinco	Kefinco Estate & District Base
1992	Kefinco	Kibichori - Bokoli
1992	Kefinco	Kimilili
1992	Kefinco	Maraba Bakery
1992	Kefinco	Munana
1992	Kefinco	Ndivisi/Makuselwa
1992	Kefinco	Old Kibichori
1992	Kefinco	Yenga - Siranga
1992	Kefinco	Shikusa
1992	Kefinco	Nambale W/S
1991	Kefinco	Pilot schemes for spare part distribution within Programme area
1991	Kefinco	Planning & Design Meru District visit 16-20th Sept'91
1990	Kefinco	Mumias Treatment Plant
1990	Kefinco	Preliminary Report for Proposed Rehabilitation of Bungoma Township Water Treatment Plant
1989	Kefinco	Practical Guidelines (Draft)
1989	Kefinco	Mumias W/S
1984	Kefinco	Preliminary Results of Study on Health Impact of Sanitation Programme in Kakamega as an indicator
1983	Kefinco	Handpumps Wells

Rehabilitation Reports

1994	Kefinco	Rehabilitation Design Report
1992	Kefinco	On Webuye Treatment Plant
1992	Kefinco	On Augmentation Proposal for Webuye W/S Treatment Plant
1991	Kefinco	On Shikusa Institutional
1990	Kefinco	On Kotur W/S
1990	Kefinco	On Kakamega Treatment Plant Preliminary Inventory
1990	Kefinco	On Proposed Chesikaki W/S - Oct.
1990	Kefinco	On Chavavo-Mahanga W/S
1990	Kefinco	ON Ugunja W/S
1989	Kefinco	Nangina-Funyula W/S Construction
1988	Kefinco	On Proposed Chesikaki W/S and Estimate Costs
	Kefinco	On Sio Port W/S
1988	Kefinco	On Kaimosi W/S
1987	Kefinco	On Maseno W/S
	Kefinco	On Port Victoria W/S
1986	Kefinco	On Maseno Treatment Plant (Revised)

Socio-Economic Reports

1992	Kefinco	On Maturu-Lwandeti
	Kefinco	On South Teso
1991	Kefinco	On Survey of Amagoro Division - August
1990	Kefinco	On South Marama
	Kefinco	On Bunyala
	Kefinco	On Chevaywa
1990	Kefinco	On South Kabras
1990	Kefinco	Bukhayo East Loc.
1990	Kefinco	Chemoge - Kapsokwony - Kongit W/S Reha. Proj. follow up study Report.
1990	Kefinco	On Central Bukhayo Loc.
1989	Kefinco	On West Bukhayo Loc.
1989	Kefinco	On Chepkube/Cheptais
1989	Kefinco	On Kanduyi Loc.
1989	Kefinco	On Survey of North Idakho Loc. - March

Development Plans

1990	Kefinco	Report on Water Supply Development Plan Seminar - Nov'90
1990	Kefinco	Report on WSDP workshop May'90
1990	Kefinco	Rural Water Supply Development Project In Western Province - Nov'83 - Dec'85
1983	Kefinco	Rural Water Supply Development Project in Western Province - Dec Plan June'83

Project Planning Reports

1991	Hel. Univ.	Case study: Western Province Water Supply Project
1991	FINNIDA	Case study: Western Province Water Supply Project (Finnida Training course on projects planning & Implementation - Nov)
1988	Kefinco	Comments for programme document of KFWWSP Phase III final draft
1988	Kefinco	KFRWD - Project Document Phase III '88-91
1988	Kefinco	Programme Document final draft Oct'88
1988	Kefinco	Programme Document - KFWWSP Phase III
1986	Kefinco	Progress Report for the Review Mission - Community Participation Sec. for 2nd Implementation

Design Reports

1994	Kefinco	Lwakhakha	
1994	Kefinco	Ileho	
1992	Kefinco	Khasoko - Nasianda Rehabilitation	
1992	Kefinco	Amukura Complex	
1992	Kefinco	Likuyani	
1992	Kefinco	Lukolis	
1992	Kefinco	Muchi-Milo	
1992	Kefinco	Netima	
1991	Kefinco	Butere	
1991	Kefinco	Maseno - Rehabilitation	
1991	Kefinco	Mateka	
1990	Kefinco	E.R Table Nº 28 School Nyawita	
1990	Kefinco	Hamisi	
1990	Kefinco	Chemoge-Kapsokwany	
1990	Kefinco	Kotur - Rehabilitation	
1990	Kefinco	Butere	
1990	Kefinco	Chesikaki Rehabilitation	
1990	Kefinco	Chesikaki - Rehabilitation	
1990	Kefinco	Mukhobola Health	
1990	Kefinco	Ugunja	
1989	Kefinco	Chebuyusi	
1989	Kefinco	Ipali	
1989	Kefinco	Maturu-Lwandeti	
1989	Kefinco	Mautuma Health	
1989	Kefinco	Mukumu	
1989	Kefinco	Naitiri Health Centre	
1989	Kefinco	Sirisia	
1987	Kefinco	Ukwala	
1987	Kefinco	Nambale Interim Report	
1986	Kefinco	Chwele	
1984	Sir Alexander	Gibb & Partners	Moi's Bridge
1975	Cowi Consult	Shitoli	
	Kefinco	Shikusa - Rehabilitation	
	Kefinco	Maraba Area	

Feasibility Reports

1994	Karnconsult	Lumakanda
1994	Karnconsult	Little Nzoia
1993	Indepth	Mwiruti
1993	Mastow	Port Victoria
1993	Kefinco	Busia Hills
1992	Kefinco	Mukoe
1992	Kefinco	Soy
1992	Kefinco	Mululu
1992	Kefinco	Chepkube
1992	Kefinco	Khasoko/Nasianda
1992	Kefinco	Khwisero
1992	Mastow	Munana
1992	Kefinco	Sihirira
1992	Kefinco	Kambiri
1992	Kefinco	Lukolis
1991	Kefinco	Hamisi Health Centre
1991	Kefinco	Kambiri
1989	Kefinco	Eregi Complex
1989	Kefinco	Kocholia
1988	Kefinco	Ruambwa
1988	Mastow	Mauna Dam
1988	Kefinco	Chemoge Kapsokwony
1988	Kefinco	Kabuchai
1987	Kefinco	Jera w/s

Tender Documents

1994	Kefinco	Backwash tank and weir Rehabilitation
1994	Kefinco	Muchi- Milo Water Project
1994	Kefinco	Munana Dam
1994	Kefinco	Kaimosi
1993	Kefinco	Mbale (New Treatment Works and Chavakali Borehole)
1993	Kefinco	Chavavo - Mahanga Rehabilitation W/S
1993	Kefinco	Chavavo- Mahanga Spring Protection
1993	Kefinco	Soy Rehabilitation of Reticulation System
1993	Kefinco	Kambiri Community Water Project
1993	Kefinco	Kutere Gravity Scheme
1993	Kefinco	Madzuu Well
1992	Kefinco	Khwisero
1992	Kefinco	Soy Water Supply Treatment Plant
1992	Kefinco	Mumias Treatment Works - Bar Bending Schedule
1992	Kefinco	Webuye
1992	Kefinco	Khasoko/Nasianda
1992	Kefinco	Navakholo Community Water Project
1991	Kefinco	Maturu-Lwandeti
1991	Kefinco	Kotur Rehabilitation
1991	Kefinco	Mateka

1991	Kefinco	Mumias Treatment Works
1990	Kefinco	Butere
1990	Kefinco	Chesikaki
1990	Kefinco	Ugunja
1989	Kefinco	Mukumu Complex
1989	Kefinco	Funyula/Nangina
1989	Kefinco	Eregi Complex

Others

1994	Kefinco	Transfer Plan
1994	Kefinco	Demand Driven Approach Information Packages, Vol I-III
1992	Kefinco	Water Use Study Project Proposals
1992	Kefinco	Water and Health Education - A Manual for Trainers
		Visit Reports - Pwani Fabrication, Scope, East African Foundry & Ndume
1992	Kefinco	Study on Khwisero self help water project women participation in water & health
1992	Kefinco	Joint terms of Ref. for Coop. Committee KFWWSP-KFPHCP
1991	Kefinco	Workplan for Community Development Section 1991
1991	Kefinco	Water Points Inventory Report - Kakamega District
1991	Kefinco	Water Points Inventory Report - Busia District
1991	Kefinco	Water Points Inventory Report - Bungoma District
	Kefinco	Water Point Inventory Report on Boreholes and Hand dug Wells - Western Province
1990	Kefinco	Syllabus for Location Leaders Seminar
1990		Women & Development in Kenya - Kakamega District
1990		Water & Sanitation Monitoring System (WASAMS) Questionnaire
1990	Kefinco	Water & Health Newsletter - KFWWSP & KFPHCP Issue Nº3
1990	Finnida	Water Supply & Diarrhoea Diseases In Western Province - Kenya (Case Control Study) - KFWWSP & KFPHCP
	Kefinco	Water Use Study Project - KFRWDP
	Kefinco	Water Quality Monitoring Report Phase II Jan'86 to Dec'88
	Kefinco	Water Points Inventory Report - Siaya District
1989	Kefinco	Water Quality Monitoring Programme
1989	TTKK	The Role of Cost recovery in Water Supply In Developing Countries
1989	Kefinco	Kenya Participation from Finn water Consulting Engineers
1988	Kefinco	Steering committee meeting of Western Province KFRWDP & KFPHCP - Sept.
	Kefinco	Seminar Proceedings on Women participation in Health, Water & Sanitation sponsored by KFPHCP & KFWWSP at Mabanga Farmers Training Institute Bungoma
1988	Kefinco	Seismic Profiles Survey
1988	Kefinco	Experience of Kefinco on Monitoring (Case study)
1988	Kefinco	Progress Report - CP Section for Dec'88 visit to KFRWDP in Western Province

1988	Kefinco	Workplan on Training of SIDA supported projects within MOWD
1988	Kefinco	Deviation from Workplan and Reasons for Deviation
1988	Kefinco	Cooperation with KFPHCP
1988	Kefinco	The KFRWDP Personnel Circular Nº 1 on terms & conditions of contract of service
1988	Kefinco	Report on Visit made to wells & springs in Kakamega, Bungoma, Busia and Siaya Districts
	CARE	Women's Income Generation (W.I.G) '87-89'
1988	Kenafya	KPHCP - Health Education Plan on Water & Sanitation for Bungoma District for the year 1989 - Draft for Discussion
1987	Kefinco	Utilization of the Improved water sources community participation & women's involvement in Kenya - FRWDP
1987	Kefinco	Utilization of Improved Water Sources Community Participation & Women
1987	Kefinco	II Implementation Phase
1985	Kefinco	Studies for the Action Plan of the review & Appraisal mission report on the project

Progress reports and workplans

Monthly and annual progress reports as well as annual workplans and budgets have been prepared throughout the Programme period, quarterly progress reports were prepared up to end of 1991 and by end of each phase a final report has been prepared.