

area, options to control flood and mitigate flood damages should be developed using structural or non-structural measures or a combination of both. Flood inundation maps will be developed using the hydrological modeling stated in hydrological survey above. Satellite image and land use maps should be obtained for the flood damage survey also.

6) Irrigation development survey

To conduct existing and potential irrigation area as part of the overall integrated water resources management inputs. Maps of the existing and potential irrigable areas should be drawn out, with scale, form and other specifications should be discussed with the counterparts. The survey should also include recommendation on infrastructures needed to irrigate the potential areas.

7) Water supply and sanitation survey

To conduct demand and supply analysis for domestic and industrial water supply as part of the overall integrated water resources management inputs. The study should verify future water demand based on projections of population and industrial growth; make recommendations on how to meet the demand through the development of surface and groundwater sources under a long-term plan; indicate the urban and rural areas needing water supply for domestic and industrial uses, including the need, if any, for water and wastewater treatment facilities; and recommend the role to be played by the government and the private sector.

8) Fisheries development survey

To conduct existing and potential development survey as part of the overall integrated watershed management inputs. Furthermore, potential for development of fisheries should be assessed, including review of the present problems, status of development and factors that affect the sub-sector.

9) Watershed Management

To prepare a long-term plan for watershed management in the study area covering the implementation of the concept of multiple use of watersheds, multiple objectives of watershed investments, and community-based watershed management. Critical watersheds should be identified using tools such as satellite imagery and maps.

10) Water Quality Survey

To conduct assessment of the quality of water sources to determine their suitability for irrigation, water supply, and fisheries. Increasing pollution has resulted in significant water pollution due to untreated sewerage water mainly from urban centers and industrial wastes, which affect on fishery development. Accordingly, there is a need to improve urban and rural drinking water supply and sanitation to address high incidence of water-borne diseases. Salinity problem downstream of the Nyando River should also be assessed in view of its limiting effect on the use of water for irrigation and water supply. The plan should recommend measures to control saline intrusion, and propose a program for monitoring of water quality, salinity and sediment at strategic points in the study area.

Furthermore, the study should consider whether solid waste is a source of water sources pollution, in which case, its management should be made integral to the basin master plan.

11) Preliminary design and estimate

To conduct preliminary design of water-related facilities and estimate its cost.

12) Implementation schedule

To establish integrated water resources management plan and prepare implementation schedule for individual projects within the management plan

13) Institutional Framework for IWRM

To conduct i) a review of the current institutional structure, the agencies, both local and national, and their functions with regard to basin-wide water resources development and management; ii) identification of institutional issues related to IWRM; and iii) development of a cost-effective program to improve on the institutional framework and resolve the issues identified.

14) Cost Estimation and budgetary scheduling

To prepare overall cost estimate and budgetary schedules based on preliminary design, estimates and implementation schedule.

15) Economic evaluation

To perform economic and financial evaluation of individual projects

16) Environmental impact assessment

To conduct environmental impact assessment for the prioritized projects. The likely major adverse effects of the plan as a whole should be identified and actions to mitigate these effects should be proposed, particularly on i) resettlement of project affected families; ii) loss of agricultural and ancestral lands due to plan implementation; iii) impacts on flora and fauna; and iv) changes in river morphology.

17) Report Preparation

To prepare inception report, interim report and final report for the Project

Part B: Feasibility Study for the Prioritized Projects and Verification Study

To conduct feasibility study for the prioritized projects based on the established integrated watershed management plan. For the 5-year investment program, the preliminary design and cost estimates, implementation schedule and arrangements, budgetary scheduling, viability evaluation, environmental impact assessment (EIA), and resettlement action plan (RAP) will be prepared/conducted.

Prior to commencement of the Feasibility Study, it should undergo a stakeholders' consultation process. A report on the methodology used, the participants and a

summary of major comments made during consultations should be made part of the plan.

The verification study for the following issues will be conducted for further implementation stage:

- 1) Verification study on existing water supply facilities (Level 1 and 2) for rehabilitation and organization for improvement together with local governments and people
- 2) Verification study on existing irrigation water facilities for rehabilitation and users association for reinforcement
- 3) Verification study on existing flood facilities for rehabilitation and flood fighting for awareness creation

Prior to commencement of the Feasibility Study, it should undergo a stakeholders' consultation process. A report on the methodology used, the participants and a summary of major comments made during consultations should be made part of the plan.

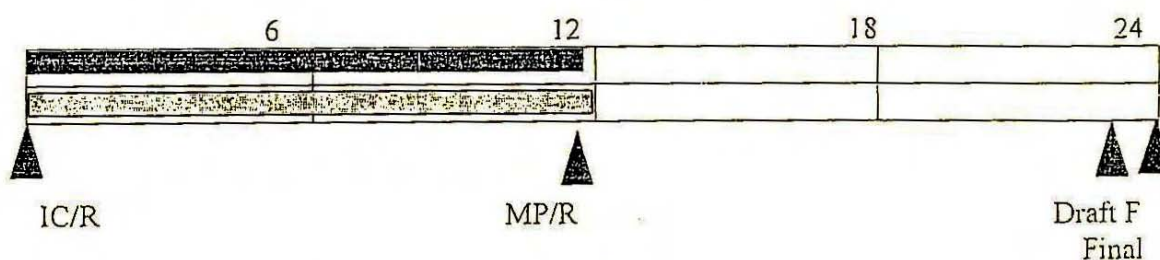
(6) Study Schedule:

(Desired implementation period of the Study)

- Expected date of start: January 2005
- Expected date of completion: December 2006

Total period of services will be 24 months, 12 months for formulation of the Master Plan and 12 months for the Feasibility Study.

Implementation Time Table is described as follows:



- Presentation of Inception Report (IC/R): Month 0
- Preparation of Master Plan: Month 0 to Month 12
- Preparation of Feasibility Study: Month 13 to Month 22
- Presentation of Draft Final Report: Month 22
- Presentation of Final Report: Month 24

(7) Expected Major Outputs of the Study:

Expected major outputs of the study are improved management knowledge of integrated water resources planning and management skills of the local counterpart staff. By implementing the Project together with foreign experts from Japan, the required skills to plan for water resources management of the Basin, and a feasibility study for the investments to be obtained.

(8) Possibility to be implemented/Expected funding resources:

After the completion of the Study, it is expected that the Project will be implemented by Grand Aid Program of the Government of Japan.

(9) Request for assistance from other donor agencies, if any.

None.

(10) Other factors, if any.

None.

III. Inputs from the Implementing Agency

(1) Assignment of counterpart personnel (number, level of technical capability etc.)

The following counterpart personnel from relevant agencies will participate in the analyses of data in their respective sub-sectors, in order to ensure effective transfer of technology.

<u>Local Counterpart</u>	<u>No. of Staff</u>
Team Leader (Integrated Water Planner)	1
Flood Control Planner	1
Hydrologist/Hydraulic Engineer	1
Irrigation Planner	1
Water Supply planner	1
Water Quality Expert	1
GIS/Computer Modeling Expert	1
Structural Engineer	1
Geologist (hydro-geology)	1
Socio-Economist	1
Fishery Expert	1
Construction Planner/ Cost Estimator	1
Environmental Specialist.	1
Surveyor	1
River Administration/Institution Specialist	1

Furthermore, in order to oversee the implementation of the study, the Project Steering Committee (PSC) will be formulated. Senior official of MWRMD Headquarters will be

the chairman of the PSC, while representatives from relevant agencies will also form members of PSC. Other PSC member would be the Consultants, JICA Representatives, and MWRMD Technical Secretariat

- (2) Available data, information, documents, maps, etc. related to the Study: (Please attaché the list)

<u>Type of Data</u>	<u>Source</u>
Socio-economic data	NWMP, 1992.
Geographical data	Survey of Kenya Maps
Hydrological data	Database, Maji House
Water Supply Data	Provincial Water Office Reports & Status Reports
Project Maps	MWRMD and Survey of Kenya
Environmental information	Environmental Reports, MENR
Previous studies	Maji House, PWO's Office Kisumu

- (3) Security conditions in the Study Area:

Peace and order prevails in majority of the basin.

IV. Global Issues (Environment, Gender, Poverty, etc.)

- (1) Environmental components (such as pollution control, water supply, sewage, environmental management, forestry, biodiversity) of the Project/Study, if any.

An environmental study will be conducted for the selected prioritized basins to determine their possible impacts to the environment. This will include identification of environmentally critical areas, the presence of endangered species and archeological relics, and investigation of the present land use and projected overall development in the selected basins. Public consultations and scoping sessions will be conducted to inform the stakeholders and beneficiaries and assess their perceptions on the proposed projects.

- (2) Anticipated environmental impacts of the Project/Study (both natural and man-made), if any.

Right-of-way/land acquisition and resettlement are among the issues anticipated to arise. Hence, in addition to the institutional aspect of the problem which will be studied, this will be given focus during the conduct of the environmental impact assessment.

- (3) Whether or not women are main beneficiaries of the Project/Study

The Project will have both men and women as beneficiaries.

- (4) Project components which require special considerations for women (such as gender difference, women specific role, women's participation), if any.

None.

- (5) Anticipated impacts on women caused by the Project/Study, if any.

None.

- (6) Poverty alleviation components of the Project/Study, if any.

The realization of this study and eventual implementation of the projects will result in mitigation of flooding. It will consequently improve the economy in the impact areas due to anticipated increase in agricultural production owing to protection afforded by the flood control project.

- (7) Project's/Study's possible adverse effects against the low-income people, if any.

None.

V. Undertakings of the Government of Kenya:

In order to facilitate a smooth and efficient conduct of the Study, the Government of Kenya shall take the following necessary measures:

- (1) Secure the safety of the Study Team.
- (2) Permit the members of the Study Team to enter, leave and sojourn in the Philippines in connection with their assignment therein, and exempt them from foreign registration requirement and consular fees;
- (3) Exempt the Study Team from taxes, duties and any other charges on equipment, machinery and other materials brought in and out of the Kenya for the conduct of the Study;
- (4) Exempt the Study Team from income tax and charges of any kind imposed on or in connection with the implementation of the Study;
- (5) Provide necessary facilities to the Study Team for remittances as well as utilization of the funds in the Philippines from Japan in connection with the implementation of the Study;
- (6) Secure permission for entry into private properties or restricted areas for the conduct of the Study;

- (7) Secure permission for the Study team to take all necessary data, documents and necessary materials related to the Study out of Kenya to Japan for analysis, and
- (8) Provide medical services as needed. Said expenses will be chargeable to members of the Study Team.

VI. Other Commitments of the Government of Kenya:

1. The Government of Kenya shall bear claims, if any arises against member(s) of the Japanese Study Team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claim arise from gross negligence or willful misconduct on the part of member of the Study Team.
2. The Government of Kenya shall act as counterpart agency to the Japanese Study Team as well as coordinate other governmental and non-governmental organizations to facilitate the smooth implementation of the Study.
3. The Government of Kenya will, as the executing agency of the Project, take responsibilities that may arise from the results of the Study. (In case a Detailed Design Study is requested).

The Government of Kenya shall ensure that all of the above-stated undertakings and commitments are adhered to, to facilitate smooth conduct of the Development Study by the Japanese Study Team.

On behalf of the Government of Kenya

Signed: 

Name: Prof. George O. Krhoda

Designation: Permaneny Secretary

Date: 2nd August. 2004

CURRENT STRUCTURE - MINISTRY OF WATER RESOURCES MANAGEMENT & DEVELOPMENT

