DEPARTMENT OF
PUBLIC WORKS AND HIGHWAYS
THE REPUBLIC OF THE PHILIPPINES

THE PREPARATORY STUDY FOR SECTOR LOAN ON DISASTER RISK MANAGEMENT IN THE REPUBLIC OF THE PHILIPPINES

FINAL REPORT
PART I
MAIN REPORT

JANUARY 2010

JAPAN INTERNATIONAL COOPERATION AGENCY

CTI ENGINEERING INTERNATIONAL CO., LTD.
in association with
NIPPON KOEI CO., LTD

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(as of 31st August 2009)

PREFACE

The Government of Japan decided to conduct a preparatory study for Sector Loan on Disaster Risk Management in the Republic of the Philippines and entrusted the Study to the Japan International Cooperation Agency (JICA).

JICA sent to the Philippines a study team headed by Mr. Yoshiharu Matsumoto of CTI Engineering International Co., Ltd. in association with Nippon Koei Co., Ltd, during the period of March 2009 and December 2009.

The Study Team held discussions with the officials concerned of the Government of the Philippines and JICA which examined the Study from specialist and technical point of view, and conducted field surveys at the study areas. Upon returning to Japan, the Study Team conducted further studies and prepared this final report.

I hope that this report will contribute to the promotion of the sector loan project on disaster risk management, and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of the Philippines for their close cooperation extended to the Study Team.

January, 2010
Izumi TAKASHIMA
Vice-President
Japan International Cooperation Agency

The Preparatory Study for Sector Loan on Disaster Risk Management in the Republic of the Philippines

January 2010

MR. IZUMI TAKASHIMA
Vice-President
Japan International Cooperation Agency
Tokyo, Japan

Ref.: **The Preparatory Study for Sector Loan on Disaster Risk Management in the Republic of the Philippines**

Subj.: **Final Report - Letter of Transmittal**

Dear Sir:

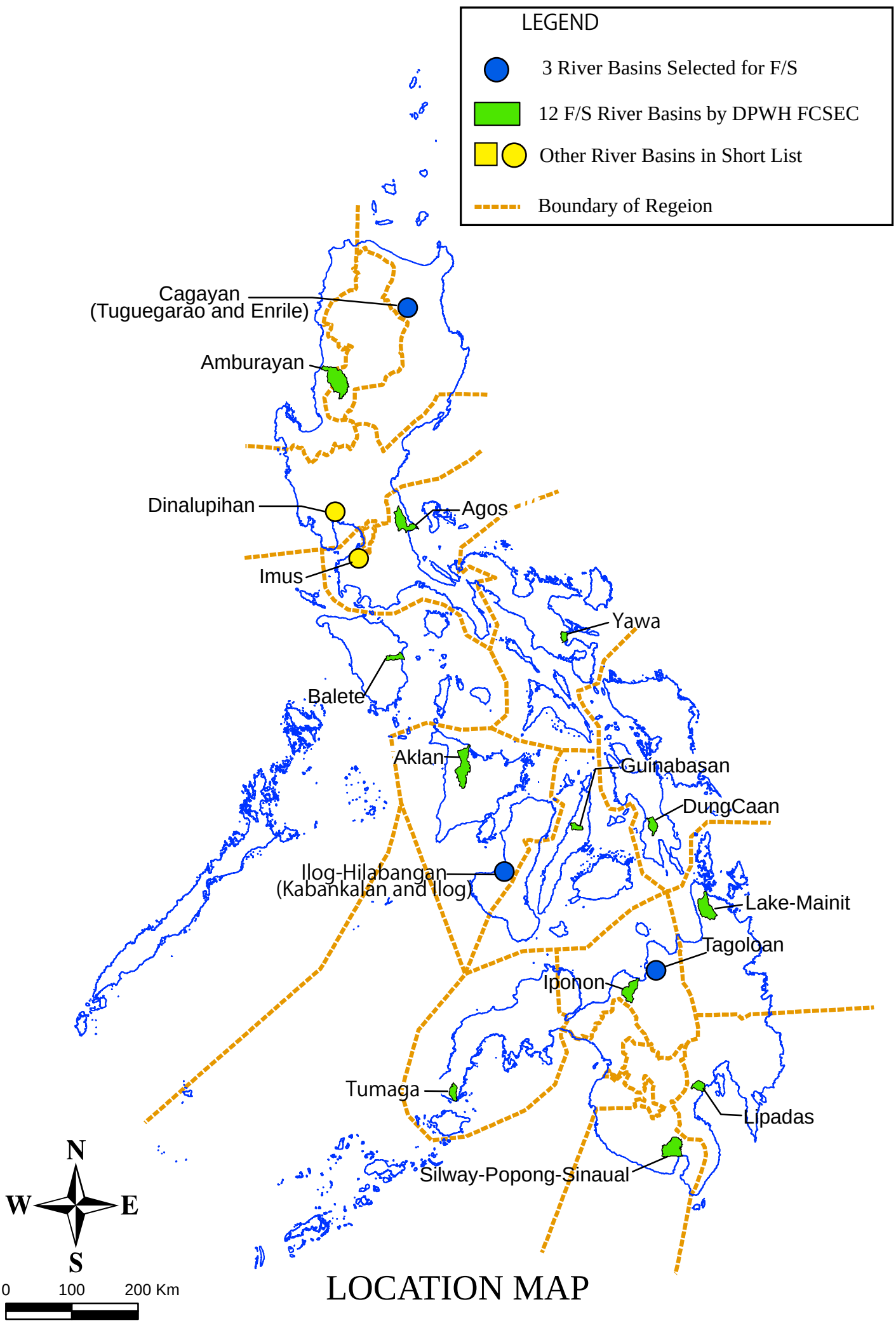
We are pleased to submit herewith the Final Report on "The Preparatory Study for Sector Loan on Disaster Risk Management" for your kind consideration. This report compiles the results of the Study in accordance with the contract between CTI Engineering International Co., Ltd. in association with Nippon Koei Co., Ltd. and the Japan International Cooperation Agency (JICA) during the period of March 2009 to January 2010.

During the Study, the Study Team prepared the implementation of the sector loan on disaster risk management together with the possibility of the creation of Disaster Response Fund including setup of cooperative agreement (conditionality) for proper and sustainable progress of the sector loan project and conducted the feasibility studies on comprehensive flood mitigation for core areas composed of applicable structural and non-structural measures for three river basins based on the analysis of existing/future conditions and problems in the areas. The report consists of summary, Part-I: Main Report, Part-II: Feasibility Studies, and Needs Assessment Study on Flood Disaster caused by Tyhoon Ondoy and Pepeng.

On this occasion the Study Team would like to express its sincere appreciation to JICA, the Ministry of Foreign Affairs, and also to the officials concerned of the Government of the Republic of the Philippines, and the Local Government Units (LGUs) concerned for the cooperation extended to the Team during the Study. We sincerely hope that the results of the Study will contribute to the commencement of the sector loan project and mitigation of flooding problems in the Philippines and that the amicable relationship between both our countries will further continue in the future.

Very truly yours,

YOSHIHARU MATSUMOTO
Team Leader
The Preparatory Study for Sector Loan on
Disaster Risk Management



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ABBREVIATIONS AND ACRONYMS

AD	Administrative Division (RO/DPWH)
A&B	Alienable and Disposable
AAB	Authorized Agent Bank
AAGR	Average Annual Growth Rate
AD	Administrative Division
ADB	Asian Development Bank
ADPC	Asian Disaster Reduction Center
ADRRN	Asian Disaster Reduction and Response Network
AFMA	Agricultural and Fisheries Modernization Act
AFP	Armed Forces of the Philippines
AGSSB	Atmospheric, Geophysical and Space Science Bureau
AIT	Asian Institute of Technology
AKPF	Abot-Kamay Pabahay Fund
AMMS	Administrative & Manpower Management Service (DPWH)
AO	Administrative Order
APSEMO	Albay Public Safety Emergency Management Office
ARMM	Autonomous Region in Muslim Mindanao
AS	Administrative Service
ASEAN	Association of South East Asian Nations
ASEP	Association of Structural Engineers of the Philippines
ASSEC	Assistant Secretary
AUDMP	The Asian Urban Disaster Mitigation Program
AusAID	Australian Agency for International Development
BACSEC	Bids and Awards Committee Secretariat (DSWD)
B-CARE	Bicol Calamity Assistance and Rehabilitation Effort
B/C	Benefit / Cost Ratio
BDCC	Barangay Disaster Coordinating Council
BFD	Bureau of Forest Development (DENR)
BFP	Bureau of Fire Protection
BIR	Bureau of Internal Revenue
BJMP	Bureau of Jail Management & Penology
BLGD	Bureau of Local Government Development (DILG)
BLGS	Bureau of Local Government Supervision (DILG)
BMZ	Bundesministerium Fur Wirtscafttliche Zusammenarbeit und Entwicklung
BOC	Bureau of Construction (DPWH)
BOD	Biological Oxygen Demand
BOD	Bureau of Design (DPWH)

BOE	Bureau of Equipment (DPWH)
BOM	Bureau of Maintenance (DPWH)
BOT	Build – Operate – Transfer
BRS	Bureau Research and Standards (DPWH)
BSP	Bangko Sentral ng Pilipinas (Central Bank of the Philippines)
BSWM	Bureau of Soils and Water Management
BP	Batas Pambansa
C/T	Census Survey and Tagging
CARBDP	Cotabato Agusan River Bank Development Project
CARL	Comprehensive Agrarian Reforms Law
CARE	Calamity Assistance and Rehabilitation Effort
CARP	Comprehensive Agrarian Reform Program
CAS	Country Assistance Strategy
CB	Community Base
CBDRM	Community Based Disaster Risk Management
C3	Command, Control and Communication Center
CCF	Country Cooperation Framework
CD	Capacity Development
CD	Construction Division (RO/DPWH)
CDCC	City Disaster Coordinating Council
CDP	Center for Disaster Preparedness
CENRO	City Environmental and Natural Resources Office (DENR)
CFMD	Controllership and Financial Management Division (RO/DPWH)
CFMS	Controllership and Financial Management Service (DPWH)
CG Meeting	Consultative Group Meeting
CIDA	Canadian International Development Agency
CITES	Convention on International Trade of Endangered Species of Wild Fauna and Flora
CLUP	Comprehensive Land Use Plan
CMP	Community Mortgage Program
CO	Carbon Monoxide
COA	Commission on Audit
CSAP	
CSP	Country Strategy and Program
DA	Department of Agriculture
DANIDA	Danish International Development Agency
DAO	Department Administrative Order
DAR	Department of Agrarian Reform
DBM	Department of Budget and Management

DBP	Development Bank of the Philippines
DCC	Disaster Coordinating Council
DCHA	Democracy, Conflict, and Humanitarian Assistance Services
DECS	Department of Education, Culture and Sports
DENR	Department of Environment and Natural Resources
DENR-EMB	DENR – Environmental and Management Board
DENR-LMB	DENR – Land Management Bureau
DEO	District Engineering Office (DPWH)
Deped	Department of Education (DECS)
DFA	Department of Foreign Affairs
DFID	Department for International Development (UK)
DILG	Department of Interior and Local Government
DiPECHO	Disaster Preparedness-European Commission's Humanitarian Aid Office
DLLO	Department Legislative Liaison Office (DSWD)
DMC	Disaster Management Cycle
DND	Department of National Defense
DOE	Department of Energy
DO	Dissolved Oxygen
DOF	Department of Finance
DOH	Department of Health
DOJ	Department of Justice
DOST	Department of Science and Technology
DOT	Department of Tourism
DOTC	Department of Transportation and Communications
DPWH	Department of Public Works and Highways
DPWH – MTIDP	DPWH Medium – Term Infrastructure Development Program
DRF	**Disaster Rehabilitation Fund (proposed in this Study)**
DRM	Disaster Risk Management
DRMMP	Disaster Risk Management Master Plan
DRNA	Damage And Reconstruction Needs Assessment
DRR	Disaster Risk Reduction
DSWD	Department of Social Welfare and Development
DTI	Department of Trade and Industry
EC	European Commission
ECC	Environmental Compliance Certificate
EDF	European Development Fund
EDPS	Electronic Data Processing Service (DILG)
EFCOS	Effective Flood Control Operation System
EIA	Environmental Impact Assessment

EIRR	Economic Internal Rate of Return
EIS	Environmental Impact Statement
EMB	Environmental Management Bureau
EM-DAT	Emergency Events Database
EMMP	Environmental Management and Monitoring Plan
EO	Executive Order
EOHO-DOH	Environmental and Occupational Health Office
ERDB	Ecosystems Research & Development Bureau (DENR)
ESC	Environmental and Social Consideration
ESWM	Ecological Solid Waste Management
ESSO	Environmental and Social Service Office (in DPWH)
EU	European Union
FCSEC	Flood Control and Sabo Engineering Center
FFB	Flood Forecasting Bureau
FFWCs	Food Forecasting and Warning System for Dam Operation
FINNIDA	Finnish International Development Agency
FMB	Forest Management Bureau (DENR)
FMC	Flood Mitigation Committee (DENR)
F/S	Feasibility Study
FSP	Forestry Sector Project
GAA	Genera Appropriations Act
GASSG	General Administrative Support Service Group (DSWD)
GDP	Gross Domestic Product
GIS	Geographic Information System
GLIDE	
GNP	Gross National Product
GPS	Global Positioning System
GRIPS	National Graduate Institute for Policy Studies
GEA	General Emilio Aguinaldo
GINI	Gini Coefficient
GIS	Geographic Information Systems
GMA	General Mariano Alvarez
GOCC	Government Owned and Controlled Corporation
GOP	Government of the Philippines
GSIS	Government Service Insurance System
GTZ	Deutsche Gesellschaft fur Technische Zusammenartbeit
ha(s)	Hectare (s)
HDMF	Home Development Mutual Fund
HFA	Hygo Framework for Action

HFHP	Habitat for Humanity Philippines
HGC	Home Guarantee Corporation
HLURB	Housing and Land Use Regulatory Board
HQ	Head Quarters
HRMS	Human Resource Management and Development Service (DSWD)
Hr/hr	Hour
HUDCC	Housing and Urban Coordinating Council
I/A(I/P)	Implementing Arrangement (Implementing Program)
IAS	Internal Audit Service (DPWH)
IBRD	International Bank for Reconstruction and Development
ICD	**Institutional Capacity Development (Team or Task Force proposed in this Study for the Sector Loan Project)**
ICET	International Center for Environmental Technological Transfer, Japan
IDA	Intelligence and Disaster Analysis
IDNDR	International Decade of Natural Disaster Reduction
IEC	Information Education Campaign
IEE	Initial Environmental Examination
ILO	International Labor Organization
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
IRA	Internal Revenue Allotment
IRP	International Recovery Platform
IRR	Implementing Rules and Regulations
ISDR	International Strategy for Disaster Reduction
IRTAF	Inter-agency Resettlement Task Force
IT	Information Technology
IUCN	International Union for the Conservation of Nature and Natural Resources
IWRM	Integrated Water Resources Management
JAXA	Japan Aerospace Exploration Agency
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
JOCV	Japan Overseas Cooperation Volunteers
JWF	Japan Water Forum
KfW	Kreditanstalt fur Wiederaufbau
KIIs	Key Informant Interview
Km	Kilometer
LAPRAP	Land Acquisition Policy and Resettlement Action Plan
LARC	Land Acquisition Resettlement Cost
LARR	Land Acquisition Resettlement and Rehabilitation

LBP	Land Bank of the Philippines
LCF	Local Calamity Fund
LDCC	Local Disaster Coordinating Council
LGA	Local Government Academy (DILG)
LGC	Local Government Code (RA 7160)
LGUs	Local Government Units
LLDA	Laguna Lake Development Authority
LMB	Land Management Bureau (DENR)
LRT	Light Rail Transit
LS	Legal Service
LTFRB	Land Transportation Franchising and Regulatory Board
LWUA	Local Water Utilities Administration
MAB	
MAI	Multilateral Aid Initiative
MD	Maintenance Division (RO/DPWH)
MCM	Million Cubic Meter
MDCC	Municipal Disaster Coordinating Council
MDG15	Millennium Development Goal 2015
MDRR	Mainstreaming Disaster Risk Reduction
M&E	Monitoring & Evaluation
MFC	Municipal Financial Corporation
MFCP	Major Flood Control Project
MGB	Mines and Geosciences Bureau (DENR)
MIS	Monitoring and Information System Service (DPWH)
MISS	Management Information Systems Service (DSWD)
MM	Metro Manila
MMDA	Metro Manila Development Bank
MMDCC	Metro Manila Disaster Coordinating Council
MMEIRS	Earthquake Impact Reduction Study for Metropolitan Manila
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
M/P	Master Plan
MPDC / MPDO	Municipal Planning and Development Coordinator / Municipal Planning and Development Office
MPH	Ministry of Public Highways
MPN	Most Probable Number
MPW	Ministry of Public Works
MQCHD	Materials Quality Control and Hydrology Division (RO/DPWH)
MRF	Material Recovery Facility

MTDIDP	Medium-Term DPWH Infrastructure Development Plan
MTPDP	Medium Term Philippine Development Plan
MTPIP of DPWH	Medium Term Public Investment
MWSS	Metropolitan Waterworks and Sewerage System
m^2	Square Meter
m^3	Cubic Meter
NAMRIA	National Mapping and Resources Information and Authority
NAPOLCOM	National Police Commission
NAPC	National Anti-Poverty Commission
NAPOCOR	National Power Corporation
NBOO	National Barangay Operations Office (DILG)
NCDRR	National Conference on Mainstreaming Disaster Risk Reduction
NCF	National Calamity Fund
NCR	National Capital Region
NSCB	National Statistical Coordination Board
NDCC	National Disaster Coordinating Council
NDMC	National Disaster Management Council
NDMP	National Disaster Management Plan
NDRB	Natural Disaster Reduction Bureau (PAGASA)
NDRMF	National Disaster Risk Management Framework
NEDA	National Economic Development Authority
NEDA – ICC	National Economic Development Authority – Investment and Coordination Committee
NFPP	National Framework for Physical Planning
NG	National Government
NGOs	Non – Government Organizations
NHA	National Housing Authority
NHCS	Napindan Hydraulic Control Structures
NHRC	National Hydraulic Research Center, UPERDFI
NHMFC	National Home Mortgage Finance Corporation
NHRC-UPERDFI	National Hydraulic Research Center
NIA	National Irrigation Authority
NOAA	National Oceanic and Atmospheric Administration
NIPAS	National Integrated Protected Areas System
NOx	Nitrogen Oxide
NPC	National Power Corporation
NPCC	National Pollution Control Commission
NPV	Net Present Value
NRDC	National Resources Development Corporation

NSCB	National Statistical Coordination Board
NSO	National Statistic Office
NWRB - DENR	National Water Resources Board
O&M	Operation and Maintenance
OCBG	Operations and Capacity Building Group (DSWD)
OCD	Office of Civil Defense
OCHA	Office for the Coordination of Humanitarian Affairs (UN)
ODA	Office Development Assistance
OECF	Overseas Economic Cooperation Fund of Japan (JBIC)
OFDA	Official Development Assistance
OPA	Office of Public Affairs (DILG)
OPDS	Office of the Project Development Service (DILG)
OTCA	Overseas Technical Cooperation Agency
OXFAM (GB)	
PAs	
PAF / PAPs	Project Affected Families / People(s)
PAGASA	Philippine Atmospheric Geophysical and Astronomical Services Administration
PAG – IBIG	Pagtutulungan sa Kinabukasan: Ikaw, Bangko, Industriya at Gobyerno
PAWB	Protected Area and Wildlife Bureau
PCFC	People’s Credit and Finance Corporation
PCM	Public Consultation Meeting
P/CMRBs	
PCSD	Philippine Council for Sustainable Development
PCUP	Presidential Commission for the Urban Poor
PD	Presidential Decree
PDAF	Priority Development Assistance Fund
PDCC	Provincial Disaster Coordinating Council
PDD	Planning and Design Division (RO/DPWH)
PDED	Project Development and Evaluation Division (DPWH)
PDM	Project Design Matrix
PDPB	Policy Development and Planning Bureau (DSWD)
PDTF	People’s Development Trust Fund
PEA	Public Estate Authority
PEQR	Philippine Environmental and Quality Report
PENROs	Provincial Environment & Natural Resources Offices (DENR)
PEZA	Philippine Economic Zone Authority
PFA	Public Forest Administration
PHDMO	Provincial Housing Development and Management Office

PHILSSA	Partnership of Philippine Support Service Agencies Inc
PHIVIDEC	Philippine Veterans Industrial Development Corporation
PHIVOLCS	Philippine Institute of Volcanology and Seismology
PIA	Philippine Information Agency
PICE	Philippine Institute of Civil Engineer
PIF	Philippine Infrastructure Fund
PMB	Program Management Bureau
PMO	Project Management Office (DPWH)
PMO – FS	Project Management Office – Feasibility Studies
PMO-MFCP	Project Management Office-Major Flood Control Project
PMP	Project Management Pool (DPWH)
PNCC	Philippine National Construction Corporation
PNP	Philippine National Police
PNPA	The Philippine National Police Academy
PNRC	Philippine National Red Cross
POs	People's Organization
PPDO	Provincial Planning and Development Office
PPFP	Provincial Physical Framework Plan
PPG	Policy and Programs Group (DSWD)
PPP	Public-Private Partnerships
PPSC	Philippine Public Safety College
PRMO	Plans Review & Monitoring Office (RO/DPWH)
Project ENCA	Project for Enhancement of Capabilities in Flood Control and Sabo Engineering of the DPWH
PRA	Participatory Rapid Appraisal
PS	Planning Service
PSP	Private Sector Participation
PTFAPSSS	Provincial Task Force Against Professional Squatters and Squatting Syndicates
PWP	Philippine Water Partnership
QRF	Quick Response Fund
RA	Republic Act
RBC	River Basin Council (DENR)
RAP	Resettlement Action Plan
RBCO	River Basin Control Office (DENR)
RBMO	River Basin Management Office (DENR)
RDCC	Regional Disaster Coordinating Council
RDP	Regional Development Plan
READY	Hazards Mapping and Assessment for Effective Community-Based Disaster Risk Management Project
RENROs	Regional Environment & Natural Resources Offices (DENR)

REO	Regional Equipment Office (RO/DPWH)
RIC	RAP Implementation Committees
RIS	Resident Interview Survey
RDC	Regional Development Council
RO	Regional Offices (DPWH)
ROW	Right of Way
RTAF	Resettlement Task Force
SAF	Special Assistance Facility
SAFP's	Strategic Agricultural & Fisheries Planning Zones
SAPROF	Special Assistance for Project Formulation
SB	Standard Bureau
SCC	Sagip Ilog Cavite Council Inc.
SEC	Securities and Exchange Commission
SES	Socio – Economic Survey
SHF	Special Housing Fund
SHFC	Social Housing Finance Corporation
SOx	Sulfur (Di) oxide Concentration
SMS	Short Message Service
SMS	Social Marketing Service (DSWD)
SRA	Social Reform Agenda
SSS	Social Security System
STB	Social Technology Bureau (DSWD)
STM	Stakeholder Meeting
SWIDB	Social Welfare Institutional Development Bureau (DSWD)
TESDA	Technical Education and Skills Development Authority
TMC	Trece Martirez City
TOR	Terms of Reference
TSP	Total Suspended Particulates
TWG	Technical Working Group
UDHA	Urban Development and Housing Act
µg	Microgram
UN	United Nations
UNCHS	United Nations Commission on Human Settlements
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNHCR	United Nations High Commissioner for Refugees
UNESCO	United Nation Educational, Scientific and Cultural Organization
UNICEF	United Nations Children Fund
UP	University of the Philippines

UPAO	Urban Poor Affairs Office
UPLB	University of the Philippines at Los Baños
UPERDFI	UP Engineering Research and Development Foundation, Inc.
USAID	United States Agency for International Development
USEC	Undersecretary
VAT	Value Added Tax
W/R	The ratio of employment at workplace / at residence
WB	World Bank
WB	Weather Bureau (PAGASA)
WMO	World Meteorological Organization
WRMB	Water Resources Management Bureau (DENR)
WSSD	World Summit of Sustainable Development
WTO	World Trade Organization
WWF	World Water Forum

CHAPTER 1 INTRODUCTION

1.1 Background of the Study

The Philippines is one of the countries most severely damaged by natural disasters in the East-Asia Region. Among the natural disasters, 92.5% are caused by typhoons that bring heavy rainfall and strong wind (Refer to **Figure 1.1 to 1.3 and Table 1.1 and 1.2**). Approximately twenty typhoons a year break out on the sea around the Caroline and Mariana Islands, and most of them pass through the Philippines. These typhoons cause floods, in most cases, by heavy rainfall.

Thus, the Philippines is vulnerable to flood damage. According to the flood damage records from 1970 to 2003, 544 people have died per annum and the number could be 1,487 people per annum if the missing and injured were included. The number of damaged households and disaster-affected persons was 500,000 and 2,800,000, respectively. Out of the 730,000 damaged houses, 70,000 have been completely destroyed. The total damage has been estimated at about 4.6 billion pesos a year; hence, once in every six years the damage amounts to more than 10 billion pesos.

In the Philippines, master plans for flood control projects of the Major River Basins (12 out of 18) with catchment areas of more than 1,400 km^2 were formulated in 1982. Based on those plans, feasibility studies and projects were implemented with ODA and other international funds (See **Figure 1.4** and **Table 1.3** and **1.4**). Even for the Principal River Basins with catchment areas of more than 40 km^2, urgent flood control projects whenever severe flood damage occurred were implemented. So far, however, river basins where flood control works have been implemented are very limited.

Under the circumstances, a development study known as "The Nationwide Flood Risk Assessment and the Flood Mitigation Plan for the Selected Areas in the Republic of the Philippines" (hereinafter called as "The Nationwide Flood Risk Assessment Study") was conducted to formulate the national strategy for flood control projects. In this study, 56 river basins in which flood control projects should be implemented for the period of 26 years between 2009-2034 were selected and the implementation schedule was arranged in the order of priority by dividing the 56 river basins into two (2) groups: one group covering the 26 river basins expected to be financed with foreign funds, while the other group of 30 river basins is to be financed with local funds. For some of the 26 river basins financed with foreign funds, requests for financial assistance from international funding institutions have been initiated (See **Figure 1.5**).

On the other hand, the prioritized river basins with middle level priorities have to wait for a rather long time to receive funds for project implementation, when each project is intended to protect the assets of the whole river basin with applications for individual loan. Flood control projects for river basins implemented with local funds may also wait for a long time judging from previous practices on flood control projects with local funds, because the limited budget for flood control is expensed ad-hoc - only for restoration works when flood damage is observed. In fact, flood disasters may occur in every river basin even for the middle priority river basins, and the stakeholders in each basin desire implementation of flood protection measures.

Under the circumstances, it has been recognized that there is a necessity for the early implementation of flood control projects not in the whole river basin but only for the core area in each basin (middle level priority river basins). For this purpose, the idea of a "Sector Loan" from New JICA (the merged JICA and JBIC) has been brought up to cover several river basins as a package but only for the protection of core areas. To make arrangements for the Sector Loan, feasibility studies are needed for the selected core areas scattered in these river basins.

In line with the above idea, the DPWH had decided to conduct, by itself, feasibility studies for twelve (12) river basins belonging to the group financed with local funds. For three (3) of the river basins including the group of foreign funds, feasibility studies are to be conducted by the DPWH with New JICA's assistance.

1.2 Objectives of the Study

1.2.1 Objectives of the Sector Loan Project on Disaster Risk Management

The objectives of the sector loan project are to strengthen the capability of Philippine Government agencies concerned in disaster risk management and to mitigate flood damage in vulnerable areas through the following:

(1) Implementation of structural and non-structural measures for the improvement of rivers in high-risk flood damage areas. The selection of such rivers shall be in accordance with the results of the "Study on the Nationwide Flood Risk Assessment and the Flood Mitigation Plan for the Selected Areas in the Republic of the Philippines."

(2) Improvement of disaster risk management systems, including management of the disaster rehabilitation fund for flood control.

1.2.2 Objective of the Preparatory Study

The objective of the Preparatory Study is to prepare the basic materials necessary to implement the project, including the following:

(1) To select three (3) objective river basins and core areas where urgent implementation of a flood control project is really needed;

(2) To conduct feasibility studies for the selected core areas in the three river basins;

(3) To arrange the materials for preparation of the Implementation Program (I/P) in connection with the application for a sector loan; and

(4) To confirm and recommend, if necessary, the current institutional arrangements to manage the sector loan.

1.3 The Study Area

The Study covers the whole country as well as three (3) river basins selected through discussions/consultations with the DPWH.

1.4 The Study Schedule

The study schedule is as shown in the chart below. The study was started in the beginning of March 2009 in a manner of Home Work that followed the Field Survey Work, and continued until the middle of November 2009.

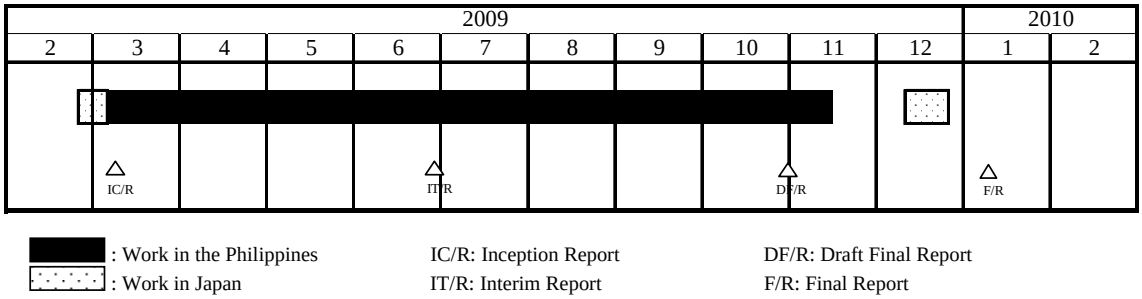


Figure R 1.1 Study Schedule, JICA Preparatory Study on Sector Loan for Disaster Risks Management, 2009-2010

1.5 Scope of Work

The scope of work of the Study is shown in **Appendix-1,** Minutes of Discussion on March 2, 2009. The Terms of Reference is composed of the following major items:

(1) Verification of Background and Necessity of the Project

(2) Verification of the Project Scope

(3) Verification of Environmental and Social Conditions

(4) Recommendation on Coordination with Other Agencies

(5) Verification of Economic Evaluation

1.6 Composition of the Final Report

The Final Report is to be submitted as the final product of "The Preparatory Study on Sector Loan for Disaster Risk Management in the Republic of the Philippines" and contains the objectives listed above.

In this connection, the Final Report consists of the following six (6) volumes:

Table R 1.1 Composition of Final Report

Volume No.	Title	Contents
-	Summary	Summary of the results of the entire study
Part I	Main Report	The results of the entire study and the framework and implementing strategy, manner, cooperative agreement and procedure of the Sector Loan.
Part II-A	Feasibility Study on the Lower Cagayan River Flood Control Project for the Sector Loan Application	Results of the review on the Feasibility Study conducted in 2002 and the Structural and Nonstructural Measures for the Project Proposed for Sector Loan.
Part II-B	Feasibility Study on the Ilog-Hilabangan River Flood Control Project for the Sector Loan Application	Review of the Master Plan of 1990 and the results of Feasibility Study on the Project Proposed for Sector Loan
Part II-C	Feasibility Study on the Tagoloan River Flood Control Project for the Sector Loan Application	Review of the Master Plan of 1982 and the results of Feasibility Study on the Project Proposed for Sector Loan.
-	Needs Assessment Study on Flood Disasters Caused by Typhoons No. 16 (ONDOY) and No. 17 (PEPENG)	

CHAPTER 2 NECESSITY OF THE PROJECT

2.1 Sector Problems on Natural Disaster

2.1.1 Natural Disasters in the Philippines

The Philippines is located in one of the most striking natural disaster belts in the world affected by a variety of natural disasters such as typhoon, flood, earthquake, volcanic eruption, drought, slope failure, high tide and many other types of disaster. Among the major disasters that have occurred since the 1980's, the disaster which recorded the heaviest casualty was the flood flow with debris in Ormoc, Leyte, brought by Typhoon Uring in November 1991 (Fatality: 5,101; Missing: about 3,000). The Central Luzon Earthquake in July 1990 recorded the largest property damage of about 12,200 million pesos. Another devastating disaster was the eruption of Mount Pinatubo in 1991, which affected not only the regional but also the national economy, recording a negative growth rate in the national GDP.

Among the various types of natural disaster, storm (typhoon/tempest), which causes about 70% of the total casualty of all types of disaster, is overwhelmingly dominant in terms of casualty as shown in the following table. The number of affected people (including dead and injured) caused by storm and flood (typhoon/tempest) account for more than 95% of the total casualty by all types of disaster. Therefore, assistance with fundamental measures against these two types of disaster (storm and flood) should contribute much to the entire disaster mitigation sector.

Table R 2.1 Statistical Data on Disasters according to Disaster Type (2000 Jan. - 2008 Dec.)

Disaster Type	Killed		Affected		Estimated Damage	
	Person	Ratio (%)	Person	Ratio (%)	USD (mil.)	Ratio (%)
Storm	5,988	73.4%	33,222,044	86.6%	1,165	92.7%
Earthquake (seismic)	15	0.2%	73,451	0.2%	2	0.1%
Volcanic Eruption	0	0.0%	209,532	0.5%	5	0.4%
Flood (General/Flash Flood)	379	4.6%	4,552,146	11.9%	72	5.8%
Mass Movement Wet Land Slide	1,717	21.0%	240,511	0.6%	9	0.7%
Epidemic	35	0.4%	774	0.0%	0	0.0%
Flood (Surge/Coastal)	26	0.3%	65,843	0.2%	3	0.2%
Drought	0	0.0%	0	0.0%	1	0.1%
Wildfire	0	0.0%	0	0.0%	0	0.0%
Insect Infestation	0	0.0%	0	0.0%	0	0.0%
Total	8,160	100.0%	38,364,301	100.0%	1,257	100.0%
Source: EM-DAT: Emergency Events Database; http://www.emdat.be/						

(1) Flood

The Philippines has a tropical climate. Tropical storms are common from June to October; each year about 20 typhoons hit the Philippines, mostly on the eastern coasts of Luzon and Samar, bringing high winds and flooding that sometimes result in property damage and loss of life.

The vulnerability of the Philippines to flooding is more pronounced in the 421 principal river basins and the 76 sub-basins of major rivers scattered all over the Philippine

Archipelago with an average of 20 typhoons each year. Under intense rainfall, overflowing of waterways, inundation and deposition of sediment in flood plains, extensive flood damage often result. Monsoons also bring heavy rain that cause flooding. Flood-prone areas are extensively located in Eastern Mindanao, Northern Samar, Central Luzon and the Bicol Region. Approximately, there is a total of about 1,316,230 hectares susceptible to flooding nationwide, almost 423,000 hectares or 32% of which are located in Central Luzon alone.[1] As the type of flood, all types could be observed; namely, flash flood including debris, mudflow and lahar flow in the upstream, overflow and bank erosion in the middle and down streams, and inland flood in the downstream.

(2) Flood Damage

From 1990 to 2003 alone, the Philippines experienced an average of 3.5 destructive typhoons a year with damage costing up to 96.6 billion pesos, mostly incurred from flood-damaged properties, infrastructures and crops. From the damage figures of the Office of Civil Defense (OCD) and the National Disaster Coordinating Council (NDCC), most typhoons entering the PAR undoubtedly take the heaviest toll on life and property. This incurs a heavy cost on the economy of the Philippines, especially, upon the agriculture sector. It has been reported that an average of 900 persons die annually, and the estimated cost of approximately 8 billion pesos per annum is assumed to be due to typhoons and associated flood events over the period covered.

The loss of human life and damage to agricultural crops and private properties, as well as the interruption of business operations, tend to hinder economic development and the efficient delivery of basic social services. Flood damage has been estimated at 2% of the national budget, and almost double the yearly budgetary allocation of the DPWH for flood control.

Table 2.1 lists the amounts of flood damage incurred in the last 26 years (1980-2005) in the Philippines, while **Figure R 2.1** shows the annual behavior of casualties.

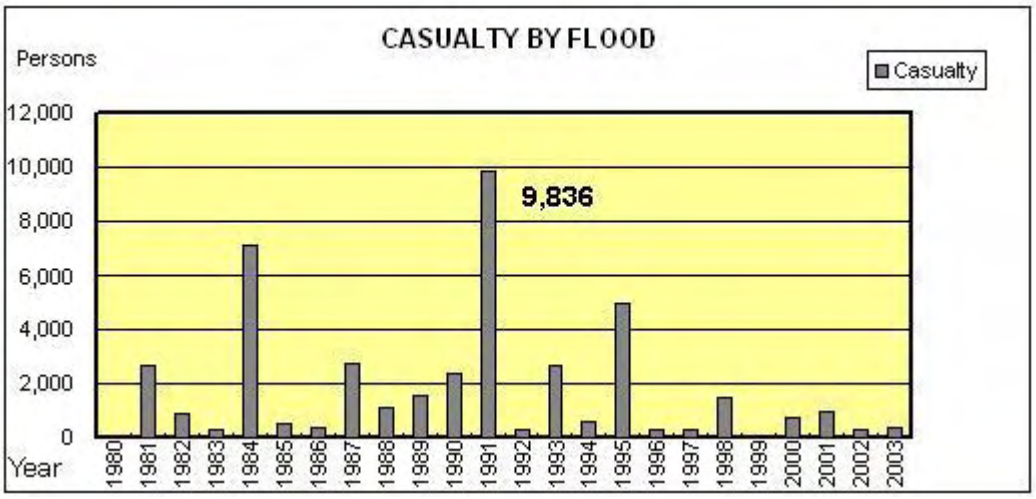


Figure R 2.1 Annual Behavior of Flood Casualties (1980-2003)

Table 2.2 summarizes the tropical cyclones, as well as the casualties and missing persons which exceeded 100 in total.

[1] Source: Philippine Flood Control 1977, NWRC

2.2 National Policy and Direction for Flood Control

In this sector, several national development plans have been prepared to orient the policy and direction for economic and infrastructure development, including flood control in the Philippines. Selected among them are the Medium-Term Philippine Development Plan (2004-2010), the Medium-Term DPWH Infrastructure Development Plan (2004-2010) and the National Framework for Physical Planning (2001-2004).

2.2.1 Medium-Term Philippine Development Plan, 2005-2010 (MTPDP 2005-2010)

The Medium-Term Philippine Development Plan (MTPDP) is a detailed roadmap towards achieving the common goal of reducing poverty through job creation and enterprise.

As for natural disaster prevention, strategies are mainly divided into two; namely, Nonstructural Measures and Structural Measures. Their strategies are excerpted as below:

1. Nonstructural Measures a. Complete the geo-hazard mapping of the remaining 13 regions; b. Conduct soil stability measures (e.g., reforestation and planting in river banks) for landslide-vulnerable areas; and c. Ensure integration of disaster preparedness and management strategy in the development planning process at all levels of governance. This shall be done through the following activities, namely, among others: periodic risk assessments, updating of respective land use policy based on the assessment, conduct of disaster management orientation/training among LGU officials and concerned local bodies, institutionalization of community-based mechanisms for disaster management (e.g., inclusion of legitimate disaster management organization at various Disaster Coordinating Councils), and advocating for the bill on "Strengthening the Philippine Disaster Management Capability."
2. Structural Measures a. Keep at the optimum the conveyance capacities of existing river channel floodways, drainage canals, esteros through riverbank protection, dredging/de-silting, observance of river easements, relocation of informal settlers, proper disposal of garbage, and efficient maintenance in coordination with LGUs; b. Provide adequate flood control and drainage facilities in all flood/sediment disaster prone areas to mitigate flooding as well as rehabilitate and improve existing facilities.

The points to be understood in the MTPDP 2004-2010 policy are summarized as follows:

- Flooding shall be mitigated through the complex enhancement between government policies, organizations, laws, physical countermeasures, etc., under the philosophy that flooding cannot be completely controlled by human techniques.
- In addition, flood management shall be considered as one of Integrated Water Resources Management.

In accordance with the policy, the following priority flood management projects have been scheduled:

- Mt. Pinatubo Hazard Urgent Mitigation II;
- Iloilo Flood Control Project;
- Lower Agusan Flood Control Project Stage 1, Phase 2;
- Bicol River Basin and Watershed Management;
- Agno and Allied Rivers Flood Control;

- KAMANAVA Flood Control;
- Metro Manila Flood Control Project - West of Mangahan Floodway;
- Pasig-Marikina River Channel Improvement Project, Phase II;
- Cagayan River Flood Control Project;
- Panay River Flood Control Project; and
- Lower Cotabato River Flood Control Project.

2.2.2 Medium-Term DPWH Infrastructure Development Plan, 2005–2010

The DPWH, which is mandated to administer flood control and Sabo projects, had set nine (9) tasks to be solved or improved for the implementation of effective flood and landslide disaster mitigation since the previous Medium-Term Plan (1999-2004), as follows:

- Formulation of an overall Master Plan of flood control adopting the principle of management and river basin approach;
- Pursuance of comprehensive planning of prioritized major and principal river basins, giving priority to maintenance rather than new construction;
- Provision of adequate flood control and drainage facilities in all flood/sediment-disaster prone areas to mitigate flooding within tolerable levels;
- Pursuance of nonstructural measures to mitigate floods, such as flood forecasting and warning and monitoring system, evacuation plan, hazard mapping and reforestation;
- Keeping of optimum conveyance capacities of river channel floodways, drainage canals, esteros, etc., through riverbank protection, dredging/de-silting, observance of river easement, and efficient management in coordination with LGUs;
- Establishment of database of river information, including existing flood control, drainage, and Sabo structures;
- Strengthening and maximizing the capacity of the Flood Control and Sabo Engineering Center (FCSEC) to conduct basic and applied researches and development, engineering programs and human resources development;
- Strengthening of the flood management capabilities of DPWH, LGUs and other concerned agencies; and
- Establishment of the National Flood Management Committee (NFMC) as the inter-agency organization and policy governing body to integrate and lead all efforts on disaster mitigation and flood management, and formulate guidelines.

To sustain the policy on development since the previous Medium-Term Plan, the DPWH have the following investment programs:

Table R 2.2 Tentative Implementation Schedule of DPWH Investment Programs

Project	Total Cost	Previous Year	Proposed Allocation (in thousand Pesos)							
			2005	2006	2007	2008	2009	2010	Total (2005-2010)	Later Years
National Roads										
Foreign-Assisted Projects	353,770*	52,376	17,122	24,270	18,834	18,819	34,014	42,163	155,222	146,676
Locally Funded Projects	142,522	1,353	9,081	11,285	18,454	37,841	30,681	33,827	141,169	
Total	496,293*	53,729	26,203	35,555	37,288	56,660	64,695	75,990	296,391	
Flood Control										
Foreign-Assisted Projects	93,422	17,414	5,285	4,784	6,532	4,014	10,966	12,642	44,223	31,785
Locally Funded Projects	4,900	-	-	-	1,500	1,500	900	1,000	4,900	-
Total	98,322	17,414	5,285	4,784	8,032	5,514	11,866	13,642	49,123	31,785
Other Locally Funded Projects	70,650	-	7,232	7,380	17,342	12,132	8,892	8,640	61,618	9,032
Grand Total	665,265	71,143	38,720	47,719	62,662	74,306	85,453	98,272	407,132	

Note: (*) as shown in MTPIP
River basins listed with requests for foreign-assisted projects in the DPWH Medium-Term Investment Program are as shown in Table 2.3, together with the local fund projects.

2.2.3 National Flood Mitigation Framework Plan (Draft: June 2006)

(1) Current Situation and Needs

(a) Background

Flood and other water-induced disasters are becoming regular occurrences in the country. These recent occurrences have shown a rising trend of disasters nationwide, coupled with the seemingly reactive postures of both government and the populace. Acknowledging the need to immediately address flood and flood/sediment related disasters which hamper the socio-economic development of the country, President Gloria Macapagal-Arroyo had directed the formulation of a National Flood Mitigation Framework Plan to facilitate the harmonious and coordinated efforts of the various government agencies and other stakeholders in mitigating flood and other water-induced disasters, at the same time rationalizing investments of other sectors.

(b) Disaster Mitigation Framework

Disaster Coordinating Councils (DCCs) at different levels have been created under PD 1566, which provides the nation's principles on disaster mitigation. Issues and concerns hampering the effective disaster mitigation in the country are enumerated (e.g., the local calamity fund is not available for pre-disaster activities).

(c) Flood Mitigation Constraints

The existing constraints on flood mitigation have been identified, as follows:

- Limited budget; and
- Limited human resources/expertise and equipment.

(2) Goals and Objectives

(a) Goals

The goal set in the National Flood Mitigation Framework Plan (NFMFP) is for the protection of communities and environment, and the enhancement of their coping capacities from/against flood and other water-induced hazards (includes sediment hazards) through nonstructural and structural measures.

(b) Objectives

Specific objectives of the Framework Plan are as follows:

- To reduce the impacts of flood and other water-induced hazards by integrating and harmonizing measures in the following areas: a) major river basins; b) high-risk principal/small rivers; c) areas within fault lines; d) molcanic areas; and e) high risk coastal areas.
- To develop hazard mitigating measures, such as: a) Structural Measures; b) Nonstructural Measures; and c) Response, Recovery and Development.
- Policies

In the implementation of the NFMFP, the following policies are to be pursued with regard to the composition of framework of flood mitigation by the following approaches:

- Structural Measures (Reducing Hazard Magnitude);
- Nonstructural Measures (Reducing Vulnerability);
- Response, Recovery and Development (Mitigating Impacts);
- Use of Integrated Water Resources Management (IWRM) principles in guiding the development of approaches;
- Rational and equitable implementation of mitigation measures, i.e., based on river basin master plans; and
- Establishment by LGUs of community-based rainfall and water level monitoring, in coordination with PAGASA and BRS-DPWH, respectively.

(3) Strategies

In line with the goals, objectives and policies, the following strategies are recommended:

- The concerned agencies shall cooperate and coordinate their responsibilities, consistent with the framework of flood mitigation and in accordance with the Responsibility Matrix;
- A river basin management plan shall be formulated for each prioritized river basin, focusing on flood mitigation; and
- Countermeasures shall be suited to local conditions, culture and resources.

(4) Framework of Flood Mitigation

Various activities under the structural (reducing vulnerability), nonstructural (reducing hazard magnitude) and response, recovery and development (mitigating impacts) approaches are to be listed including those for institutional strengthening.

(5) Implementation Plan

Government agencies, LGUs and other stakeholders are to implement the mitigation programs and measures described. This will require the commitment of government to support the programs, and the understanding and support of the LGUs and beneficiaries.

The following nonstructural and structural measures are to be implemented:

(a) Nonstructural Measures

- NAMRIA Base Map Updating
- Harmonization of Hazard Maps
- Hydrological Information Dissemination
- Watershed Management
- Coastal Resources Management
- Community Disaster Management

(b) Structural Measures

- Ongoing Foreign-Assisted Flood Control Projects
- River Basins Scheduled for Implementation until 2010
- Feasibility/Detailed Engineering and Implementation of Priority Projects identified in the High Risk Flood and Sediment Disaster Prone Areas (DPWH)
- Feasibility/Detailed Engineering and Implementation of Sabo Projects in identified Sabo Sites (DPWH)
- Master Plan for the remaining seven (7) Major River Basins (no existing MP)

- Update of Completed Master Plans of four (4) Major River Basins (DPWH)
- SWIM/SWIP Projects (NIA/BSWM, DA/DPWH)
- River Improvement Projects and Drainage Projects under the District Engineering Offices of the DPWH Regular Funds
- River Improvement Projects and Drainage Projects under the Local Government Units
- Provision of Structural Complement (i.e., check dams) for Erosion Control and Reforestation

2.3 Current Disaster Management System in the Philippines

2.3.1 Policies and Strategies

The disaster management policy is embedded in Presidential Decree No. 1566, which strengthens the Philippine disaster control capability, establishing the national program on community disaster preparedness. Salient provisions of PD 1566 cover the following:

- The state policy on self-reliance among local officials and their constituents in preparing for, responding to and recovering from disasters;
- Organization of the national, regional and local disaster coordinating councils (LDCCs);
- Preparation of the national calamities and disaster preparedness plan (NCDPP) by OCD and implementing plans by NDCC member agencies and local DCCs;
- Conduct of periodic drills and exercises by concerned agencies and local DCCs; and
- The authority for the local government units to program funds for disaster preparedness activities such as the organization of DCCs, and training and equipping of DCC response teams.

The disaster management doctrines in PD 1566 are as follows:

- Responsibility for leadership rests on the provincial governor, city mayors, municipal mayors and barangay chairpersons, according to their area of responsibility.
- Self-reliance shall be developed by promoting and encouraging the spirit of self-help and mutual assistance among the local officials and their constituents.
- Each political and administrative subdivision of the country shall utilize all available resources in the area before asking for assistance from neighboring entities or higher authority.
- When an emergency affects an area covering several towns and cities, the city mayors and their personnel and facilities shall be placed under the operational control of the Provincial Governor for the duration of the emergency.
- It is the responsibility of all government departments, bureaus, agencies, and instrumentalities to have documented plans of their emergency functions and activities.
- The national government exists to support the local governments in times of emergencies and according to their level of assignment, all national government offices in the field shall support the operations of the local government.
- The primary responsibility rests on the government agencies in the affected areas in coordination with the people themselves.
- Planning and operation shall also be done at the barangay level in an inter-agency, multi-sectoral basis to optimize the utilization of resources.
- In the absence of a duly constituted regional government, national government offices at the regional level shall be led and operationally controlled by the Regional Commissioner or by the official so designated by the President.

- To ensure that operational activities become automatic and second nature to all concerned, exercises and periodic drills shall be conducted at all levels, principally at the barangays.

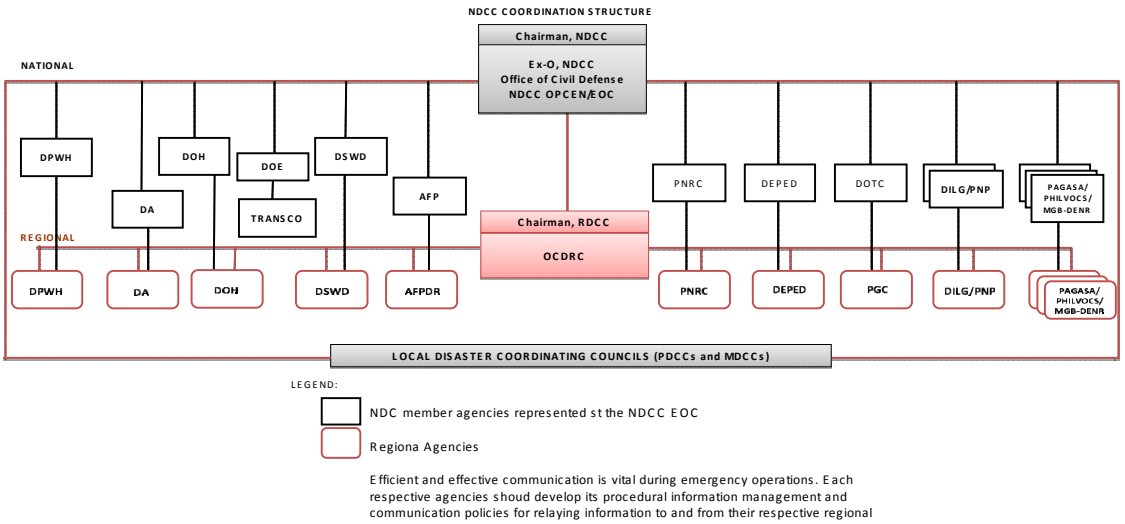
2.3.2 Institutional Aspects

(1) The NDCC and Its Network

The National Disaster Coordinating Council (NDCC) is the highest policy making, coordinating, and supervising body at the national level for disaster management in the Philippines. It advises the President on the status of national disaster preparedness and management plans, and also recommends disbursement of the State of Calamity Fund to support urgent and emergency activities.

The NDCC consists of the Secretary of DND as Chairman with the Secretaries of DILG, DPWH, DOH, DSWD, DA, DepEd, DOF, DOLE, DTI, DOTC, DOST, DBM, DOT, DENR as members, including the Director of PIA, Sec-Gen of PNRC, AFP Chief of Staff. The Administrator of OCD is the Executive Officer.

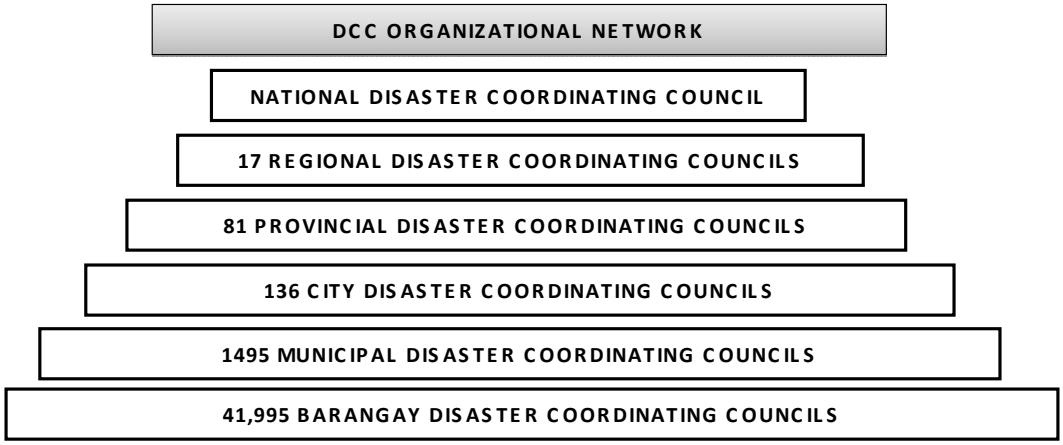
OCD is also the Secretariat and the executive arm of NDCC. The NDCC coordination structure is shown in **Figure R 2.2**.



(Source: Office of Civil Defense)

Figure R 2.2 NDCC Coordination Structure

The organizational network of DCC consists of the NDCC proper, down to Regional, Provincial, City, Municipal and Barangay DCCs, as shown in **Figure R 2.3**.



(Source: Office of Civil Defense)

Figure R 2.3 DCC Organizational Network

The NDCC comprehensive disaster management framework consists of the following:

- **Mitigation** refers to the measures at minimizing the impact of a natural or a man-made disaster in the country or community in terms of casualties and damages. It also refers to the measures designed to prevent natural phenomena from causing or resulting to disasters or other similar emergency situations.
- **Preparedness** refers to pre-disaster actions and measures being undertaken to avert or minimize loss of lives and properties, such as but not limited to community organizing, training, planning, equipping, stockpiling, hazard mapping and public information and education initiatives.
- **Response** refers to any concerted effort by two or more agencies, public or private, to provide emergency assistance or relief to persons who are victims of disasters or calamities, and in the restoration of essential public activities and facilities.
- **Rehabilitation** refers to the process by which the affected communities/areas or damaged public infrastructure are restored to their normal level or a better/improved condition prior to the occurrence of disaster or calamity. The rehabilitation measures include emergency funding from the local and national calamity funds and other sources such as loans, grants or technical assistance.

(2) The Office of Civil Defense

OCD has the primary task of coordinating the various government agencies and instrumentalities as well as private institutions and civic organizations devoted to public welfare and supervising, monitoring and evaluating the implementation of disaster management programs to ensure effectiveness at the national and regional levels.

The activities and programs of OCD can be classified into three major program thrusts:

- **Disaster risk reduction -** Risk identification and hazard vulnerability assessment are continuously being conducted in order to prevent /mitigate the occurrence of disasters.
- **Civil protection and preparedness** - This program thrust consists of developing and implementing a mechanism for informing, educating, and training of OCD personnel, disaster managers, local government executives/responders, volunteer workers and the general public on civil defense and assistance measures to enhance competencies and capabilities in responding to and mitigating the effects of disasters and other emergencies.

- **Coordination of disaster response operations and rehabilitation initiatives** - These are OCD-led coordinative activities and functions of various agencies and instrumentalities of the national government, private institutions and civic organizations.

The Office of Civil Defense maintains and operates the National Disaster Coordinating Council Operations Center (NDCC Opcen) in pursuit of its vision of a prepared population and a safe nation. The mission of the said Opcen is to operate on a 24/7 basis in coordination with relevant agencies by providing and disseminating disaster response and population preparedness guidelines and facilitate effective management of the consequences of disasters or emergency situations requiring interventions of national agencies in order to minimize adverse effects of disasters.

The NDCC Opcen serves as the nerve center for coordination of all pre- and post-disaster operational activities at the national level. Its core functions are the following:

- **Alert and monitoring -** Provides warning in close coordination with national warning agencies and monitor the probable consequences of potential disasters or emergency situations around the country with relevant DCCs.
- **Multi-agency operational coordination -** Involves coordination of pre-defined and post-disaster operational activities being undertaken by relevant agencies, ensuring that all key actors are taken on board.
- **Response coordination and resource mobilization -** Maintains an updated database of all available response resources in the country, and formulate mobilization of SOPs for the response resources and operational support arrangements.
- **Information management -** Documents all past disasters situations to include a review of the pre- and post-disaster activities undertaken by key actors and maintain database of relevant information.
- **Program coordination for operational capability upgrade -** Maintains active linkages with member agencies and facilitates the synchronization of programs for operational capability upgrade, and provides operational guidelines on the management of local DCC Opcen.

(3) NDCC Member Agencies and Their Roles in Disaster Management

As shown in Item (1) above, the NDCC is a multi-agency council. The roles and responsibilities of related agencies as members of NDCC are collectively referred to and explained in Section 3.2 of Chapter 3 as the related agencies for disaster risk management in the Philippines.

(4) Local Disaster Coordinating Councils

Pursuant to the provisions of Republic Act No. 7160, which is otherwise known as the Local Government Code of 1991, the Local Chief Executive shall carry out emergency measures as may be necessary during and after man-made and natural calamities and disasters to ensure the welfare and benefit of the people. On the other hand Presidential Decree No. 1566 and the National Calamities and Disaster Preparedness Plan provide the reorganization of the Local Disaster Coordinating Councils throughout the country.

The Local Government Code provides that the chief executives are the chairmen of their respective councils. Thus, the Governor is the chairman of the Provincial Disaster Coordinating Council (PDCC), which consists of organic key officers of provincial and national government agencies assigned to work in the province. At the city level, the City

Mayor becomes the Chairman of the City Disaster Coordinating Council (CDCC), while the town Mayor is the Chairman of the Municipal Disaster Coordinating Council (MDCC). The Punong Barangay acts as the Chairman of the Barangay Disaster Coordinating Council (BDCC).

The functions of the Provincial Disaster Coordinating Council are the following:

- To establish a physical facility to be known as the Provincial Disaster Operations Center (PDOC);
- To coordinate the disaster operations activities of the municipalities within the province from PDOC;
- To implement within the province the guidelines set by the RDCC;
- To advise the City/Municipal and barangay DCCs regarding disaster management;
- To submit recommendations to the RDCC as necessary; and
- To place the CDCCs/MDCCs and its tasked units under the operational control of the PDCC during an emergency affecting the towns/cities.

The functions of the City/Municipal Disaster Coordinating Council are almost similar to those of PDCC, which are as follows:

- To establish a physical facility to be known as the City/Municipal Disaster Operations Center (C/MDOC);
- To coordinate from the City/Municipal Disaster Operations Center the disaster operations activities;
- To implement within the city/municipality the guidelines set by the PDCC;
- To advise the Barangay Disaster Coordinating Councils regarding disaster management; and
- To submit recommendation to the PDCC, as necessary.

The functions of the Barangay Disaster Coordinating Council are almost similar to those of MDCC, which are follows:

- To establish the Barangay Disaster Operations Center (BDOC);
- To coordinate from the BDOC the disaster operations activities of its tasked units;
- To implement within the barangay the guidelines set by the C/MDCC; and
- To advise the members of the BDCC regarding disaster management.

(5) Relevant Issues and Gaps on DRM

As stated above, the following relevant issues and gaps regarding DRM in the Philippines becomes clear:

- Role of water-related agencies in terms of river administration, such as easement on riverbank.
- Poor enforcement of easement zone regulation or salvage zone encourages informal settlers to continue inhabiting areas along river banks and near coastlines increasing their exposure to disaster risk.
- Poor recognition of flood control project in relation to disaster risk management and climate change adaptation.
- Insufficient operation and maintenance of structural and nonstructural measures for flood control projects.

- Some of the physical structures such as levees and dikes built to safeguard against typhoons and flooding were reported by LGUs to be substandard and poor in quality.
- Measures to mitigate future disasters such as natural resources conservation and alternative livelihood are not implemented in many disaster-prone areas.
- Many LGUs lack funds and available space for the relocation of informal settlers living within flood-prone areas along river banks and esteros, and landslide-prone areas of steep slopes.
- The existing laws and regulations on disaster management are not fully coordinated and enforced, while some provisions are outdated.
- Institutional capacity of some national line agencies and local government units on disaster risk management is still lacking, while mechanisms to institutionalize and implement DRM at the local level are still being developed.
- The bulk of national and local calamity funds available are allotted for response, relief operations and rehabilitation of damaged infrastructures, while less allotment for disaster risk management programs.
- Risk assessment technology is not localized, while forecasting tools and models are too technical and complicated requiring special equipment, software, sets of data and skills for LGUs and other government agencies to apply.
- There are few available assessment tools and data on the existing and potential hazards and risks brought about by climate change to vulnerable areas and ecosystems, while climate change emerging threats and footprints have not been identified comprehensively nationwide for purposes of anticipative interventions and adaptation measures.
- Equipment and facilities for monitoring and early warning system are deficient in many localities, while there is poor documentation at the local level on previous disaster events that can be used to establish the trends for forecasting purposes.
- Lack of systematic effort to coordinate, consolidate and establish a common or shared database or information networking among different organizations, both private and public.
- Wide coverage in the dissemination of information, education and communication (IEC) on DRM is constrained by available resources.
- Research methods and programs on the impacts and risks posed by climate change to the country's vulnerable communities and ecosystems are still limited.

2.4 Laws, Regulations and Orders related to Flood Control Works and Disaster Risk Management

2.4.1 General

The Philippine laws, regulations and department orders closely related to flood mitigation planning, design and implementation are as follows:

Table R 2.3 Philippine Laws, Regulations and Orders directly related to Implementation of Flood Mitigation

Laws, Regulations and Orders	Description
PD 1067	The Water Code of the Philippines, 1976
IRR of PD 1067	Implementing Rules and Regulations for the Water Code mentioned above. (Amended by NWRB in 2005)
PD 477	Local Fiscal Administration, 1974 The following are explicitly stated in this law: "LGU shall prepare the Infrastructure Fund to execute the construction, improvement, maintenance and repair of drainage facilities." (This law was amended by RA 8185 mentioned below.)
RA 8185	This amended the share for calamity fund from 2% to 5% of annual revenue in PD 1566.
PD 1566	Strengthening the Philippine Disaster Control, Capability and Establishing the National Program on Community Disaster Preparedness
RA 9184	Government Procurement Reform Act, 2003 (The overdone excessive durability of structures is stipulated in the IRR of this law.)
RA 7160	Local Government Code of 1991 (It is stipulated in this law that flood control works shall be executed by cities/municipalities.)
Disaster Risk Management Act and Philippine Disaster Risk Reduction and Management Act	Amendatory laws instead of PD 1566 discussed in the Senate and the House of Representatives respectively. "Disaster Risk Management Act" (Senate) "Philippine Disaster Risk Reduction and Management Act" (House of Representatives)
LARRIPP	Land Acquisition, Resettlement, Rehabilitation and Indigenous Peoples' Policy prepared by DPWH (March 2007)
IROW Procedural Manual	Infrastructure Right-of-Way Procedural Manual prepared by DPWH (01 April 2003)

2.4.2 Current Legal and Organized Development of Disaster Risk Management Relevant to PD 1566

(1) Philippine Climate Change Act

President Arroyo approved Republic Act No. 9729 or the Philippine Climate Change Act of 2009 last October 23, 2009. This Act seeks to institutionalize Government's response to climate change and lessen its impact in the Philippines, and also aims to attract financial and technical assistance from the foreign community to fund adaptation and disaster risk reduction initiatives.

The law created the Climate Change Commission, an independent and autonomous policy-making body attached to the Office of the President that would formulate and implement plans for the country to better prepare for and respond to natural disasters. Upon the organization of the Commission, the Presidential Task Force on Climate Change and the Inter-Agency Committee on Climate Change shall be abolished, provided that their powers and functions shall be absorbed by the Commission.

The created Commission is tasked to coordinate, monitor and evaluate programs and action plans to address climate change. The four-member Commission headed by the President will be autonomous and shall have the same status as a national government agency, while one of the members will serve as the vice-chairperson. The members of the Commission must be experts in the field and will hold office for six years and may be

reappointed, provided that no person shall serve for more than two consecutive terms. The commission's technical staff will be headed by a competent Executive Director to be appointed by the President. The Commission shall meet once every three months, or as often as may be deemed necessary by the Chairperson. The Chairperson may likewise call upon other government agencies for the proper implementation of the Act.

The Commission's Advisory Board will be composed of sixteen heads of concerned government departments; presidents of league of provinces, cities, municipalities, and barangays, including representatives from the academe, business sector, non-government organizations, and from the disaster risk reduction community. The representatives who will be appointed by the President will serve for a term of six years without reappointment unless their representation is withdrawn by the sector they represent. The law would empower the local government units to boost their disaster preparedness response and to mitigate the threats of climate change.

The Commission shall constitute a national panel of technical experts consisting of practitioners in disciplines that are related to climate change, including disaster risk reduction. The Commission shall formulate a Framework Strategy and Program on Climate Change within six months from the effective date of this Act. The said framework shall serve as the basis for a program for climate change planning, research and development, extension, and monitoring of activities to protect vulnerable communities from the adverse effects of climate change, which shall be reviewed every three years.

The Commission shall also formulate the National Climate Change Action Plan, as well as the Local Climate Change Action Plan, in accordance with the Framework. The LGUs shall be the frontline agencies in the formulation, planning and implementation of climate change action plans in their respective areas, consistent with the provisions of the Local Government Code, the Framework, and the National Climate Change Action Plan.

(2) Policy Formulation

There are various versions of reforms on disaster management in the both upper and lower houses of the legislative branch of government. The lower house's (the House of Representatives) consolidated version as of August 2009 is "An Act Strengthening the Philippine Disaster Risk Reduction and Management System, Providing for the National Disaster Risk Reduction and Management Framework and Institutionalizing the National Disaster Risk Reduction and Management Plan, Appropriating Funds Therefor and Other Purposes." The upper house (the Senate) consolidated version as of August 2009 is "An Act Strengthening Philippine Disaster Risk Reduction, Management and Recovery Capability by Institutionalizing the National Disaster Risk Reduction, Management and Recovery Framework, Appropriating Funds Therefor and for Other Purposes."

(a) House of Representatives Version

The proposed consolidated Bill of the House of Representatives as of August 2009 is highlighted as follows:

The short title of the consolidated bill is Philippine Disaster Risk Reduction and Management Act of 2009.

One of the relevant declared policies is the adoption of an integrated and coordinated, multi-sectoral, inter-agency and community-based approach to disaster risk management that shall be both anticipatory and responsive to the

socio-economic and environmental impacts of disasters including those due to climate change. The definition of terms is consistent with the United Nations International Strategy for Disaster Reduction (UN ISDR). Under the scope, the act provides for all actions and measures pertaining to disaster risk reduction and management.

The existing National Disaster Coordinating Council (NDCC) established through PD 1566 shall be restructured into the National Disaster Risk Reduction and Management Council (NDRRMC). The NDRRMC shall be chaired by the Secretary of DND, while the vice chair persons will be the Secretaries of DOST and DILG. The members will be the heads of DSWD, DOH, DENR, DA, DOLE, DepEd, DTI, DOE, DOTC, DOJ, DOF, DBM, DPWH, PMS, AFP, NAPC-VDC, OPAPP, NEDA, PIA, CHED, GSIS, SSS, PCIC, PhilHealth, ULAP, LPP, LCP, LMP, LMB, PNRC, Chairperson of HUDCC, one (1) representative from the private sector, four (4) representatives from civil society organizations, and the Director-General of the National Disaster Risk Reduction and Management Authority (NDRRMA).

The existing Office of Civil Defense (OCD) shall be restructured into the NDRRMA within a three-year implementation period. The NDRRMA shall be autonomous and attached to the Office of the President, headed by a Director-General with three (3) Deputy Director-Generals to be appointed by the President. The NDRRMC shall have supervisory powers over the NDRRMA, such as developing the National Disaster Risk Reduction and Management Framework (NDRRMF). One of the functions of NDRRMA shall be the formulation and implementation of the National Disaster Risk Reduction Management Plan (NDRRMP), which shall be integrated in the MTPDP, GAA and in local development plans. In every region, a Regional Disaster Risk Reduction and Management Authority (RDRRMA) shall be created as the regional arm of NDRRMA. The RDRRMA shall be headed by a Regional Director who shall sit as a member of the Regional Development Councils (RDC) responsible in ensuring disaster sensitive regional development plans.

At the local level, the existing Provincial, City, Municipal, and Barangay Disaster Coordinating Councils shall be known as Provincial, City and Municipal Disaster Risk Reduction Councils (LDRRMC). It will be chaired by the Local Chief Executives, while the Local Planning and Development Officer is the vice-chairperson with the heads of local offices, other concerned agencies and organizations as members. One of the functions of LDRRMC shall be the integration of risk reduction into local development plans, programs and budget as strategy in poverty reduction, environmental protection and sustainable development. In every province, city and municipality, a Local Disaster Risk Reduction and Management Office (LDRRMO) shall be established under the Office of the Governor, City or Municipal Mayor.

In addition, a Barangay Disaster Risk Reduction and Management Committee (BDRRMC) shall be established in every barangay under the Punong Barangay. The said office and committee shall set the direction, development, implementation and coordination of disaster risk management programs within their jurisdiction.

The bill provides that not less than 5% of the estimated revenue from regular sources shall be set aside as a local disaster risk reduction and management fund, which includes the existing Local Calamity Fund and other dedicated disaster risk reduction and management resources for the LDRRMO operations and programs.

The mobilization, accreditation, and protection of disaster volunteers and national service reserve corps, civil society organizations and the private sector is provided in the bill, including the compensatory benefits for the injury or death of the volunteer. The bill provides for the integration of disaster risk reduction and management in the school curricula of secondary and tertiary level of education, including the National Service Training Program (NSTP), whether private or public, including formal and non-formal, technical-vocational, indigenous learning, and out of school youth courses and programs. It also provides that disaster risk reduction and management programs will be part of SK programs and projects.

A provision on mechanisms for international humanitarian assistance is included for the exemption from local taxes of foreign donations, such as food, clothing, medicine, and equipment for relief, rehabilitation and other disaster management related supplies. Coordination during emergencies is provided, wherein the NDRRMA, LDRRMOs or BDRRMCs shall be responsible in taking the lead in preparing for, responding to, and recovering from the effects of disaster events in their areas of jurisdiction. Declaration of state of calamity is provided, wherein the Council shall recommend to the President of the Philippines the declaration of a cluster of barangays, municipalities, cities, provinces, and regions under a State of Calamity, based on the criteria set by the Council. Provision is provided on making it mandatory the immediate undertaking of remedial measures upon the declaration of State of Calamity, such as price control on prime commodities, among others. Prohibited acts in the bill include neglect of responsibilities, dereliction of duties, diverting relief goods, misrepresenting the source of relief goods, among others. On penal provisions, the bill proposes that upon conviction of any prohibited acts, the offender shall suffer a fine of Php50,000 and/or imprisonment of 6 years and 1 day to 12 years, or both, at the discretion of the court.

On appropriation, the initial amount for the NDRRMA shall come from the existing budget of the Office of Civil Defense. Thereafter, the amount needed for its operation and maintenance shall be included in the General Appropriations Act. Within sixty days (60) from the approval of this Act, the NDRRMA with participation from other stakeholders shall promulgate the necessary implementing rules and regulations to carry-out the provisions of this Act.

A Congressional Oversight Committee shall be created to monitor and oversee the implementation of the provisions of this Act. The Committee shall be composed of six (6) members with the chairpersons of the Committees on Housing of the Senate and of the House of Representatives and six (6) additional from each House to be designated by the Senate President and the Speaker of the House of Representatives, respectively. The minority shall be entitled to pro rata representation but shall have at least one (1) representative in the Committee.

(b) Senate Version

The salient provisions of the proposed Senate Bill as of August 2009 are as follows:

The short title shall be the “Philippine Disaster Risk Reduction, Management and Recovery Act of 2009.”

One of the declared policies is to develop, promote, and implement a Comprehensive National Disaster Risk Reduction, Management and Recovery Plan of the national government and local government units, together with partner stakeholders, to build the disaster resilience of communities, and to institutionalize

arrangements and measures for reducing disaster risks, including projected climate risks, and enhancing disaster preparedness and response capabilities at all levels.

The Act provides for the development of policies and plans and the implementation of actions and measures pertaining to all aspects of disaster risk reduction, management and recovery. The present National Disaster Coordinating Council (NDCC) shall be known as the National Disaster Risk Reduction, Management and Recovery Council (NDRRMRC), repealing PD 1566.

The NDRRMRC shall be headed by the Secretary of DND as Chairperson, while its Vice-Chairpersons shall consist of the secretaries of DILG, DSWD and Director-General of NEDA. The Council members consist of the secretaries of DOH, DENR, DA, DepEd, DOST, DTI, DOTC, DBM, DPWH, DFA, DOJ, DOLE, DOT, Office of the Executive Secretary, Office of the Presidential Adviser on the Peace Process, and Office of the Press Secretary. Its members also include the Chairman of CHED, AFP Chief of Staff, PNP Chief, PNRC Secretary-General, Commissioner of the National Anti-Poverty Commission - Victims of Disasters and Calamities Sector (NAPC-VDC), Chairperson of National Commission on the Role of Filipino Women, presidents of ULAP, LPP, LCP, LMP, LMB, two NGO representatives and the Administrator of OCD. The Council shall be empowered with policy-making, coordination, integration, supervision, monitoring, and evaluation functions. The Council shall develop a National Disaster Risk Reduction, Management and Recovery Framework, including the formulation and lead in implementing the NRRMR Plan, among others.

The NDRRMRC Chairperson may call upon other instrumentalities or entities of the government and non-governmental and civic organizations for assistance. The Chairperson is authorized to restructure and reorganize the Office of Civil Defense.

The OCD shall have the primary mission of administering a comprehensive national civil defense and disaster risk reduction, management and recovery program. The Administrator of OCD shall also serve as Executive Director of the Council with the same duties and privileges of a department undersecretary. The Council shall utilize the services and facilities of OCD as the Secretariat.

The propose bill provides the powers and functions of OCD such as the following:

- Advise the Council on matters relating to disasters risk reduction, management and recovery;
- Oversee the development, evaluation and review of Local Disaster Risk Reduction, Management and Recovery Plans to facilitate the integration of disaster risk reduction measures into the Local Comprehensive Development Plan and Comprehensive Land Use Plan;
- Establish Disaster Risk Reduction, Management and Recovery Training Institutes for training, information and education programs;
- Establish an operating facility to be known as the National Disaster Risk Reduction, Management and Recovery Operations Center; and
- Prepare criteria and procedure for the enlistment of Accredited Community Disaster Volunteers, among others.

The current Regional Disaster Coordinating Councils shall be known as the Regional Disaster Risk Reduction, Management and Recovery Councils (RDRRMRCs), which shall establish an operating facility center whenever necessary.

The current Provincial, City, Municipal and Barangay Disaster Coordinating Councils shall be known as Provincial, City, Municipal and Barangay Disaster Risk Reduction, Management and Recovery Councils to be chaired by the local chief executive, respectively. It shall be the responsibility of local government units to ensure that disaster risks are assessed and effectively reduced in their respective jurisdiction through the performance of their functions.

The national, regional and local DRRMRCs shall encourage the participation of civil society organizations to support the government programs.

A Local Disaster Risk Reduction, Management and Recovery Office (LDRRMRO) in every province, city, municipality and barangay shall be established. In consonance with their functions, they shall assist the LDRRMRCs in setting the direction risk reduction, management and recovery programs and coordinating disaster response activities within the territorial jurisdiction.

The National Disaster Risk Reduction, Management and Recovery Plan (NDRRMRP) in conformity with the Framework shall provide for the following:

- Identification of hazards, vulnerabilities and risks to be managed at the national level;
- Disaster risk reduction, management and recovery approaches and strategies to be applied in managing said hazards and risks;
- Agencies roles and responsibilities at all government levels; and
- Vertical and horizontal coordination of disaster risk reduction, management and recovery in the pre-disaster and post- disaster phases.

On coordination during emergencies, the concerned DRRMRCs shall take the lead in preparing for, responding to, and recovering from the effects of any disaster based on the following criteria:

- BDRRMRC, if a barangay is affected;
- City/Municipal DRRMRCs, if two (2) or more barangays are affected;
- Provincial DRRMRC; if two (2) or more cities/municipalities are affected;
- Regional DRRMRC, if two or more provinces are affected; and
- NDRRMRC, if two or more regions are affected.

The NDRRMRC and intermediary LDRRMRCs shall always act as support to local government units which have the primary responsibility as first disaster responders. Private sector and civil society groups shall work in accordance with the coordination mechanism and set policies.

The Council based on their criteria shall recommend to the President of the Philippines the declaration of a cluster of barangays, municipalities, cities, provinces, and regions under a state of calamity. The local sanggunian (council) upon the recommendation of the proper LDRRMRC may issue the declaration and lifting of the state of calamity.

The President's declaration shall warrant international humanitarian assistance as deemed necessary, through the mechanism provided in the proposed bill. Any person, group or corporation who commits any of the prohibited acts specified in the proposed bill shall be held liable and be subjected to the prescribed penalties.

The present Local Calamity Fund shall be known as the Local Disaster Risk Reduction, Management and Recovery Fund, which shall be at least 5% of the estimated revenue from the regular of LGUs. The present calamity fund appropriated under the GAA shall be known as the National Disaster Risk Reduction, Management and Recovery Fund.

The OCD as lead agency shall be allocated a budget of one billion pesos revolving fund at the effectivity of the Act. An annual report relating to the progress of implementation shall be submitted to the Office of the President, Senate and House of Representatives within the first quarter of the succeeding year. The Council shall issue necessary rules and regulations for the effective implementation of the Act within sixty days after its approval.

(3) Action Plan for Disaster Risk Reduction

The Strategic National Action Plan (SNAP) of the Philippines for disaster risk reduction (DRR) spearheaded by the NDCC is a road map on strategic objectives and vision for the next ten years considering the goals of the Hyogo Framework for Action (HFA). The SNAP involves multi-stakeholder participation to mainstream DRR. It is a product of several national consultation workshops, dialogues and focus group discussions. It utilizes the multi-hazard approach in managing the impact of natural and human induced disasters, especially the threat of climate change.

The SNAP consists of priority programs and projects from 2009-2019 based on strategic actions gathered from several consultations. The priority actions are clustered into five strategic objectives as follows:

(a) Enabling environmental policies, institutions, partnerships, capacity development and mainstreaming

- To advocate the passage of the Disaster Risk Management Act to strengthen the institutional and policy framework;
- To strengthen partnerships and build alliances through multi-stakeholder dialogues;
- To sustain disaster management programs and projects at the local level through institutionalize the disaster management office;
- To enhance the capacity of Local Disaster Coordinating Councils for self-reliant and capable implementation of disaster management programs; and
- To mainstream DRR into the peace process through enhancement of trust and confidence of communities to the concerned agencies.

(b) Financial and economic soundness by mobilizing resources

- To allocate budget for prioritized programs and projects;
- To establish public-private partnerships to increase contribution to risk reduction activities; and
- To develop common understanding of resource needs for disaster mitigation and preparedness

(c) Supportive decision-making for an enlightened citizenry

- To ensure the implementation of national DRR policy by integrating into sector plans and programs;

- To generate information and database as support tools, including technologies to facilitate financially viable and economically sound mainstreaming of DRR; and
- To enhance disaster preparedness capacities and requirements including multi-stakeholder coordination mechanism.

(d) Safety and well-being enhancement

- To iIncrease level of awareness and competencies of concerned stakeholders through IEC campaign;
- To institutionalize strengthening and capacity building for disaster risk management at the ground level;
- To provide means to advance knowledge and application for DRR through education and research;
- To establish disaster information and management system, including production of topographic maps and nautical charts;
- To enhance monitoring, forecasting and early hazard warning; and
- To assess risks which need monitoring.

(e) Evaluation of DRR

- To equip stakeholders with assessment through development of tools to efficiently monitor progress and evaluate impact of programs and projects, including underlying risks factors.

2.5 Related Agencies, Organization and their Roles

Various government agencies and/or inter-agency commissions currently undertake policy-making, formulation, coordination and execution of the programs and/or projects related to flood mitigation in the Philippines, as shown in **Table 2.4**. Several new organizational setups related to flood mitigation are further proposed and/or projected.

These existing and proposed organizations could be broadly classified into three types or groups. The first group is the nationwide policy-making/coordination body. This group is represented by NEDA, NWRB-DENR and NDCC. NEDA undertakes policy-making/coordinating for the entire socio-economic development in the country, while NWRB is for the water sector, in particular, including flood mitigation. The NDCC is further designated to take the role for nationwide disaster coordination works, which include those for flood as one of the disasters. All of these existing entities were established in the 1970's, and since then they have always played as principal policy/coordination bodies in the water sector. It is herein noted that some new organizations such as NWRB-RBCO were recently established. However, the roles and/or authorities given to these new organizations are deemed to duplicate and/or overlap, to a certain extent, with those currently in operation. As the result, it seems to be still uncertain whether the organizations currently in operation are to be replaced by the newly proposed entities. Moreover, a Technical Working Committee on the bills seeking to create river authorities of the House Committee on Government Enterprises and Privatization has held several meetings. It is supposed that these movements further result in a complicated situation on river management.

The second group consists of the national government agencies, which could be the implementing agencies in specific fields of the water sector. The organizations such as DPWH, NIA, PAGASA and OCD could be categorized into this group. Among them, DPWH and NIA take the role of developing the major and/or large-scale infrastructures for flood mitigation, which are usually implemented with foreign financial assistance. On the other hand, the functions of PAGASA and OCD contribute to the nonstructural flood mitigation measures such as flood forecasting, warning

and evacuation. These national government agencies have their own regional offices to perform their roles and authorities over the whole country.

The third group consists of the local government units (LGUs), which are divided into three tiers; namely, the Provincial Government, the City/Municipality, and the Barangay (the smallest administrative unit in the Philippines). In spite of the enactment of the Local Government Code of 1991, which intends to strengthen the local autonomy, the development of large-scale infrastructures for flood mitigation has been hardly undertaken by the LGUs due to budgetary constraint. As the result, the roles and authorities of the LGUs on flood mitigation are limited to the construction, maintenance and rehabilitation of local drainage systems and/or nonstructural measures such as the cleaning of waterways and small-scale watershed management.

The following agencies are, in principle, related to this Sector Loan: DPWH, LGUs, NEDA, DENR and the other stakeholders (Refer to **Table 3.1)**.

2.5.1 DPWH

The Department of Public Works and Highways (DPWH) is one of the three departments under the executive branch of the Philippine Government undertaking major infrastructure projects. The DPWH is mandated to undertake: (a) planning of infrastructures such as roads and bridges, flood control works, water resources projects and other public works; and (b) design, construction, and maintenance of national roads and bridges, and major flood control systems. These activities are undertaken in support of the national objectives of: (a) alleviating rural poverty and attaining food security; and (b) expanding industries for greater productivity and global competitiveness as envisioned in the MPDP 2005-2010.

The DPWH functions as the engineering and construction arm of Government tasked to continuously develop its technology for the purpose of ensuring the safety of all infrastructure facilities and securing for all public works and highways the highest efficiency and quality in construction.

(1) Functions

The functions for the development of infrastructure projects (e.g., roads, bridges, flood control facilities and water supply) consisting of four phases (Project Identification, Preparation, Implementation, and Operation and Evaluation) are, as follows:

(a) Project Identification

It is the process of collecting potential projects with expected return of investments.

(b) Project Preparation

In the project preparation phase, the following works are undertaken:

- Project Feasibility Study;
- Inclusion in the Medium-Term Plan;
- Fund Appropriation;
- Detailed Engineering; and
- Inclusion of Project Annual Program.

(c) Project Implementation

In this phase, the following works are undertaken:

- Fund Release;
- Right-of-Way Acquisition;
- Bidding and Contracting;
- Construction;
- Completion and Acceptance; and
- Payment.

(d) Project Operation and Evaluation

National roads and bridges, major flood control structures, and related facilities of national importance remain under the responsibility of the DWPH during the operational phase. The regional and district engineering offices of DPWH undertake the maintenance of facilities, generally by administration.

Impact evaluation or post-project appraisal is an attempt to assess the results of a project and, as a function of the results, of the means employed to achieve them.

(e) The Role for Disaster Risk Management

The DPWH is one of main members of NDCC. Therefore, the implementation of flood control projects is a key function regarding disaster risk management and, besides, the DPWH has the mandated tasks described below for disaster risk management.

- To organize reaction teams within the department offices and bureaus.
- To provide warning to the public on impending water rise within its control.
- To prepare and identify buildings, facilities, and infrastructures for use as evacuation shelter during emergencies.
- To provide heavy and light equipment for rescue and recovery operations.
- To restore destroyed public works, offices, and other buildings.
- To assist in providing transportation facilities for relief supplies, personnel, and disaster victims.
- To make available communication facilities for disaster operations.

In this connection, DPWH prepared the Manual of Operations for Disaster Risk Management in January 2009.

(2) Organization

The organizational structure of the Department of Public Works and Highways is pursuant to Executive Order No. 124 dated 30 January 1987. The authorities and areas of responsibility are based on Department Order No. 114, 127 and 149 Series of 2003. The organization is divided into that of the central office and the regional offices. The organization charts are shown in **Figure 2.1**.

(a) Central Office

As of August 2004, there were 10 bureau level offices and 7 project management offices (PMOs) in the Central Office of DPWH.

Among the seven PMOs, the PMO for Major Flood Control and Drainage Projects (MFCDP) and that for Mount Pinatubo Emergency mainly undertake flood control and Sabo projects which are usually foreign-assisted. As another

PMO related to flood control and sabo works, the PMO-FCSEC was created in 1999 and its functions are as described below.

(b) Regional Offices

There are 16 regional offices nationwide to mainly undertake the locally funded infrastructure projects. Under these regional offices are the 176 district engineering offices. In each regional office, there are usually six divisions and one regional equipment service unit, of which the Engineer V is placed as the division chief except for the Administrative and the Comptrollership and Financial Management divisions. Furthermore, 75 to 80 engineers are assigned to perform the services and the operation of infrastructure projects under the engineering division.

In a region or under each regional office are 10 to 15 district engineering offices. As of 2002, the total number of DPWH engineers in the regional offices nationwide was estimated around 7,000 to 8,000 permanent employees.

Table R 2.4 shown below indicates inter-annual changes of DPWH between 2007 and 2009. The results show that the manpower of DPWH had decreased gradually year by year due to organizational reformation and rationalizing efforts.

Table R 2.4 DPWH Manpower Complement (June 2007 – Jan. 2009)

DPWH MANPOWER COMPLEMENT as of June 30, 2007

Office	Regular	Contractual	Daily/Casual	Maint. Fund	Total
Proper & Bureau	2,072	10	171	0	2,253
Regional Office	14,701	41	7,419	641	22,802
PMOs	23	823	468	0	1,314
Total	16,796	874	8,058	641	26,369

DPWH MANPOWER COMPLEMENT as of September 30, 2007

Office	Regular	Contractual	Daily/Casual	Maint. Fund	Total
Proper & Bureau	2,072	10	171	0	2,253
Regional Office	14,607	33	7,211	633	22,484
PMOs	23	823	468	0	1,314
Total	16,702	866	7,850	633	26,051

DPWH MANPOWER COMPLEMENT as of January 31, 2009

Office	Regular	Contractual	Daily/Casual	Maint. Fund	Total
Proper & Bureau	1,844	10	171	0	2,025
Regional Office	14,000	43	7,013	705	21,761
PMOs	23	823	468	0	1,277
Total	15,867	839	7,652	705	25,063

(3) FCSEC

The FCSEC was created in December 1999 through Department Order No. 237 as the PMO of DPWH for the implementation of Project ENCA with assistance from JICA. After more than nine years since its creation, FCSEC had accomplished much under the project. These include standard guidelines and manuals, trained engineers of selected regional and district engineering offices, established database on flood control and Sabo

works, and the initiation of hydraulic experiments. FCSEC is also implementing pilot projects on flood control and Sabo works under the Project for Strengthening the Flood Management Function (SFMF) of DPWH.

(a) Objectives

The objectives for establishing the FCSEC are as follows:

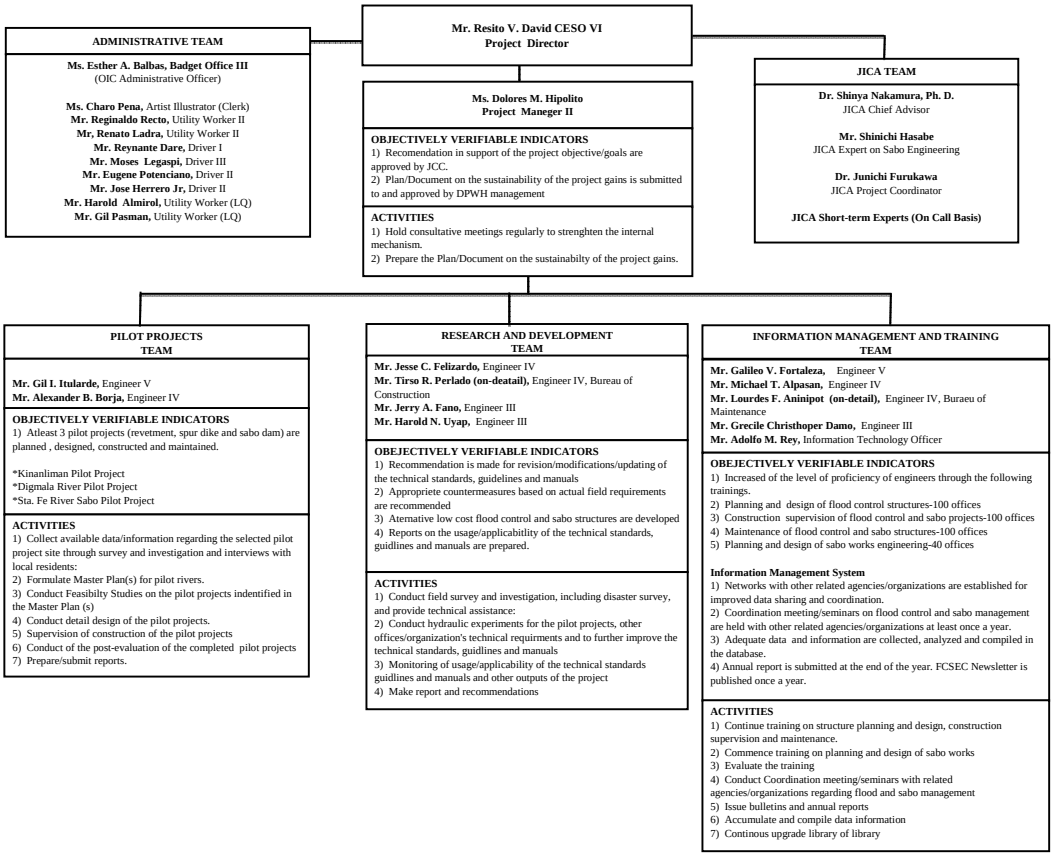
- To improve the effectiveness of flood control and Sabo structures and other measures implemented by DPWH in accordance with technical standards, guidelines and manuals; and
- To strengthen the flood management function of DPWH through research and development, training, information management, implementation of pilot projects and creation of internal support mechanism.

(b) Present Organization and Engineering Staff

The present FCSEC consists of engineering and support staff headed by the Project Director and assisted by the Project Manager together with the following five teams:

- Administrative Team
- JICA Team
- Pilot Project Team
- Research and Development Team
- Information Management and Training Team

The organizational and functional chart of PMO-FCSEC under the JICA Technical Cooperation Project for Strengthening the Flood Management Function of DPWH is shown in **Figure R 2.4** below.



(As of September 2009)

Figure R 2.4 Organizational Structure and Functional Chart of FCSEC

(c) Present Budget Allocation

For the year 2009, the budget allocation of FCSEC was about ten (10) million pesos with breakdown as follows:

- Salaries and Wages
- Traveling Expenses
- Communication Expenses
- Training Expenses
- Supplies and Materials
- Others (Gasoline, Water Bill, Electric Bill, Vehicle Repair, Janitorial, Security, etc.)

(d) Limit and Issues of Activities Due to Current Staff and Budget

With the current staff and budget, the FCSEC as PMO is spearheading the implementation of a technical assistance project (SFMF). Its target groups are the DPWH offices with relevant flood control and Sabo engineering activities in the central, regional and district engineering offices, while the direct beneficiaries of the project are the people at pilot sites and other disaster flood prone areas.

As the coordinating body to oversee the projects, a Joint Coordinating Committee (JCC) for SFMF of DPWH was created in 2005 under Special Order No. 57. The JCC is an internal mechanism to sustain the development of technology and organization in the field of flood control and Sabo engineering. It

is being chaired by the Assistant Secretary for Planning with member representatives from the DPWH bureaus, services, PMOs, NEDA and JICA. Likewise a TWG was created in 2005 to provide support services under Special Order No. 175. The JCC also serves as the body in passing relevant resolutions for the DPWH Secretary on sustainable development regarding flood control and Sabo engineering in the Department.

While remarkable accomplishments were done, there are still some issues and concerns that need to be addressed, such as the following:

- Under-utilization of Hydraulic Laboratory
- Need for long term research expert for guidance
- Insufficient funds for comprehensive research and development
- Insufficient counterpart personnel to do research work
- Supplemental budget for pilot projects

(e) Required Capacity to Cover the Role as Flood Management Center

The FCSEC was originally established to be a permanent institution in DPWH, but due to tedious process and time limitation prior to the start of the project, the creation of FCSEC as the project management office was found more realistic during that time.

Since then the PMO-FCSEC implemented the Project for Enhancement of Capabilities in Flood Control and Sabo Engineering of DPWH with the goal of providing sound and quality flood control structures and facilities, through the assistance of JICA.

The FCSEC was able to attain its objectives, considering its various accomplishments. In this connection, it has been proposed that, to pursue the momentum it should be maintained in the restructured DPWH organization under the Rationalization Plan as the "Flood Management Center," a permanent office under the Office of the Secretary (OSEC). The permanency of the office, as originally envisioned will serve as a core office in flood management with its manpower resources and facilities (buildings, vehicles and equipment). It will also facilitate the institutionalization of capabilities in flood control and Sabo engineering beyond the technical cooperation period through the formulation of policies and guidelines.

(f) Complementation between Present Capacity and Required Capacity for Flood Management

The Project for Strengthening the Flood Management Function of DPWH is being implemented, which manifest on the importance of enhancing the engineers in providing efficient disaster mitigation structures and assure the sustainability of the project. The present capacity shows various outputs as follows:

<u>Various Accomplishments in the Past</u>

- Researches were conducted for developing/updating technical standards, guidelines and manuals, and assessment of efficient countermeasures for flood control and Sabo.
- Sufficient numbers of personnel of DPWH were trained on flood control and Sabo engineering.

- Information system and database was established for more effective flood management function of DPWH.
- Internal mechanism was created in DPWH to sustain the development of technology and organization in the field of flood control and Sabo engineering.
- Pilot projects are being implemented using the technical standards, guidelines and manuals.

Further capacities on flood management are being required for the following functions by FCSEC itself:

Required Capacity in the Future (FCSEC)

- Conduct of technical researches on water and sediment related disaster mitigation
- Supervision of data collection and maintain database on flood and Sabo management
- Formulation/undertaking of programs on capacity development in flood management and Sabo engineering
- Prescription of guidelines for the conduct of post-disaster survey and assessment
- Evaluation of flood control system in a river basin
- Provision of technical assistance on water and sediment disaster mitigation
- Advice to the Secretary on declaring flood control areas and recommend guidelines for flood plain management and plans in these areas
- Performance of other duties and responsibilities as maybe assigned or delegated by the secretary.

Based on the foregoing descriptions and circumstances surrounding disaster risk management, the following areas of concern shall further be considered as a vigorous, leading and key section for disaster risk management in DPWH:

Further Required Capacities in the Future

- Strengthening of flood control and Sabo information database, including the upgrading of hydrologic data collection leading to possible integrated management information system;
- Strengthening of flood control and Sabo information database, including the upgrading of rehabilitation and restoration works by DEOs and ROs, as well as BOM;
- Enhancing capacity development not only within DPWH proper, but also the LGU beneficiaries;
- Harmonization Activities between Structural Measures undertaken by DPWH and Nonstructural Measures to be executed by LGUs or other related agencies;
- Formulation of guidelines and technical assistance on disaster risks management in relation to climate change; and
- Complement with other institutions on river basin management considering policy directions, institutional linkages and tools for implementation.

(4) Organizational Change and Rationalization of DPWH

The proposed organizational structure of DPWH under the rationalization plan wherein FCSEC is to be strengthened as the Flood Management Center under the Office of Secretary is shown in **Figure R 2.5** below.

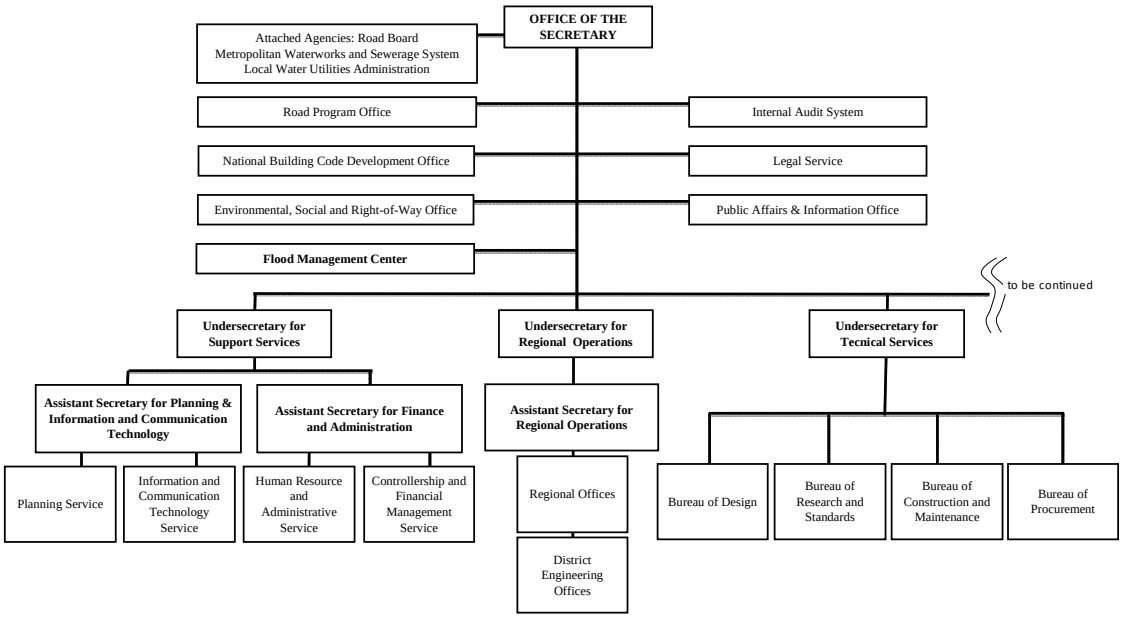


Figure R 2.5 Proposed DPWH Structure under Rationalization Plan

2.5.2 LGUs

In this stage, the specific LGUs are not nominated, since the objective river basins are not designated yet. In this section, the discussion is made on the Local Government Code of 1991, which specifies the principal role and responsibilities hereafter.

(1) Policy of Local Government Code of 1991

The Local Government Code of 1991 came into effect as RA 7160 declaring the following policies:

- It is hereby declared the policy of the State that the territorial and political subdivisions of the State shall enjoy genuine and meaningful local autonomy to enable them to attain their fullest development as self-reliant communities and make them more effective partners in the attainment of national goals. Toward this end, the State shall provide for a more responsive and accountable local government structure instituted through a system of decentralization whereby local government units shall be given more power, authority, responsibilities and resources. The process of decentralization shall proceed from the national government to the local government units.
- It is also the policy of the State to ensure the accountability of local government units through the institution of effective mechanisms of recall, initiative and referendum.
- It is likewise the policy of the State to require all national agencies and offices to conduct periodic consultations with appropriate local government units, non-governmental and people's organizations, and other concerned sectors of the

community before any project or program is implemented in their respective jurisdictions.

(2) Basic Services and Facilities of LGUs Stipulated in Local Government Code

LGUs have the responsibility to deliver basic services including flood control facilities, which are intended primarily to service the needs of residents of the municipality or province and funded out of municipality or provincial funds.

In the case of national funds given to LGUs for infrastructure projects, the Code or any other laws or regulations does not specify which will render such services, the National Government or the LGUs.

The DPWH has a role as an interim measure for such projects to be handed over to LGUs with acceptance agreement in a manner of MOA when the project is completed. Some of the LGUs, however, decline to accept and such cases cause problems on operation and maintenance of the facilities.

(a) Infrastructure in LGUs

Flood control and drainage are included in the following section of the Local Government Code:

SEC. 17. Basic Services and Facilities. - Local government units shall endeavor to be self-reliant and shall continue exercising the powers and discharging the duties and functions currently vested upon them. They shall also discharge the functions and responsibilities of national agencies and offices devolved to them pursuant to this Code.

Local government units shall likewise exercise such other powers and discharge such other functions and responsibilities as are necessary, appropriate, or incidental to efficient and effective provision of the basic services and facilities, as enumerated in **Table 2.5**.

However, public works and infrastructure projects and other facilities, programs and services funded by the National Government or those wholly or partially funded from foreign sources are not covered under this Section, except in those cases where the local government unit concerned is duly designated as the implementing agency for such projects, facilities, programs and services.

(b) Maintenance of Infrastructure in LGUs

Councils of LGUs shall enact ordinances, approve resolutions and appropriate funds for the general welfare of the LGUs and its inhabitants to ensure the efficient and effective delivery of the basic services and facilities as provided in Item 1) above and shown in **Table 2.5**.

(3) Technical Assistance

As Operative Principles of Decentralization in Section 3, it is stipulated that the realization of local autonomy shall be facilitated through improved coordination of national government policies and programs and extension of adequate technical and material assistance to less developed and deserving LGUs.

2.5.3 DENR

On January 30, 1987, Executive Order No. 131 was issued creating the Department of Energy, Environment and Natural Resources (DEENR) that took the powers and functions of the previous Ministry of Natural Resources (MNR) and embraced the emerging critical concern about energy and environment. However, EO 131 was never implemented. Executive Order No. 192 came on June 10, 1987, reorganizing the DEENR and renaming it as the Department of Environment and Natural Resources (DENR). On October 15, 1996, Executive Order No. 374 was issued creating the Presidential Task Force on Water Resource Development and Management (PTFWRDM), chaired by the Secretary of the DENR. PTFWRDM is tasked to coordinate the projects of various government agencies and departments involved in water to ensure efficient management and development of the country's water resources.

The Department of Environment and Natural Resources is mandated to be the primary agency responsible for the conservation, management, development, and proper use of the country's environment and natural resources.

(1) DENR Core Function

DENR core functions are as follows:

(a) To formulate and implement policies, guidelines, rules and regulations relating to environmental management, pollution prevention and control;

(b) To formulate, implement and supervise the government policies, plans and programs pertaining to the management, conservation, development, use and replenishment of the country's natural resources and ecological diversity; and

(c) To promulgate and implement rules and regulations governing the exploration, development, extraction, disposition, and use of the forests, lands, minerals, wildlife and other natural resources.

(2) DENR Special Function for Disaster Risk Management

As a member of NDCC, DENR has the following special roles regarding Disaster Risk Management under its department proper, bureaus or subsidiary organizations.

- To organizes, mobilizes, and trains reaction teams or task forces in the department proper and bureaus including regional, provincial, and community officers for disaster control management;
- To conduct a continuing geo-hazard assessment in the country, and provide technical assistance on geo-hazard mapping and assessment studies of major urban centers and critical areas in order to minimize disasters;
- To reforest and establish control measures in areas prone to flooding, landslide, mudflows and ground subsidence; and promulgate rules and regulations for the control of forest fires and forest pest and diseases; and
- To undertake necessary measures to prevent accidents caused by typhoon vulnerable trees in urban areas.

(3) Organization

In accordance with Executive Order No. 192, the organizational structure of DENR at the central level comprises the following: the Office of the Secretary; the offices of the Undersecretaries and Assistant Secretaries, the Public Affairs Office, the Special

Concerns Office, and the Pollution Adjudication Board. The staff bureaus are composed of the following:

- Forest Management Bureau (FMB), which is responsible for matters relating to forest development and conservation;
- Land Management Bureau;
- Mines and Geo-Science Bureau, (MGB), which is responsible for the preparation of the national geo-hazard mapping to determine the hazard prone areas;
- Environmental Management Bureau (EMB), which is responsible on matters pertinent to environmental management and conservation, pollution control and water quality management;
- Ecosystems Research and Development Bureau; and
- Protected Areas and Wildlife Bureau.

The field offices, on the other hand, consist of all department regional offices, the provincial offices and the community offices.

At the operational level, the DENR organization reflects a line structure under the direct supervision of the Field Operations Office. The line functions are decentralized down to three levels, namely:

- Regional Level: Regional Environment and Natural Resources Offices (RENROs)
- Provincial Level: Provincial Environment and Natural Resources Offices (PENROs)
- Community Level: Community Environment and Natural Resources Offices (CENROs)

One regional office is established in each of the fifteen (15) administrative regions. There are at present seventy-three (73) provincial environment and natural resources offices, one office for almost every province. There are also one hundred seventy-one (171) community environment and natural resources offices, each covering several municipalities in a province. The related agencies are:

- National Mapping and Resource Information Authority (NAMRIA)
- Natural Resources Development Corporation (NRDC)
- Laguna Lake and Development Authority (LLDA)
- National Water Resources Board (NWRB)

(4) National Water Resources Board (NWRB)

The National Water Resources Council (NWRC) was established through Presidential Decree No. 424 in March 1974 and renamed to the present National Water Resources Board (NWRB) in accordance with Executive Order 124-A in July 1987. The NWRB had always been the country's leading policy-making and regulatory body in the water sector, holding the following functions:

- To formulate and coordinate policies, programs and standards relating to water-related programs and projects;
- To manage and regulate all water-related activities; and
- To regulate and monitor water utilities.

The NWRB is chaired by the Secretary of DENR and composed of five cabinet secretaries, a representative from the academe and the executive director as members. Although the NWRB is independent in the aspects of policy-making and regulatory

functions, it is currently under the administrative supervision of the DENR as an attached agency.

(5) River Basin Control Office (RBCO)

The RBCO was established through Executive Order No. 510 dated March 5, 2006, as an agency attached to DENR. The RBCO is the core agency for the direction, control, regulation, rationalization and harmonization of all water-related programs and projects, including those for flood mitigation.

The RBCO formulated the Master Plan of Nationwide Integrated River Basin Management and Development in 2007, and proposed the following items:

- The NWRB is to be reorganized into the Water Resources Management Bureau of DENR. Upon the reorganization, the functions of policy-making for water related programs and projects are likely to be transferred from the aforesaid NWRB to the RBCO.
- The River Basin Management Office (RBMO) and the River Basin Council (RBC) are to be newly established to strengthen the functions of the RBCO. The RBMO shall be the unit of DENR to support the roles of RBCO at the river basin level. On the other hand, the RBC shall be composed of representatives from the existing water-related agencies serving as entities for policy governing and fund sourcing for the river basin program.
- The RBMO shall organize and facilitate the local multi-sectoral river basin committees and task forces.

2.5.4 National Economic and Development Authority (NEDA)

The National Economic and Development Authority (NEDA), as mandated by the Philippine Constitution, is the country's independent economic development and planning agency. It is headed by the President as chairman of the NEDA Board, with the Secretary of Socio-Economic Planning, concurrently NEDA Director-General, as vice-chairman. All Cabinet members, as well as the Central Bank Governor, are members of the NEDA Board.

The powers and functions of the NEDA reside in the NEDA Board. It is the country's premier social and economic development planning and policy coordinating body.

Assisting the NEDA Board in the performance of its functions are the following six cabinet-level interagency committees:

- Development Budget Coordination Committee (DBCC);
- Infrastructure Committee (InfraCom);
- Investment Coordination Committee (ICC);
- Social Development Committee (SDC);
- Committee on Tariff and Related Matters (CTRM); and
- Regional Development Committee (RDCom)

As for the sector loan project, NEDA, especially ICC, will be involved in issuing approval of the project.

The ICC consists of the Secretary of Finance, as chairman; the NEDA Director-General, as co-chairman; and the Executive Secretary, the Secretaries of Agriculture, Trade and Industry, Budget and Management and the Governor of the Central Bank of the Philippines, as members. The ICC has the following functions:

- To evaluate the fiscal, monetary and balance of payments implications of major national projects, and recommend to the President the timetable of their implementation on a regular basis;
- To advise the President on matters related to the domestic and foreign borrowing programs; and
- To submits a status of the fiscal, monetary and balance of payments implications of major national projects.

As for the tasks on disaster risk management, the NEDA as a member of NDCC has the following special roles:

- To organize Disaster Control Groups (DCGs) and Reaction Teams within the proper, its attached agencies and regional offices;
- To ensure that disaster concerns are integrated both in the national and local development plans and to analyze the effects of disasters and calamities on socio-economic plans and programs of the country; and
- To assist in mobilizing resources through technical assistance in the formulation of projects for ODA funding or programming.

2.5.5 Other National Agencies and Authorities related to Flood Mitigation

The following agencies currently possess certain roles related to flood mitigation and/or river basin management works:

(1) National Disaster Coordination Council (NDCC)

As stated in Subsection 2.3.1, Presidential Decree No. 1566 was issued in 1978 to organize the National Disaster Coordination Council (NDCC) on the premise that the country and its component communities shall mobilize all its available institutions to protect lives and property and ensure collective survival in the face of natural disasters.

The NDCC is the policy-making and coordinating body for disaster management at the national level. It directs all disaster preparedness plans, as well as disaster response operations and rehabilitation, both in public as well as private sectors. The Secretary of National Defense serves as Chairman of NDCC. The members of the NDCC are the heads of fourteen national agencies, the Chief of Staff of the Armed Forces of the Philippines, the Secretary-General of the Philippine National Red Cross, and the Administrator of the Office of Civil Defense (OCD).

In each of the administrative regions of the country, the Regional Disaster Coordinating Council (RDCC) was also established to perform similar functions as the NDCC for the regions. Equivalent officials of various agencies at regional level serve in these councils, which are headed by regional chairmen designated by the President.

There also exists the local disaster coordinating councils at the provincial, regional, city/municipal and barangay levels. These local councils have the function to execute the actual disaster management works required at the local level through cooperation with civic and non-government organizations (NGOs). The chief executive of the local government such as the provincial governor or the mayor serves as chairman of the local disaster coordinating council. The members of the local disaster coordinating council include the staffs of the local government agencies, as well as private citizens and NGOs.

When the central government utilizes the National Calamity Fund for security and restoration, the application shall be submitted to NDCC through OCD and then, after

evaluation, endorsed to the Office of the President. (See Subsection 2.3.2 for Detailed Functions.)

(2) The Department of National Defense (DND)

The DND proper organize Disaster Control Groups (DCGs) and teams within their bureaus and offices, and provide budget for activities of the TWG of NDCC. The Armed Forces of the Philippines (AFP) organize reaction teams in military installations, establish communication linkages and make these available for disaster operations, assist in the reconstruction of damaged national and local infrastructures, assist in providing transportation facilities for the rapid movement of relief supplies and personnel and evacuation of disaster victims, including assistance to the Philippine National Police (PNP) in providing security coverage in disaster areas.

The OCD monitors the implementation of PD 1566. During disaster operations, the OCD ensures that the National Disaster Management Center is available for use by the Council and its TWG. It spearheads in the organization of DCCs or Action Teams and develops programs of instruction modules for disaster preparedness training of DCGs in coordination with DILG and DSWD. It receives bulletins from warning agencies and disseminates the same to appropriate agencies and general public, and also conducts studies on disaster management.

The National Defense College of the Philippines integrates DRM in its Master in National Security Administration (MNSA) program, and provides support to the OCD in DRM-related research activities.

(3) Department of Science and Technology (DOST)

The Department of Science and Technology (DOST) as a member of NDCC has special roles regarding disaster risk management, as follows:

- To coordinate the deployment of transport services during and after disaster occurrence from national to local DCCs;
- To mobilize DOTC regional facilities through the RDCC Chairman in disaster areas, including manpower, transport and communication facilities of the DOTC Action Center; and
- To initiate the immediate restoration of destroyed infrastructure facilities for transportation and communications.

The Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), which is under DOST, has the important function to provide atmospheric, geophysical and astronomical data including rainfall data and other climatologic data, which are essential for the formulation of a flood mitigation plan and execution of flood forecasting and warning. Moreover, PAGASA has the following special tasks on disaster risk management:

- To organize and train DCGs and Reaction Teams in PAGASA;
- To prepare and issue advisories and warning bulletins on extreme weather events such as tropical cyclones, El Niño and La Niña episodes, storm surges, floods covering major river systems, prolong and heavy rainfall episodes during monsoons and other similar situations;
- To provide assistance to the NDMC in times of emergency, or as may be required with respect to current weather disturbance; and

- To participate in the conduct of training and researches related to natural disaster preparedness and mitigation.

On the other hand, the Philippine Institute of Volcanology and Seismology (PHIVOLCS) is mandated, as specified in EO 128, to perform the following functions:

- To predict the occurrence of volcanic eruptions and earthquakes and their geotectonic phenomena;
- To determine how eruptions and earthquakes occur and also areas likely to be affected;
- To exploit the positive aspects of volcanoes and volcanic terrain in the furtherance of socio-economic development efforts of the government;
- To generate sufficient data for forecasting volcanic eruptions and earthquakes;
- To formulate appropriate disaster-preparedness and mitigation plans; and
- To mitigate hazards of volcanic activities through appropriate detection, forecast and warning system.

In addition, PHIVOLCS has the following special roles on disaster risk management:

- To organize DCGs and Reaction Teams in PHIVOLCS proper and field stations;
- To issue advisories on earthquakes, volcanic activities and tsunami to the general public; and
- To identify suitable evacuation sites in coordination with concerned agencies.

The Philippine Nuclear Research Institute (PNRI) under DOTC is mandated to: undertake research and development activities in the peaceful uses of nuclear energy, to institute regulations on the said uses and to carry out the enforcement of said regulations to protect the health and safety of radiation workers and the general public. The PNRI also has special roles regarding disaster risk management, as follows:

- To organize and train DCGs in PNRI offices and facilities;
- To supervise the organization and training of DCGs in nuclear installations and facilitate the storage, handling, and use of radioactive materials;
- To issue advisories on radioactive fallouts, contamination, and radiation accidents to the public; and
- To decontaminate impacted areas in coordination with concerned agencies.

(4) Environmental and Occupational Health Office (EOHO) under the Department of Health (DOH)

The EOHO under DOH is responsible for water supply and sanitation programs and strategies to forestall environmental related diseases.

The special roles of DOH on disaster risk management as a member of NDCC are as follows:

- To organize assessment and medical response teams in its regional health offices and hospitals to assist the LGUs during emergencies, through direct assistance or technical expertise on sanitation, public health concerns and other health hazards;
- To issue warnings and advisories to the public on epidemics and other health hazards, and undertake necessary measures together with LGUs to prevent the occurrence of communicable diseases and epidemics;
- To maintain data on health status including vulnerable population to facilitate assessment of health needs and furnish these data to NDCC; and

- To organize the health sector for a more responsive and integrated health response to disasters and emergencies, and develop policies and protocols on health response to disasters and skills training.

(5) Department of Social Welfare and Development (DSWD)

The DSWD is the lead agency on food and non-food items by the prepositioning of relief resources in its field offices, and provision of relief augmentation to disaster affected LGUs as a core member of NDCC.

DSWD considers emergency shelter, camp management and protection through the generation of database for available temporary shelters from LGUs as evacuation centers, capacity building of LGUs and other stakeholders in the management of evacuation centers. It also provides technical assistance to LGUs in profiling of families in disaster prone areas using the DSWD Family Access Card (FAC) to ensure appropriate services and interventions, especially the vulnerable sectors.

DSWD also considers permanent shelter and livelihood under the cluster approach in disaster management through the provision of technical assistance and resource augmentation support in the implementation of shelter assistance projects, as well as provision of seed capital as livelihood assistance.

In this connection, the Operations and Capacity Building Group of the Program Management Bureau (PMB-OCBG), which is under DSWD, has the important function of relief assistance and social services to disaster victims, including immediate restoration or rehabilitation to normal life in the extension of emergency services to support and assist project-affected-families.

(6) BLGD-DILG

The Bureau of Local Government Development (BLGD), which is under the Department of Interior and Local Government (DILG), is responsible for overseeing the organization of disaster coordinating councils, establishing the operation centers of all LGUs, and training of members of LDCCs on capacity strengthening regarding disaster risk management. In addition, DILG has special roles regarding disaster risk management as a member of NDCC, as follows:

- The DILG in coordination with the OCD, oversees the organization/activation of local DCCs, and conducts training programs for DCGs, DCCs, and Civil Defense Deputized Coordinators;
- Assists LGUs in the establishment of evacuation sites and the actual evacuation of disaster victims in coordination with DSWD and formulates policy reforms to ensure the effective delivery of basic services during emergencies;
- Oversees the organization/activation of Local Price Monitoring Teams in coordination with DTI to ensure stable prices of basic commodities during emergencies; and
- Ensures public safety and promote peace and order, and also organizes the Police Auxiliary Services and the Auxiliary Services in LGUs.

(7) National Irrigation Administration (NIA) and Department Agriculture (DA)

The Department of Agriculture, as a member of NDCC, has special roles regarding disaster risk management, as follows:

- To organize reaction teams within the department offices and bureaus;

- To conduct surveys in disaster prone areas to determine the extent of damage on agricultural crops, livestock, and fisheries, and also maintains data on these to facilitate the assessment of damage during calamity and furnishes reports to NDCC through OCD; and
- To render technical assistance to disaster victims whose crops or livestock have been destroyed, damaged or lost, and also coordinate with the Philippine Crop Insurance Corporation for the immediate release to farmers of crop insurance to compensate losses.

In addition, the NIA was established in 1963 as a government agency responsible for development, operation and maintenance of irrigation systems all over the country. The particular function of NIA is oriented to the promotion of national food production programs and the enhancement of economic and social growth in rural areas through the development of irrigation systems. In the course of development of irrigation systems, NIA sometimes constructs flood control facilities like dikes to protect the irrigation systems in case they are developed in flood-prone areas.

NIA has at present 13 regional irrigation offices, 67 provincial irrigation offices and 101 irrigation systems offices.

(8) Department of Transportation and Communication (DOTC)

The DOTC has special roles regarding disaster risk management, as follows:

- DOTC proper coordinates the deployment of transport services during and after disaster occurrence from national to local DCC;
- Mobilizes the regional facilities of DOTC through the RDCC Chairman in disaster areas, including manpower, transport and communication facilities of DOTC Action Center; and
- Initiates the immediate restoration of destroyed infrastructure facilities for transportation and communications.

(9) National Hydraulic Research Center (NHRC-UPERDFI)

The NHRC is a research center attached to the University of the Philippines Engineering Research and Development Foundation, Inc. (UPERDFI), which was formally organized in 1972 as a private, non-stock, non-profit corporation based in the University of the Philippines. The objectives of UPERDFI are to promote and support engineering research and development in the country in the furtherance and enhancement of its economic development.

(10) Department of Budget and Management (DBM)

The Department of Budget and Management (DBM) has some special roles on disaster risk management as a member of NDCC, as follows;

- To organize reaction teams within the department offices and bureaus;
- To issue rules and regulations on the inclusion of disaster preparedness activities in the preparation of the Annual Investment Plan of local government units; and
- To release the necessary funds to implementing agencies as recommended by the NDCC and approved by the President.

(11) Department of Trade and Industry (DTI)

The Department of Trade and Industry (DTI) has special roles on disaster risk management as a member of NDCC, as follows;

- To maintain Bantay Presyo Operation Centers in all regional and provincial offices to address the concerns of the public; and mobilize the National Price Coordinating Council and Local Price Coordinating Council to develop strategies for stabilizing prices of basic and prime commodities;
- To disseminate information on consumer rights and responsibilities, price and supply advisories and guidelines, and other related matters; and
- To strengthen and intensify monitoring and enforcement activities nationwide to ensure the availability of basic necessities at affordable levels and to ensure compliance with fair trade laws

(12) Department of Education (DepEd)

The Department of Education (DepEd) has special roles on disaster risk management as a member of NDCC, as follows;

- To organize reaction teams within the department offices and bureaus, including the Boy Scout of the Philippines, the Girl Scout of the Philippines, and other institutions of learning;
- To make available school buildings nearest the affected areas as evacuation centers, and to provide report of damages to schools affected by disasters and submit to NDCC Chairman; and
- To assist in the public education campaign through the integration in the school curricula of subjects relative to different calamities, their causes and precautionary measures.

(13) Philippine Information Agency (PIA)

PIA in cooperation with concerned agencies undertakes a continuing information drive on disaster mitigation and control, and coordinates with mass media in educating the public on disaster management.

(14) Philippine National Red Cross (PNRC)

The Philippine National Red Cross (PNRC) has special roles on disaster risk management as a member of NDCC, as follows:

- To organize disaster response teams in its establishments, and conduct disaster management training courses; and
- To make available whole blood and its derivatives during disasters, and assist in providing emergency relief assistance to victims of disasters.

(15) Office of the President (OP)

The Office of the President (OP) approves releases from the National Calamity Fund upon the recommendation of OCD pursuant to the General Appropriations Act (GAA).

2.5.6 Current Efforts and Achievements on Organizational Setup regarding Flood Damage Mitigation Projects

(1) Introduction

There are various government agencies and/or inter-agency committees currently undertaking policy-making, formulation, coordination and execution of programs and/or projects related to flood mitigation in the Philippines. Several new organizational setups related to flood mitigation are further proposed and/or projected.

These existing and proposed organizations could be broadly classified into three types or groups. The first group is the nationwide policy making/coordination body. This group is represented by NEDA, NWRB DENR and NDCC-OCD. NEDA undertakes policy making/coordinating for the entire socio-economic development in the country, while NWRB is for the water sector, particularly flood mitigation. The NDCC is further designated to take the role on nationwide disaster coordination works, which include those for flood as one of the disasters. All of these existing entities were established in the 1970's, and since then, have always played as principal policy/coordination bodies in the water sector. It is herein noted that some new organizations such as RBCO-DENR were recently established. However, the roles and/or authorities given to these new organizations should be complementary with those currently in operation. Moreover, a Technical Working Committee on the bills seeking to create river authorities of the House Committee on Government Enterprises and Privatization has held several meetings. It is hoped that this proposal will support each other on river management.

The second group consists of the national government agencies, which could be the implementing agencies in specific fields of the water sector. The organizations such as DPWH, NIA, PAGASA and OCD could be categorized into this group. Among them, DPWH and NIA take the role of developing the major and/or large-scale infrastructures for flood mitigation, which are usually implemented with foreign financial assistance. On the other hand, the functions of PAGASA and OCD contribute to the nonstructural flood mitigation measures such as flood forecasting, warning and evacuation. These national government agencies have their own regional offices to perform their roles and authorities over the whole country.

The third group consists of the local government units (LGUs), which are divided into three tiers; namely, the Provincial Government, the City/Municipality, and the Barangay (the smallest administrative unit in the Philippines). In spite of the enactment of the Local Government Code of 1991, which intends to strengthen the local autonomy, the development of large-scale infrastructures for flood mitigation has been hardly undertaken by the LGUs due to budgetary constraint. As the result, the roles and authorities of the LGUs on flood mitigation are limited to the construction, maintenance and rehabilitation of local drainage systems and/or nonstructural measures such as the cleaning of waterways and small scale watershed management.

(2) Proposed Execution Body for the Project Component

In principle, the key relevant agencies related to this project component are DPWH, LGUs, NEDA, DENR, OCD and other stakeholders, while DPWH will be spearheading the execution of this component being the lead agency for flood control projects.

(3) Legal Basis and Necessity of Establishment of Conceived Flood Management Committee

The Water Code of the Philippines of 1976 (PD 1067) is a decree instituting a water code, thereby revising and consolidating the laws governing the ownership, appropriation, utilization, exploitation, development, conservation and protection of water resources. The 2005 amended implementing rules and regulations (IRR) of the said Water Code provides that an inter-agency flood plain management committee (hereinafter referred to as the "FMC or the Flood Mitigation Committee") for declared flood control areas shall be formed by the Secretary of DPWH, with members from the representatives of concerned agencies.

(a) National and Regional FMCs

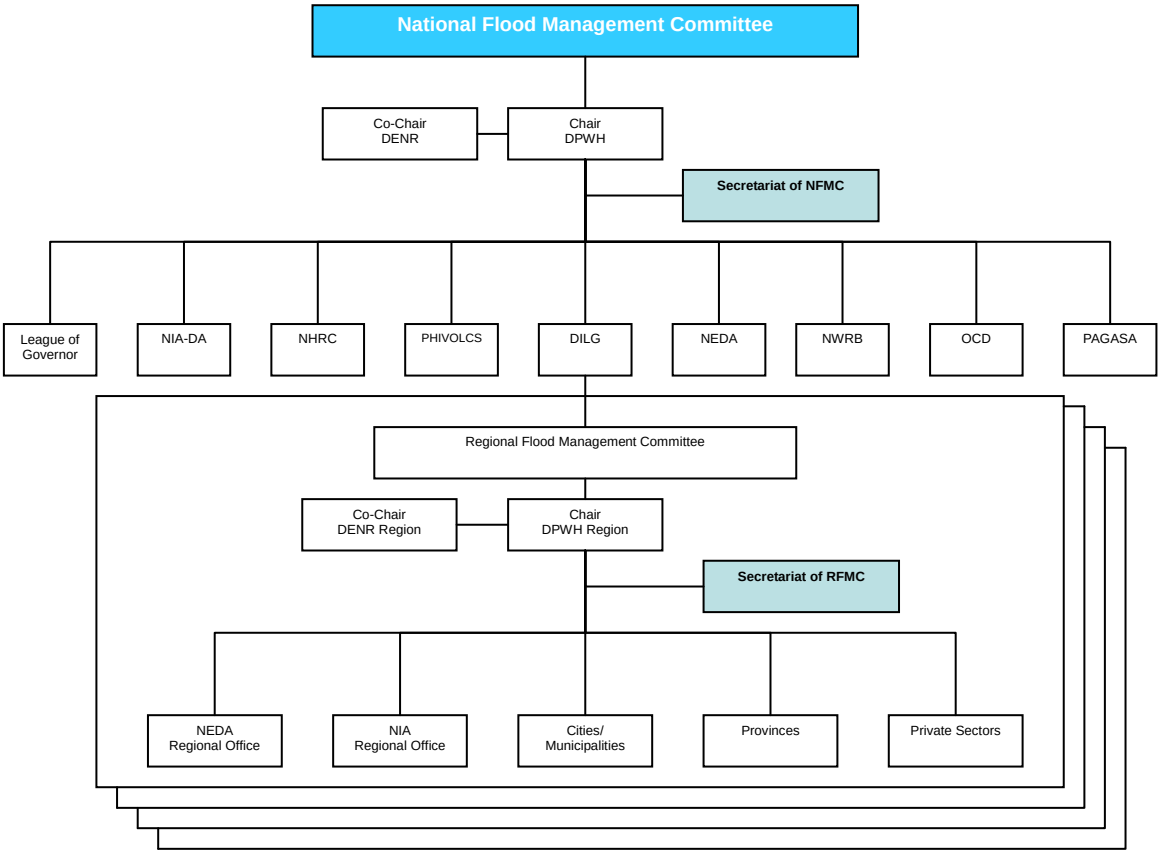
To realize the FMC, it is worth to reiterate the 2004 DPWH study on flood control project implementing system for principal river basins. The said study emphasized that flood management is the action to mitigate the damages caused by flood and sediment related disasters, by means of structures such as floodway, dam, etc., and/or by nonstructural method such as risk mapping, forecasting and warning system and land use regulation in river basin-wide area, and other methods and activities in any form to mitigate the damages.

Therefore, it is necessary to organize the National Flood Management Committee (NFMC) composed of related agencies, with the Regional Flood Management Committees (RFMCs) as its regional branches. The RFMC shall take action closely to their respective regions as well as the LGUs therein under the guidance and instruction of NFMC.

The objectives of creating the above committees are as follows:

- To lead all agencies and people on flood disaster mitigation;
- To integrate all efforts and investments for effective for flood disaster mitigation; and
- To coordinate all activities related to flood and water resources.

The proposed NFMC shall consist of the Secretary of DPWH as chairperson, with the Secretary of DENR as co-chairperson, while the member agencies are the DILG, NEDA, DA-NIA, PAGASA, NWRB, NHRC, PHIVOLCS, OCD-NDCC and the League of Governors. At the regional level, the RFMC shall consist of the Regional Director of DPWH as chairperson with the Regional Director of DENR as co-chairperson, while the members include those of NEDA, DA-NIA, Governors of provinces, Mayors of Cities/Municipalities, and private sector representatives (**Figure R 2.6**).



Source: DPWH

Figure R 2.6 Proposed Organizational Set-up of NFMC & RFMC

The roles and functions of the Committee consistent with the IRR of the Water Code are the following:

- To establish close liaison among national and local government entities and promote the best interest and the coordinated protection and management of flood plain lands for the mitigation of flood damages viewed in a larger context to include other aspects such as environmental quality and public health, safety and welfare;
- To provide guidelines to local governments in the formulation of regulatory ordinances regarding flood plain use and occupancy;
- To draft and recommend guidelines for flood plain management in a particular flood control area in order to achieve the goals and objectives; and
- To perform such other functions as the Secretary/Chairman may direct.

The other functions of the Committee may include:

- Organization of joint inspection teams for flooding areas to identify and study the causes and countermeasures; and
- Monitoring of the progress of projects for flood mitigation.

The NFMC shall be supported by the FCSEC, being the Secretariat, with roles as follows:

- To arrange regular and periodic meetings of the National Committee;
- To prepare the necessary materials for the National Committee;
- To draft the management guidelines; and

- To provide necessary coordination for technical and administrative cooperation among the member agencies on the implementation of flood control, Sabo and drainage projects.

The appropriate group of the Planning and Design Division of the DPWH regional offices shall act as the RFMC Secretariat with roles as follows:

- To arrange regular and periodic meetings of the Regional Committee;
- To prepare the necessary materials for the Regional Committee;
- To draft the regional flood management guideline in line with the national guideline; and
- To provide necessary arrangements for technical and administrative support to LGUs on the implementation of flood control, Sabo and drainage projects within its region.

(b) Related Good and Enterprising Example of Local FMC (Ormoc City)

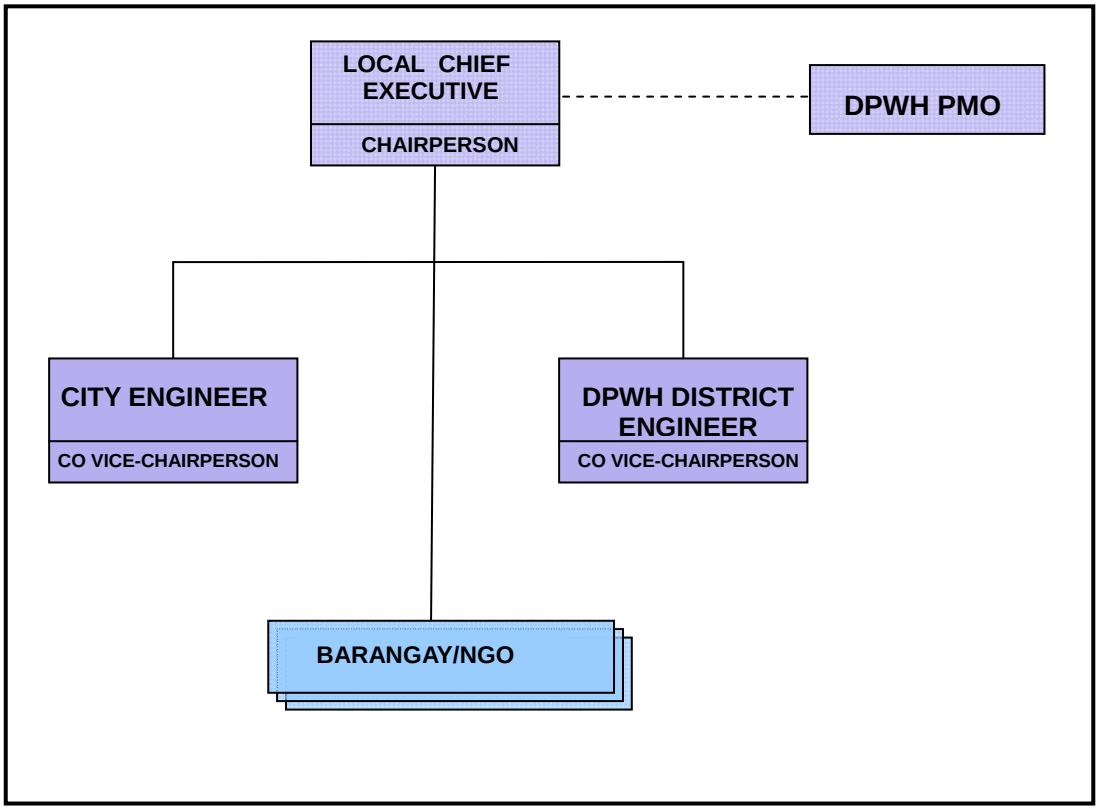
The City of Ormoc was devastated by Typhoon Uring in 1991, resulting in the death of about 8,000 people and the destruction of nearly 14,000 houses, with nearly Php 620 million in damage to agriculture, livestock, fishery, commerce and infrastructure. The national government, through the DPWH, with funding support from the Government of Japan, embarked on the construction of flood control structures, river improvement and reconstruction of bridges.

When the project was completed, the city government accepted the responsibility of maintaining the structures when they were turned over by the DPWH. Maintenance activities performed by the city government include removal of deposits, vegetation control, repainting of steel components and enhancement of river environment.

The general strategy adopted by the LGU was the creation of a central coordinating body that oversees the monitoring and maintenance activities on the flood control facilities. Thus, the Flood Mitigation Committee (FMC) was created with the following responsibilities:

- To evaluate the magnitude of any damage during disaster or every other flood and recommend to the concerned agencies the appropriate repair and rehabilitation activities to be undertaken;
- To monitor the progress of the maintenance, repair and rehabilitation activities;
- To act as the main coordinating body/council for all technical, physical and social related activities of the two main rivers;
- To conduct regular monitoring activities for the river improvement structures at Anilao and Malbasag rivers;
- To inform/recommend appropriate regular maintenance activities to all concerned agencies; and
- To collect and maintain data of the activities undertaken.

The FMC structure in Ormoc City shown in **Figure R 2.7** is quite simple and straightforward in its composition.



Source: DPWH District Office

Figure R 2.7 Organizational Structure of Ormoc City Flood Mitigation Committee (FMC)

The coordination between the City Engineer's Office and the DPWH-DEO is overseen by the City Local Chief Executive, while the coordination of the City Government with the DPWH is through the DPWH-PMO. Further, the FMC coordinates very closely with the CDCC during and immediately after disaster events.

At the community level, each barangay has a definite role and responsibility to perform, as follows:

- To take an active role in monitoring and reporting to the FMC all illegal activities undertaken within the Project;
- To initiate/spearhead barangay/district level program in instilling awareness and in-depth responsibility to the residents in the basic ways of caring for the river environment;
- To cooperate in monitoring/reporting the water level during flood time at their respective areas; and
- To assist the FMC in the evaluation of damage caused by flood through their eye-witness' account.

Among the collaborating/participating entities are the environmental and social non-governmental organizations (NGOs) whose primary roles were defined in terms of implementing community-based projects and programs.

(4) Flood Management in an Integrated Approach at the Local Level

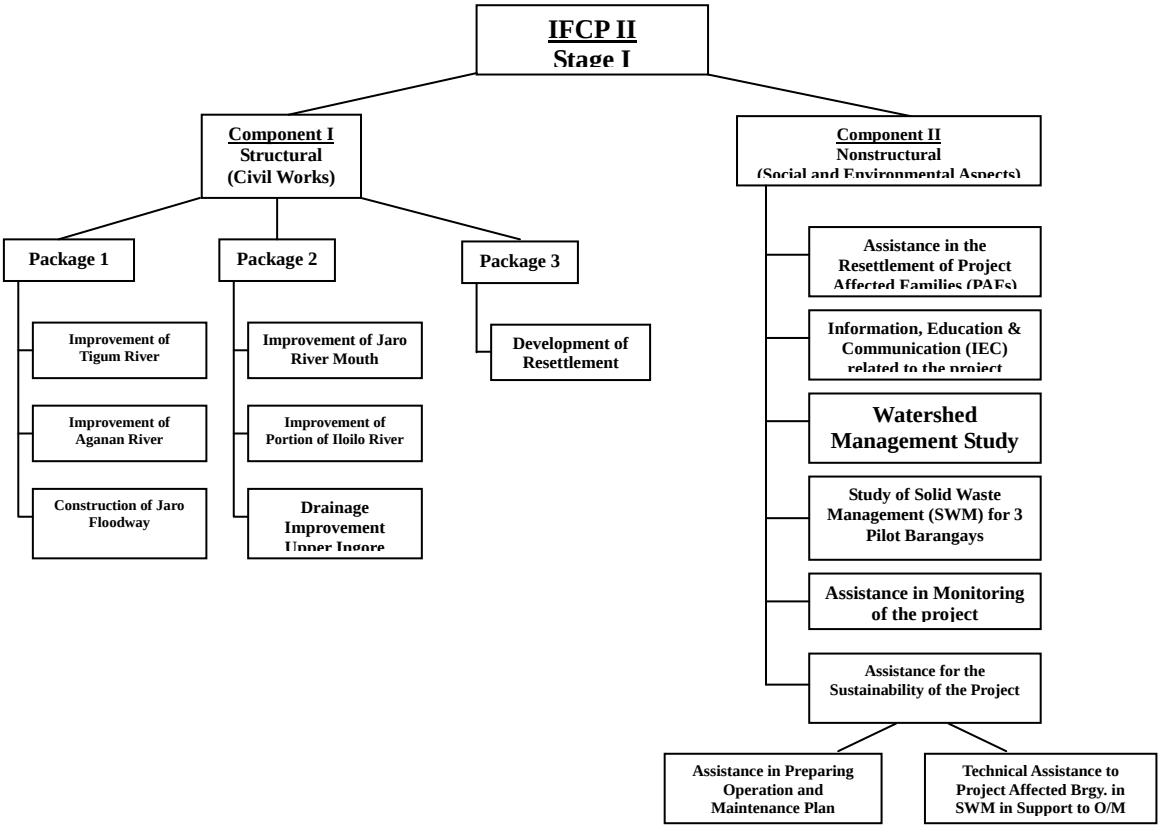
The Medium-Term Philippine Development Plan (2004-2010) underscores the need to translate the global commitments to action by adapting and making the Integrated Water Resources Management strategy operational. It envisions that the IWRM strategy will enable the Philippines to effectively address the challenges in water resource management, with due consideration on various stakeholders interests and needs. The IWRM is also viewed as the path for protecting, conserving and restoring critical ecosystems.

The National Framework for IWRM defines it as a systematic, collaborative and multi-stakeholder process, which promotes the coordinated development and management of water, land and related resources within hydro-geological boundaries, in order to maximize the resultant economic and social welfare in an equitable manner and without compromising the sustainability of vital ecosystems. It links water and water-related policies, objectives, and uses to improve planning and decision-making in the operation and management of natural resources and environmental systems and in the design and implementation of relevant programs and policies.

(a) Related Good and Enterprising Example of IWRM-1 (Jaro and Iloilo River Basins)

The standing policy of the DPWH with regard to its flood control program is that projects should fall within the area covered by the major and principal river basins as defined by NWRB. The DPWH's approach in recent years has evolved into a much more comprehensive outlook on flood management in which engineering is supplemented and complemented by nonstructural measures.

The use of both structural and nonstructural measures in the DPWH flood control programs is embodied in its current policies and strategies as shown in **Figure R 2.8** for the Iloilo Flood Control Project (IFCP).



Source:IFCP

Figure R 2.8 IFCP Structural and Nonstructural Measures

(b) Related Good and Enterprising Example of IWRM-2 (Ilog-Hilabangan River Basin)

One of the areas implementing IWRM is the Ilog-Hilabangan River Basin, which is facing several environmental problems such as forest denudation, saltwater intrusion, river pollution, water scarcity, high prevalence of waterborne and environment-related diseases, fish kill occurrences, water use conflict, flooding in the downstream and others. Current efforts to address these problems in the river basin and watershed areas are done in an uncoordinated manner due to administrative limitations caused by the political division which divides Negros Island into two provinces.

The goal of the Provincial Environmental Code of both provinces is to improve the quality of life of the Negrenses by promoting sustainable development in the management of environmental and natural resources, which is consistent with the Local Government Code that allows local government units to adopt measures to safeguard, conserve and protect the environment. In relation to this, the Clean Water Act provides for the establishment of Water Quality Management Areas using appropriate physiographic units such as watershed, river basin or water resources region, while the MTPDP calls for an IWRM approach in managing water resources through the establishment of River Basin Organizations (RBOs) to promote devolution of decision-making process to the lowest appropriate levels.

In this regard, the two provinces of Negros Island act together by establishing enabling mechanisms and institutional support which will define areas of complementation, collaboration, cooperation to protect, rehabilitate and develop

water, land and related resources in the Ilog-Hilabangan River Basin, through the IWRM approach. The Governors of the provinces of Negros Oriental and Negros Occidental mutually agreed to form the Negros Island IWRM Council on June 26, 2008.

The Council is composed of various stakeholders within the Ilog-Hilabangan River Basin, headed by a champion on environmental protection and management. The creation of an Executive Committee (Execom) was considered to oversee the actual implementation of the plans developed and decisions approved by the Council, and the Execom will also guide the operations of the TWGs to monitor the deliverables. The creation of Secretariats was also considered, headed by the Negros Oriental Provincial Planning and Development Coordinators and the Negros Occidental Provincial Environment and Management Officer respectively. The Council shall appoint an Executive Officer to implement the activities and other targets of the Negros Island IWRM Council Operational Plan.

The said Council will serve as the apex and policy advisory body for integrated water resources planning and management within the Ilog-Hilabangan River Basin, thereby contributing towards the realization of the Millennium Development Goal on environmental sustainability. It will also include the targets on integrating the principles of sustainable development into the country's policies and programs, reverse loss of environmental resources, and reduce by half the proportion of people without sustainable access to safe drinking water. The flood control component in this IWRM process for the Ilog-Hilabangan River Basin is under the climate change aspect.

(5) Organizational Structure Related to Operation and Maintenance Activities of Flood Mitigation Project

The preparation of an operation and maintenance plan is necessary for project sustainability. There is a need to clarify which organizational unit within the LGUs will have the primary responsibility for the required O&M works. There is also a need to establish a clear, workable arrangement with the LGUs to ensure integration of the O&M of flood control facilities in their regular maintenance program and budget. The consideration of nonstructural measures in the overall O&M works includes among others the institutional arrangements after the project turn-over.

With the turn-over and the creation of the central coordinating body, the responsibility of maintaining the flood control facilities in both structural and non-structural areas is ensured, personnel are dutifully identified and assigned, complementary programs are developed and implemented, operating units are mobilized and requisite resources are adequately and appropriately allocated.

(a) Related Example regarding O&M Activities-1 (Ormoc City)

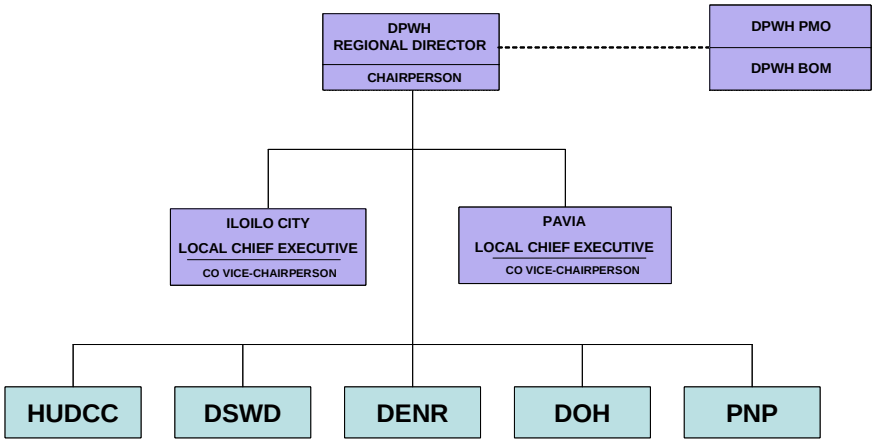
As explained in "(4) Flood Management in an Integrated Approach at the Local Level," Ormoc City established the FMC. The FMC has also the responsibility for O&M activities to properly maintain the constructed river facilities and prepared a budget for such O&M activities. The annual O&M budget managed by the FMC is fixed at 2 million pesos from the Fiscal Budget of the City.

(b) Related Example regarding O&M Activities-1 (Iloilo City and Municipality of Pavia)

The Operation and Maintenance Implementation Plan (OMIP) of the Iloilo Flood Control Project (IFCP) proposed that an apex entity must be created, which shall coordinate all efforts by the individual LGUs to ensure an integrated and convergence approach in the O&M activities. The DPWH Regional Office is tapped to lead this apex entity with the respective local chief executives acting as vice chairpersons. With the DPWH leading the coordination work, it can spearhead the needed administrative strength in coordinating with the various national government agencies, provincial government and province-level organizations, and even regional bodies in coming up with an integrated and comprehensive O&M package and support.

The proposed institutional arrangement for O&M of IFCP as illustrated in **Figure R 2.9** is just for initial composition and, as time progresses, there can be modification in the structure. At this juncture, the basic organizations that must be linked-up are those that directly respond to the current need for the transition phase: public works, environment and natural resources, human/urban settlement, river administration and management, peace and order, social welfare and community development, disaster management, public health and livelihood.

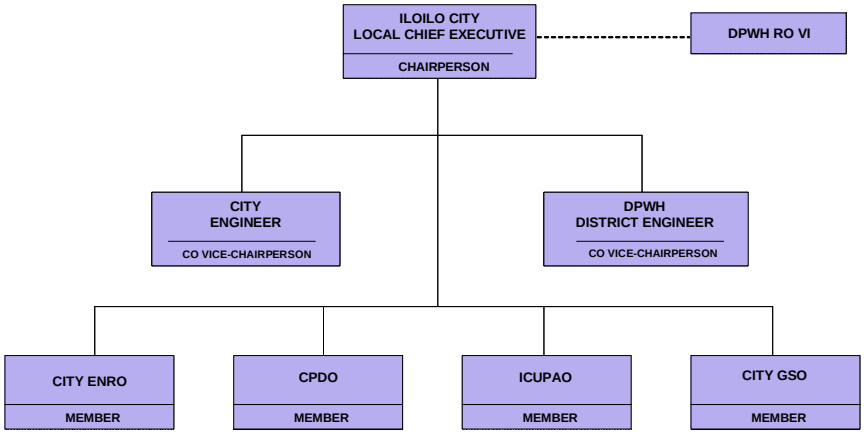
The Apex O&M Coordinating Body will have as its primary mandate the coordination of all agencies and organizations, as well as the various programs and projects, resources, etc., as it impacts on operations and maintenance of the flood control facilities.



Source: IFCP

Figure R 2.9 Proposed Organizational Chart of the Apex O&M Body

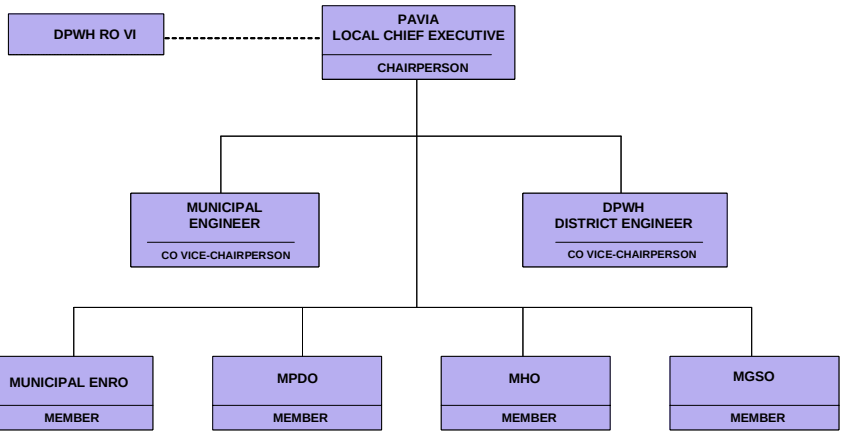
The identified entity for the task is the LGU O&M Implementing Body proposed to be led by the respective local chief executives and supported by the LGU Engineering Offices and the DPWH District Engineering Offices. Other members of the "Implementing Body" are offices whose current mandates impact on the structural and nonstructural O&M work requirements. The general idea is to maximize these existing offices and simply strengthen their technical and operational capacities (**Figure R 2.10** and **R 2 11**).



Source: IFCP

Figure R 2.10 Proposed Organizational Chart for the Iloilo City O&M Body

At the local level, the City of Iloilo had established its own Iloilo River Development Council (IRDC) with the mandate to manage the river. At the Municipality of Pavia, there is no river administrative body to manage the river systems in its area of responsibility. Nonetheless, the municipal government has adopted a river watch system called "Bantay Suba," which monitors activities in the river.



Source: IFCP

Figure R 2.11 Proposed Organizational Chart for the Municipality of Pavia O&M Body

The LGU O&M Implementing Body will have as mandate the review, formulation and enforcement of policies, laws and other statutes pertinent to river administration and management, human settlement, solid waste management, and disaster management to name a few.

It should be emphasized that the creation of the abovementioned bodies should include not only its responsibilities and accountabilities but should be clear with its power and authority, as well as with the resources, that must be assigned and allocated for it to perform its functions and mandate.

Meanwhile, at the barangay level there must be strengthening in terms of technical assistance and support, and the thrust for community volunteer development and mobilization. For practical purposes, the existing committees at the barangay level should be maximized and functions strengthened.

At the same time, it is good to remember that there are so many institutions in the community that could be tapped and mobilized: for their experience, commitment, technical expertise and other resources. Non-government organizations (NGOs), people's organizations (POs) and the academe are sources of collaborative energy for O&M activities. It is noteworthy that most environmental concerns are championed by NGOs and POs, and the technical experts are mostly in the academe.

The legal basis for the creation of the O&M coordinating body must be equally undertaken to proceed from the formation of the O&M implementing body. A memorandum of agreement, even initially among the DPWH and the two LGUs, would pave the way for its establishment. Thereafter, all organizations and entities that the body may deem necessary for its effective functioning may be invited to join.

2.6 Budget for Flood Mitigation Projects

2.6.1 National Budget for Investment on Flood Control Infrastructures

As described above, the DPWH is the national agency mandated to undertake construction of infrastructures for flood mitigation, and it shoulders investment costs for major flood mitigation projects in the Philippines. The actual average investment cost for infrastructure projects under the DPWH budget was about 40.3 billion pesos on the average for the period 1999-2006. This investment cost is divided into 21 billion pesos (53%) for national road projects, 5.1 billion pesos (13%) for flood mitigation projects, and 14 billion pesos (27%) for other locally-funded projects as listed in **Table R 2.5**.

Table R 2.5 Actual Investment Costs for Infrastructure Projects from 1999 to 2006 - DPWH

(Unit of Cost: million pesos)

Year	National Road Projects		Flood Mitigation Projects		Other Locally Funded Projects		Total
	Cost	Percentage to Total	Cost	Percentage to Total	Cost	Percentage to Total	
1999	21,878	60%	5,346	15%	9,513	26%	36,737
2000	22,950	51%	4,791	11%	17,146	38%	44,887
2001	21,878	60%	5,346	15%	9,512	26%	36,736
2002	13,059	33%	4,969	12%	22,115	55%	40,143
2003	18,328	45%	4,347	11%	17,668	44%	40,343
2004	18,898	51%	4,270	11%	14,220	38%	37,388
2005	24,313	63%	5,085	13%	9,391	24%	38,789
2006	28,642	60%	6,318	13%	12,754	27%	47,714
Average	21,243	53%	5,059	13%	14,040	35%	40,342

Source: DPWH

The actual investment costs listed above have been disbursed based on the costs proposed in the DPWH Medium-Term Infrastructure Development Program (DPWH-MTIDP), and a comparison between the actual costs and the proposed investment costs for 1999-2004 shows that the proposed investment costs were almost fully disbursed as actual investment costs. However, the investment costs for both national road projects and flood mitigation projects were curtailed to less than 70% of the proposed costs, and the balance was converted to investment for other locally-funded projects, as listed below (**Table R 2.6**).

Table R 2.6 Proposed Investment Costs in the Medium-Term Investment Program (1999-2004) and Ratio of Proposed Investment Costs to Actual Costs Disbursed

(Unit of Cost: million pesos)

Year	National Road Projects		Flood Mitigation Projects		Other Locally Funded Projects		Total	
	Cost	Rate to Actual Cost	Cost	Rate to Actual Cost	Cost	Rate to Actual Cost	Cost	Rate to Actual Cost
1999	24,273	90%	4,384	122%	581	1637%	29,240	126%
2000	22,951	100%	4,791	100%	2,147	799%	29,891	150%
2001	28,161	78%	6,089	88%	458	2077%	34,710	106%
2002	29,063	45%	8,285	60%	719	3076%	38,068	106%
2003	39,983	46%	9,641	45%	905	1952%	50,530	80%
2004	41,640	45%	10,773	40%	1,950	729%	54,364	69%
Average	31,012	63%	7,327	66%	1,127	1334%	39,467	100%

Source: DPWH MTIDP for 1999-2004

The latest DPWH-MTIDP for the period 2005-2010 was proposed in May 2007, as shown in **Table R 2.7**. According to the Plan, the annual total investment cost for the period will gradually increase and the average will reach about three times of that for the period 1999-2004. The share of the investment for flood mitigation to the total cost will slightly decrease from 13% for 1999-2004 to 12% for 2005-2010.

Table R 2.7 Proposed Investment Costs in the Medium-Term Investment Program for 2005-2010

(Unit of Cost: million pesos)

Year	National Road Projects		Flood Mitigation Projects		Other Locally Funded Projects		Total
	Cost	Percentage to Total	Cost	Percentage to Total	Cost	Percentage to Total	
2005	26,203	68%	5,285	14%	7,232	19%	38,720
2006	35,556	75%	4,784	10%	7,380	15%	47,720
2007	37,288	60%	8,032	13%	17,342	28%	62,662
2008	56,660	76%	5,515	7%	12,132	16%	74,307
2009	64,695	76%	11,866	14%	8,892	10%	85,453
2010	75,990	77%	13,641	14%	8,640	9%	98,271
Average	49,399	73%	8,187	12%	10,270	15%	67,856

Source: DPWH MTIDP for 2005-2010

In the proposed DPWH-MTIDP for the period 2005-2010, the implementation of 33 foreign financial assistance projects (9 ongoing projects and 24 new projects) is included in the sector of flood mitigation. The average investment cost per project is estimated at about 2.8 billion pesos (4.3 billion pesos for the ongoing projects and 2.3 billion pesos for the proposed projects), as listed below.

Table R 2.8 Proposed Investment Costs for Ongoing and Proposed Flood Mitigation Projects in the Medium-Term Program for 2005-2010 (Foreign Financial Assistance Projects)

(Unit: million pesos)

Project Status	Number of Projects	Investment Cost (million pesos)				Ave. Invest. Cost per Project (million pesos)
		Prior Years	2005 to 2010	After 2005	Total	
Ongoing	9	17,414	21,173	0	38,587	4,287
Proposed	24	0	23,050	31,785	54,835	2,285
Total	33	17,414	44,223	31,785	93,422	2,831

In addition to the above foreign financial assistance projects, the DPWH-MTIDP for 2005-2010 projects has the investment cost of 4.9 billion pesos in total for locally funded projects in the sector for flood mitigation, as shown in **Table R 2.9**. This cost is likely to be oriented to the maintenance of flood mitigation facilities such as drainage along national roads, protection works along national roads/seawalls and maintenance for river channels.

Table R 2.9 Proposed Investment Costs for Ongoing and Proposed Flood Mitigation Projects in the Medium-Term Program for the Years 2005 to 2010 (Locally-Funded Projects)

Project	Annual Investment Cost (million pesos)						
	2005	2006	2007	2008	2009	2010	Total
Drainage along National Roads	0	0	500	500	300	350	1,650
Protection Works along National Roads/Seawalls	0	0	500	500	300	350	1,650
Flood Control in Principal/Major River Basins	0	0	500	500	300	300	1,600
Total	0	0	1,500	1,500	900	1,000	4,900

DPWH has taken efforts, through its district offices, to mitigate and prevent flood damage in each jurisdiction area such as installation of bank protection works, dredging of deposited materials on the riverbed, and drainage improvement works. DPWH has also undertaken maintenance and cleaning of drainage canals along national roads.

2.6.2 National Budget for Disasters and Calamities

In addition to the budget for infrastructures such as flood control facilities, the National Calamity Fund has been prepared for relief and rescue operations in post-disaster activities nationwide based on PD 1566 and related regulations described in Section 3.3. This fund can be adopted for disaster and calamity preparedness. The fund can be classified into three (3) categories, as shown in **Table R 2.10**. The NDCC described in Subsection 3.2.5 manages the fund through the periodical and emergency councils.

Table R 2.10 Status of National Calamity Fund during 2004-2008

Unit: Php

Fiscal Year	2004	2005	2006	2007	2008
National Calamity Fund (NCF)	700,000,000	700,000,000	1,173,834,752	933,330,764	4,283,956,230
Quick Response Fund (QRF)	235,468,750	276,250,000	346,250,000	373,750,000	678,750,000
Contribution to NGAs *[1]	377,531,250	380,300,000	503,734,752	230,361,764	3,240,123,700
Contribution to LGUs *[2]	87,000,000	43,450,000	323,850,000	329,219,000	365,082,530

Fiscal Year	2004	2005	2006	2007	2008
National Calamity Fund (NCF)	100%	100%	100%	100%	100%
Quick Response Fund (QRF)	34%	39%	29%	40%	16%
Contribution to NGAs	54%	54%	43%	25%	76%
Contribution to LGUs	12%	6%	28%	35%	9%

Note : *1: NGA - National Government Agency/s

*2: Source: OCD

2.6.3 Budget of Local Government Units

The Local Government Code of 1991, which was enacted in 1992, induced the decentralization and/or devolution of national government agencies. The Code increased the financial resources available for LGU units by:

(1) Broadening their taxing powers;

(2) Providing the LGUs with a specific share from national wealth exploited in their area; e.g., mining, fishery, and forestry charges; and

(3) Increasing share from the national taxes, i.e., internal revenue allotments (IRA), from the previously low 11% to as much as 40%.

Under the conditions enumerated above, the annual income of the LGUs are covered by about 50-70% of the IRA, other parts for the local taxes and others (such as the senatorial funds, congressional funds and subsidies from the upper LGUs and the national government), and most parts of the annual expenses are allocated for office operating cost, which is mostly used for personnel expenses. The budgetary scale among the cities/municipalities has a rather large gap. The cities and municipalities in the Philippines are classified into five groups according to their income.

The city/municipal fund for infrastructure development usually comes from 20% of the IRA in accordance with RA 8185 (Local Government Code). In spite of the increment of IRA by decentralization, the fund could hardly shoulder the necessary cost for flood mitigation. Therefore, judging from this income and expense, the budget for flood mitigation works by the LGUs is rarely sufficient, and the cities/municipalities currently undertake minor drainage projects only. However, LGUs shall secure the local calamity fund corresponding to 5% of annual total revenue in accordance with RA 8185 (Local Government Code).

Outside Metro Manila, flood control, urban drainage and other urban infrastructure projects of the LGUs may be implemented through credit facilities provided by the Land Bank of the Philippines (LBP), the Development Bank of the Philippines (DBP), and the Municipal Finance Corporation (MFC; formerly, Municipal Development Fund Office of the Department of Finance) under such category as World Bank (WB), Asian Development Bank (ADB), and Japan Bank for International Cooperation (JBIC) assisted projects. These credit facilities are usually called as “Two-Step Loan,” where the LGUs may borrow funds for infrastructure projects through the guarantee of the national government or national funding institutions. Generally, the interest rate of 9% to 10% on the original rate of the foreign funding institution is added to the amortization and because of such high interest rate, the LGUs could hardly afford repayment of the said “Two-Step Loan.”

2.7 Japanese Policy on the Sector

2.7.1 Policy on the Sector

The Government of Japan (GOJ) provides assistance to the Philippines to contribute to political stability and promote economic prosperity, taking into account the following factors: 1) The Philippines is a neighboring country, and has for many years maintained favorable relations with Japan; 2) Japan and the Philippines have a close relationship of interdependence in trade and investment.

In this connection, the GOJ has given priority to assistance in Disaster Risk Management focused on the most susceptible areas as one of Priority Areas/Sectors and Policies considering aggravated environmental issues. In the disaster risk management sector, these are inclusive of measures against floods, earthquakes and volcanic activities.

2.7.2 Previously Assisted Projects in the Sector

The GOJ, recognizing the significance of coping with the sector problems, has been assisting the Government of the Philippines (GOP) in the implementation of flood control projects since the early 1970's. The projects under GOJ assistance can be classified into: 1) GOJ grant-aid projects; 2) JICA studies; and 3) OECF/JBIC projects, as shown in **Table 2.6, 2.7 and 2.8**, respectively. As shown in these tables, during the last 33 years from 1971 to 2003, 53 projects and studies amounting to 138,173 million yen (excluding costs of JICA studies) have been implemented. The salient features of these projects by category are as described below.

(1) Grant-Aid Projects of GOJ

Nine (9) grant-aid projects with the total cost of 9,198 million yen have been implemented during the last 33 years (see **Table 2.6**). The implementation agencies were PAGASA, University of the Philippines (UP) and DPWH.

PAGASA implemented two projects with the total cost of 101 million yen (1% of the total amount) relating to the flood forecasting and warning systems in the Pampanga River Basin. UP implemented one project relating to the National Hydraulic Research Center. On the other hand, the DPWH implemented six projects with the total cost of 9,037 million yen (98%) relating to:

- Retrieval of flood prone areas in Metro Manila;
- Equipment procurement for Mt. Pinatubo;
- Flood mitigation works in Ormoc City;
- Rehabilitation of the flood control and warning system in Metro Manila; and
- Construction of Hydraulic Laboratory.

In Ormoc City, the first phase of the JICA-assisted Flood Mitigation Project has been completed. This involved the construction of three (3) slit dams and the reconstruction of five (5) bridges.

(2) JICA Studies

Seventeen (17) studies have been implemented during the last 33 years and two (2) studies are ongoing (see **Table 2.7**). The implementation agencies were PAGASA and DPWH.

PAGASA implemented one study on flood forecasting system (6% of the total number of studies). On the other hand, DPWH implemented 18 studies (94%), which are classified into:

- Flood Control and Sabo: Six (6) studies around Mt. Mayon, Mt. Pinatubo and Laoag;
- Flood Control: Five (5) studies in major river basins (Pampanga, Panay, Agno, Ilog-Hilabangan and Lower Cagayan);
- Flood Control and Drainage, or Drainage alone: Three (3) studies in Metro Manila; and
- Others (disaster prevention): Two (2) studies around Mt. Mayon and in Camiguin Island; one (1) nationwide study (The Nationwide Flood Risk Assessment and the Flood Mitigation Plan for the Selected Areas in the Republic of the Philippines); and one (1) study for a principal river basin (Comprehensive Flood Mitigation for Cavite Lowland Area in the Republic of the Philippines).

Based on these, it is evident that JICA studies have been implemented in Metro Manila, major river basins (Pampanga, Panay, Agno, Ilog-Hilabangan and Lower Cagayan), principal river basins (Laoag and Cavite), Mt. Mayon, Mt. Pinatubo and Camiguin Island.

(3) JICA Loan Projects (by Previous OECF/JBIC)

Twenty-seven (27) JICA (i.e., the previous OECF/JBIC) projects (L/A based) with the total cost of 128,975 million yen have been implemented during the last 33 years (see **Table 2.8**). The implementation agencies were PAGASA and DPWH.

PAGASA implemented four (4) projects with the total cost of 12,390 million yen (10% of the total amount) relating to the flood forecasting and warning systems for dam operation, etc. On the other hand, DPWH implemented 23 projects with the total cost of 116,585 million yen (90%), which are classified into:

- Flood Control: 15 projects in Pampanga, Pasig-Marikina, Agusan, Agno and Allied Rivers, Iloilo City and Metro Manila
- Flood Control and Drainage, or Drainage alone: 3 projects in Metro Manila
- Flood Control and Sabo: 1 project in Laoag
- Others (volcano hazard mitigation, telemetering and small dams): 4 projects at Mt. Pinatubo and nationwide.

Based on these, it can be understood that JICA (OECF/JBIC) projects have been implemented mainly in Metro Manila, major river basins (Pampanga, Pasig-Marikina, Agusan and Agno), selected urban centers (Laoag and Iloilo), and Mt. Pinatubo.

2.8 Policy of the Other Donor Agencies

2.8.1 World Bank (WB)

(1) General Policy on Disaster Risk Management[2]

The World Bank's Disaster Risk Management aims to reduce human suffering and economic losses caused by natural and technological disasters. The World Bank tries to provide a more strategic and rapid response to disasters, promoting the integration of disaster prevention and mitigation efforts into the range of development activities.

Since 1980, the World Bank had approved more than 500 operations related to disaster management, amounting to more than US$40 billion. These include post-disaster reconstruction projects, as well as projects with components aimed at preventing and mitigating disaster impacts. For reconstruction projects, much of the Bank's investment focuses on the reconstruction itself of physical infrastructure and damaged structures. Rebuilding in urban areas often focuses upon health facilities, such as hospitals that are themselves important in post disaster reconstruction. Economic recovery also features as a key component in some reconstruction projects, where it usually involved financing urgently needed imports.

Common areas of focus for prevention and mitigation projects include forest fire prevention measures, such as early warning measures and educational campaigns to discourage farmers from slash-and-burn agriculture that ignites forest fires; and flood prevention mechanisms, ranging from shore protection and terracing in rural areas to adaptation of production.

[2] The Policy of WB on Disaster Risk Management is cited from the website: http://web.worldbank.org

(2) Program to Strengthen Disaster Risk Reduction and Disaster Management in Southeast Asia

The Association of Southeast Asian Nations (ASEAN) Secretariat, the United Nations International Strategy for Disaster Reduction (UNISDR) and the World Bank announced a cooperation program to strengthen disaster risk reduction and disaster management in Southeast Asia in May 2009. This program aims to help ASEAN reduce its vulnerability to natural hazards, thus protecting its citizens from the impact of extreme weather events in the future. The program is the focus of the Memorandum of Cooperation (MoC) on Disaster Risk Reduction, a tripartite agreement between the ASEAN Secretariat, the UNISDR and the World Bank. The program lays a framework for technical support from the UN and the World Bank to help ASEAN formulate and implement strategies and action plans for disaster risk reduction and management. The objectives of this program include (i) building ASEAN's capacity in the areas of disaster risk reduction and climate change adaptation; (ii) mobilizing resources for the implementation of disaster risk reduction initiatives in ASEAN; and (iii) helping ASEAN policy-makers gain knowledge on effective and practical ways to reduce disaster risks.

(3) Report on Enhancing Poverty Alleviation through Disaster Reduction in the Philippines

The World Bank report on enhancing poverty alleviation through disaster risk reduction in the Philippines contains the needed improvement of policies and practices towards addressing the following issues:

- Disasters are being dealt with in manners that are ad-hoc and response-oriented;
- Information on disaster risk is lacking and measurement of socio-economic impact of disasters is inadequate;
- NDCC members and LGUs have limited risk reduction capacities;
- Efforts by donor, multilateral and civil society are poor and generated little effect; and
- Government bears the majority of cost of disasters.

(4) Philippines Climate Change Adaptation Project

The Global Environmental Facility (GEF) of the World Bank assisted in the Philippine Climate Change Adaptation Project (PhilCCAP) Phase 1 from July 2007 to June 2009. The Project aims to reduce the negative impacts of the increasing risks due to climate change on poverty alleviation and economic development, particularly in agriculture, natural resources, and infrastructure sectors, and partly through enhanced inter-agency coordination with regard to climate change adaptation and natural hazard risk management.

PhilCCAP is spearheaded by DENR with partners from DA-BSWM, NIA, DOE, PAGASA, OCD-NDCC, and NAMRIA. The proposed project has nationwide coverage with pilot sites in Cagayan Province in Region 2, and Albay Province in Region 5.

PhilCCAP has two phases: Phase 1 aims at a) establishing the institutional set-up best suited for guiding country and sector responsive adaptation activities to reduce the country's vulnerability to associated risks; b) preparing reliable climate risk information; and c) developing country-relevant solutions for climate risk reduction through adaptation. Its second phase would aim to scale up the best practices and lessons learnt in PhilCCAP, which would generally support climate change and disaster risk assessments

in order to facilitate risk-proofed investments in other key development sectors of the country.

The Phase 1 of PhilCCAP is anticipated to have the following components:

- Component 1 would improve coordination of adaptation policy
- Component 2 would implement climate risk management in key sectors, which include agriculture, natural resources and infrastructure
- Component 3 would lead to the strengthening of proactive disaster management within NDCC
- Component 4 would underpin the previous two components by enhancing the generation and timely targeted delivery of scientific and other information required for effective and efficient climate risk management
- Component 5 covers project management as well as coordination and support for implementation activities.

2.8.2 ADB

ADB has a comprehensive disaster and emergency assistance policy that provides rehabilitation and reconstruction assistance and assists developing member countries with prevention, preparation, and mitigation of the impact of future disasters. This policy was approved on 01 June 2004. Named as "The 2004 Disaster and Emergency Assistance Policy of the Asian Development Bank (DEAP of ADB)," the policy is consistent with Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank 2008–2020, which calls for mainstreaming disaster risk management (DRM) and providing early and medium-term disaster response and assistance in partnership with selected aid agencies.

The basic principles of this policy contain the following items:

- Adopting a systematic approach to disaster management, including natural disasters and post-conflict.
- Mainstreaming disaster risk management as an integral part of the development process.
- Strengthening partnerships among development and specialized organizations to enhance the effectiveness of emergency aid, since no single agency can provide all the resources needed to cope with disasters and the resulting emergencies.
- Using resources more efficiently and effectively to better support pre- and post-disaster activities.
- Improving organizational arrangements within ADB for planning, implementing, and communicating effectively on disaster and emergency-related assistance

Based on the above principles for disaster risk management, ADB has created the following plan and position papers:

- Action Plan for Implementing ADB's Disaster and Emergency Assistance Policy (April 2008); and
- Positioning ADB's Disaster and Emergency Assistance Policy in a Changing Regional Environment.

Furthermore, the ADB will establish a new fund that will enable it to immediately provide financial aid to developing member countries (DMCs) hit by natural disasters. The ADB Board of Directors approved the establishment of the Asia Pacific Disaster Response Fund (APDRF), which will provide grants of up to US$3 million to help DMC's meet the immediate costs of restoring life-saving services following a declared disaster. This financial assistance will bridge the gap between existing ADB emergency loans and grants. Hence, the ADB has two emergency funds and one of them is the existing emergency assistance loan that is designed for longer term

reconstruction and rehabilitation. While this mechanism of APDRF allows for quick fund disbursement, it still takes at least 12 weeks before funds can be made available to affected DMCs. The new APDRF will complement ADB's existing mechanisms and allow for the disbursement of additional funds almost immediately. APDRF assistance will be extended after three conditions are met – a natural disaster has occurred; a statement of national emergency has been officially declared by the affected DMC; and the United Nations humanitarian/resident coordinator has confirmed the scale and implications of the disaster and indicated a general amount of funding needed. The size of the grant extended by APDRF will depend on the extent of the disaster. The Regional and Sustainable Development Department of ADB (RSDD) will manage the fund in consultation with the ADB regional departments and resident missions, and coordinate with various ADB departments in implementing activities financed by the APDRF. An initial US$40 million will be transferred from the Asian Tsunami Fund to establish the APDRF. The tsunami fund was set up by ADB in February 2005 in response to the pressing needs of DMCs adversely affected by the December 2004 tsunami. The Asian Tsunami Fund contributors have approved the transfer to the new fund. ADB will also accept a minimum US$500,000 contribution for the APDRF from bilateral, multilateral, and individual sources.[3]

The ADB also in focus reported, that if the rise in temperature continue, climate change will have devastating impacts the on lives of people, environment, including infrastructure, while the poor are most vulnerable. The ADB's long-term strategic framework for 2008-2020 aforementioned includes climate change as part of their core operation.

On mainstreaming climate change adaptation, some of ADB approaches in addressing risks vulnerability in development strategies and actions to improve resilience of the poor and most vulnerable consist of the following:

- Improvement of understanding of climate change in addressing social dimensions;.
- Increase of sector resilience by providing policy and technical guidance to address climate change and variability issues in agriculture, infrastructure, transport, health, water and other sectors; and
- Climate proofing by helping ensure development projects are neither vulnerable to climate nor increase exposure to climate change impacts.

As crosscutting activities, ADB is working in finalizing regional climate change implementation plans for incorporation into country partnership strategies. The ADB partners consist of universities, specialized international agencies, and others. They are working on the following:

- Conduct of studies in critical areas on climate change and energy, building of climate resilience in the agricultural sector, climate change and migration, and economics of climate change;
- Establishment of regional knowledge hubs for climate change efforts at several leading academic institutions in the region;
- Engagement with international community through knowledge sharing and outreach;
- Building of internal capacities and developing member countries through knowledge training, workshops, and assistance programs; and
- Strengthening of collaboration with development partners to mobilize further resources, like the climate change fund.

2.8.3 GTZ

The GTZ is an international cooperation enterprise for sustainable development with worldwide operations. GTZ has the corporate form of a "GmbH" (closed limited company) in the private

[3] Most of Information of the APDRF are quoted from the Website http://www.adb.org/Media/Articles/2009/12853-asian-disasters-funds/

sector. It is owned by the German Federal Government. GTZ has been active in the Philippines since 1971 on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ). GTZ currently focuses on economic reform, environment, health and HIV/AIDS, and water and wastewater in the priority regions of the Visayas Islands and Mindanao.

(1) Disaster Program

On disaster, the German Government follows two mainline of actions. The objective of the first line of action is global climate change, wherein the aim is an overall reduction of greenhouse gases and preservation of forests in all countries in the context of the Kyoto Protocol.

On the other hand, the second line of action aims for concrete disaster risk reduction and had identified three main challenges, as follows:

- Creation of a disaster-sensitive legal and organizational framework in disaster prone areas;
- Implementation of mechanisms that control damage, such as warning and flood control systems; and
- Design and implementation of first aid and rapid reaction systems that help limit human casualties once disaster has struck.

The GTZ has been supporting partner countries to implement disaster risk reduction (DRR) projects and programs, which include community-based DRR, capacity development for DRR, and the establishment of early warning systems. It has integrated DRR in its Environmental Sector Program in order to promote sustainable development in the country, consisting of mainstreaming DRR into development strategies. GTZ is implementing these activities on behalf of BMZ and is supported by the Disaster Preparedness Program of the European Commission's Humanitarian Aid Department (DIPECHO).

(2) Disaster Risk Management

In order to safeguard and complement the progress of other components, the GTZ Environmental and Rural Development Program (EnRD) Program integrated Disaster Risk Management (DRM) to its activities in 2006. It supported an action plan for DRM system in Region VIII. It also provided organizations responsible for emergency aid in Eastern Visayas such as Disaster Coordination Council at provincial and municipal level, OCD, PAGASA-DOST, etc. The positive results of these initial measures led to the co-finance agreement between DIPECHO and BMZ in January 2007.

The DRM component of GTZ assisted in the technical set-up and training of the new Flood Early Warning Systems (FEWS) in partnership with the Ormoc City Government and PAGASA. It assists in the implementation of awareness-raising measures in communities and schools, and also acts as moderator in various decision-making processes on specific risk reduction measures at the local level. The DRM had completed a GIS, mapping risk assessments in six watershed areas in the Provinces of Leyte, Southern Leyte, Northern and Eastern Samar.

(3) Climate Change Adaptation

GTZ supports the Project on Adaptation to Climate Change and Conservation of Biodiversity in the Philippines (ACCBio) under the BMU International Climate

Protection Initiative funding and being implemented by DENR. The project aims at the development and implementation of relevant adaptation strategies to compensate the effects of climate change and loss of biodiversity in selected areas of the Philippines. The project components include the following:

- Institutional strengthening for the enhancement of capacity of the Philippines Inter-agency Committee on Climate Change (IACCC) and upgrading its Secretariat into a Climate Change Office in DENR;
- Assistance for the development of national climate change adaptation strategies and policies in close cooperation with relevant stakeholders;
- Showcasing of best practices through funding and implementation of micro-projects to protect the Philippines unique terrestrial and marine biodiversity; and
- Contribution to awareness creation of climate change and environmental issues and dissemination of success stories and best practices.

In the multi-stakeholders dialogue, it was agreed that a collaboration framework for the development of the Philippines Strategy on Climate Change Adaptation should be drafted. The process sets the frame for the organization of eight (8) TWGs in priority sectors for climate change adaptation: water, biodiversity, coastal and marine, forestry, agriculture, health, infrastructure and energy. The TWGs shall recognize crosscutting concerns such as risk reduction and management including gender.

(4) Integrated Water Resources Management

The GTZ supports DILG's water supply and sanitation program with LGUs. They felt that one of the strategies in pursuing this is through integrated water resources management (IWRM) approach. An example of this is their assistance in the process of organizing the Negros Island IWRM Council, wherein the target area is the Ilog-Hilabangan River Basin. However, the GTZ involvement on this is phasing out.

The strategic objectives of the said Negros Island Council consistent with the national IWRM framework are as follows:

- To conserve, rehabilitate, protect and develop land and water resources, ecosystems and biodiversity through sustainable watershed management;
- To ensure availability of safe, sustainable, affordable, responsive, and equitably distributed water supply and sanitation services and facilities;
- To ensure that quality of surface and drinking water are safe and acceptable based on national regulatory standards to protect ecosystem and human health;
- To establish knowledge-based information system of water resources for effective and efficient water resources assessment, planning, governance, and monitoring; and
- To plan and implement adaptation and mitigating measures from the risks of climate change events and water related disasters, which include flood control measures.

2.8.4 UNDP

The United Nations Development Programme (UNDP) takes a long-term approach to human development, investing in the abilities and potential of institutions and people to bring about sustainable change. However, in the face of a severe global economic recession, UNDP's mission is taking on a sense of renewed urgency. Together with the effects of food price increases and climate change, the challenges are significant in meeting the Millennium Development

Goals (MDGs). There are indications that in many countries, with these recent setbacks, the MDGs may not be achieved by 2015. However, UNDP is well placed to respond to the crisis, because it has a near universal presence, on the frontlines of development, working at the country, regional and global levels. Its mandate covers the critical areas of fighting poverty and also helping to tackle climate change and to promote sustainable development, supporting crisis prevention and recovery and advancing democratic governance, while trying to achieve gender equality. The UNDP Philippines sets four focus areas under the Country Program Action Plan 2005-2009 (GOP and UNDP, 2005). They are 1) achieving the MDGs and reducing human poverty; 2) fostering democratic governance; 3) energy and environment for sustainable development; and 4) crisis prevention and recovery.

(1) MDG-Fund

The MDG Achievement Fund, established in 2006 with a contribution from the Government of Spain, supports MDG achievement activities brought to the table by multiple partners at the country level. The Fund presents a valuable opportunity to advance UN reform through collaborative programming at the national level.

In the Philippines, the Millennium Development Goals Achievement Fund (MDG-F) was launched in 2007 based on the agreement between the Spanish Government and the United Nations Development Programme (UNDP), wherein the Spanish Government will provide the Fund. The UNDP and other United Nations (UN) organizations are responsible for the implementation of programs and projects to achieve the Millennium Development Goals (MDGs) under the Fund.

The MDG-F aims at supporting developing counties to achieve the MDGs by accelerating their efforts. More specifically, the MDG-F supports policies and programs that have significant and measurable impacts on the selected MDGs, finances the testing and scaling-up of successful models, facilitates innovations in development practice, and adopts mechanisms that enhance the quality of assistance. The Philippines is one of the 59 countries eligible to apply for the MDG-F support. The UNDP assists the Government of the Philippines achieve the MDGs and the objectives of the Philippine Mid-Term Development Plan.

The MDG-F focuses on seven key development challenges: 1) Democratic governance; 2) Gender equality and empowerment; 3) Human needs and basic social services; 4) Economic and private sector development; 5) Environment and climate change; 6) Conflict prevention and peace building; and 7) Culture and development.

(2) Climate Change and Natural Disasters

In a global crisis, UNDP is well situated to help mitigate the negative impacts of climate change such as decreased agricultural production, increased exposure to climate induced natural disasters, and increased incidence of warmer climate diseases, while addressing these through foster financial and technological solutions to make economies less carbon-intensive; increase access to cleaner energy for household usage; and establish disaster-risk reduction and adaptation plans such as early warning systems.

UNDP recognizes that climate change calls for a new development paradigm, one that mainstreams climate change into development planning at all levels, links development policies with the financing of solutions and helps countries move towards less carbon intensive, yet sustainable economies. In 2008, UNDP endorsed a new climate change strategy, which supports the capacity of developing countries to make informed policy and investment decisions to help reduce greenhouse gas emissions, reduce poverty and

accelerate the achievement of the MDGs. The strategy also sets out how UNDP works with UN agencies, the Global Environment Facility (GEF) – consisting of UNDP, the UN Environment Programme (UNEP) and the World Bank – civil society and the private sector.

UNDP promotes both climate change mitigation and adaptation efforts since both are essential to meet the climate change challenge. On mitigation, UNDP's efforts include promoting greater energy efficiency in all sectors and uses, increased utilization of a wide range of renewable energies, increased energy access for the poor, policy reform and capacity development. On the adaptation side, UNDP supports countries as they work to integrate climate risks into national development policy and plans, develop financing options to meet national adaptation costs and share adaptation knowledge and experiences.

The United Nations System has identified its role in supporting the Government to achieve national and global environmental goals and better natural disaster response through a stronger policy environment, local capacity building and access to services. With respect to the environment and climate change, special attention is given to the organization and management of natural resources and the environment in the context of rural development and food security. Assistance have been allocated to the Government of the Philippines for mainstreaming climate risk reduction (CRR) into key national and selected local development plans.

The UNDP has long been active in the area of disaster reduction, prevention, and preparedness since 1989 when it first allocated core resources for disaster preparedness. This is a key area of the fourth focus under the Country Program Action Plan. The UNDP has been working with the Philippine Institute of Volcanology and Seismology (PHIVOLCS), the Mines and Geosciences Bureau (MGB) of DENR, the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), and selected local government units in multi-hazard mapping, community-based disaster preparedness, and community-based early warning systems.

The Strengthening of Philippines' Institutional Capacity to Adapt Climate Change Program (MDG-F 1656) was launched in September 2008 and will continue until December 2011.

(3) READY Project

As and initial step to address issues on vulnerabilities to several disasters, the UNDP and AusAid (Australian Agency for International Development) are assisting a Hazards Mapping and Assessment for Effective Community-based Disaster Risk Management Project (READY Project) during five-year (2006-2010) in association with NDCC and related agencies. This project aims to institutionalize and standardize Disaster Risk Management (DRM) measures and process at the national level as well empowerment of the most vulnerable local municipalities and cities in the Philippines. The READY Project targets 27 high risk provinces and has three main components, namely;

- Multi-hazard Identification and Disaster Risk Management: Development of multi-hazard mapping for landslide by MGB-DENR, flood and storm surge by PAGASA, and earthquakes by PHIVOLCS
- Community-based Disaster Preparedness: Development of Information and Installation of Community-based Early Warning System (such as rain, tide, water gauges and landslide/tunami signages)

- Mainstreaming and Institutionalization of risk reduction into the local development planning process

(4) GEF Small Grant Programs

The UNDP manages the Global Environmental Facility (GEF) Small Grants Program. The development goal of the program is to secure global environmental benefits in the areas of biodiversity conservation, climate change mitigation, protection of international waters, prevention of land degradation, and phasing out of persistent organic pollutants through community-based initiatives and actions.

The Philippine Small Grants Program focuses on biodiversity conservation, environmental protection of international waters, and promotion of renewable energy such as micro-hydro and community-based solar power facilities in rural areas.

(5) UNDAP

Another focus which aims to strengthen the capacity of key stakeholders to implement environment and natural resources policies, frameworks, and plans include framework strategies for sustainable development. A United Nations Development Assistance Framework (UNDAF) is then proposed to spell out how the United Nations believes it can best contribute to supporting progress on the issues identified in the Common Country Assessment.

UNDAF is the United Nations' covenant with the government and people of the Philippines. It holds the United Nations systems accountable for certain development outcomes resulting from the individual efforts of United Nations organizations and equally important, the synergy of the various United Nations organizations working together as a team. Stemming from the analysis of the Common Country Assessment, the United Nations Development Assistance Framework (UNDAF) for the Philippines 2005-2009 has identified five key strategic areas to which the United Nations in the Philippines believes it can contribute: macroeconomic stability, broad-based and equitable development; basic social services; good governance; environmental sustainability; and conflict prevention and peace-building. Coordination and partnerships will continue to be the hallmarks of United Nations work in the country going forward, focusing on assisting the Government of the Philippines in meeting the Millennium Development Goals. The United Nations is deeply committed to the Government and people of the Philippines and looks forward to continuing its support to the country.

CHAPTER 3 ISSUES AND CONSIDERATIONS ON PREVIOUS APPROACHES TO THE SECTOR

3.1 General Flow of Project and Related Agencies

3.1.1 General Flow of Project

To analyze the issues on the application of Sector Loan, the work matrix of a project showing the relationship between the stakeholders and the work items in each stage of progress of the project has been arranged as shown in **Figure R 3.1,** where the project proceeds under several stages (Refer to **Table 3.1**).

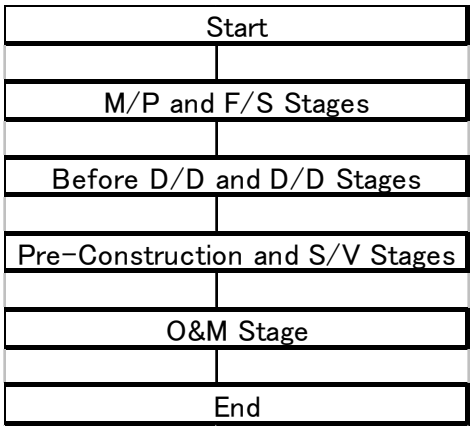


Figure R 3.1 Project Progress and Stages

(1) M/P and F/S Stages

(a) M/P Stage

In this stage, the following works are mainly performed:

- Study on general framework for the formulation of M/P relating to the sector;
- Clarification of target for the formulation of M/P;
- Collection and arrangement of basic data and identification of sector issues;
- Arrangement of several alternative countermeasures to settle down the issues and selection of the optimum measures;
- Arrangement of implementation schedule of countermeasures for the realization of M/P in a manner of urgent and long term strategy; and
- Selection of urgent project for F/S.

(i) Study on General Framework for the Formulation of M/P relating to the Sector

Firstly, for the formulation of the M/P, the general framework such as national strategy and regional strategy of the sector in the manner of National Development Plan and Regional Development Plan is examined and the necessity formulation of M/P in the sector is identified.

(ii) Clarification of Target for the Formulation of M/P

For the formulation of M/P, the basic conditions such as target area, target year, and target project formulation level (safety level in a manner of return period in case of flood control) are clarified.

(iii) Collection and arrangement of basic data and identification of sector issues

To achieve the targets, sector issues are identified through several analyses of collected data and information as well as similar previous studies.

(iv) Arrangement of several alternative countermeasures to settle the issues and selection of the optimum measure

To settle the sector issues, several alternative countermeasures are arranged and the optimum one is selected in due consideration of socio-economic, technical and environmental aspects.

(v) Arrangement of implementation schedule of countermeasures for the realization of M/P in a manner of urgent and long term strategy

To realize the M/P, the optimum countermeasures will be arranged in a manner of implementation schedule classifying into those implemented urgently and long term considering the priority.

(vi) Selection of Project Components for F/S

Among the several project components in the M/P, those for F/S are selected.

(b) Feasibility Study Stage

In the feasibility study stage, the following works will be undertaken:

- Collection of additional data, information and related plans, and conduct field survey for the feasibility study;
- Arrangement of alternatives for the F/S and selection of optimum plan;
- Project evaluation for the selected optimum plan; and
- Preparation of implementation schedule for the selected optimum plan.

(i) Additional collection of data, information and related plans and conduct of field survey for the feasibility study

For the feasibility study, data, information and related plans are collected additionally and analyzed, conducting field survey works such as topographic surveys, geological surveys and environmental surveys.

(ii) Arrangement of alternatives for the F/S and selection of optimum plan

In accordance with the context of the M/P, more detailed alternative countermeasures are arranged and the optimum plans are selected through comparative studies from the socio-economic, technical and environmental viewpoints.

(iii) Project evaluation for the selected optimum plan

The selected optimum plans are evaluated from socio-economic, technical and environmental points of view to identify the project feasibility.

(iv) Preparation of implementation schedule for the selected optimum plans

The selected optimum plans are arranged in a manner of implementation schedule itemizing the project components including the optimum plans.

(2) Before D/D and D/D Stages

(a) Before D/D

After completion of the feasibility study, the following preparatory works are undertaken before proceeding to the detailed design work:

- Preparation of EIA and receipt of ECC Certificate;
- Evaluation of volume and contents of ROW acquisition;
- Application for ICC approval and receipt of ICC approval;
- Preparation of I/P, application and conclusion of L/A;and
- Consideration of Institutional Arrangement.

(i) Preparation of EIA and Receipt of ECC Certificate

In the Philippines, it is necessary for proponents to obtain approval of project implementation from the EMB of DENR, which will issue the Environmental Compliance Certificate (ECC) or Certificate of Non-Coverage (CNC) in accordance with the EIA system. In principle, DENR will evaluate the project as to whether or not ECC is required based on the project digest (PD) that shall be prepared by the project implementation agency. When the ECC is required, the project implementation agency needs to prepare and submit IEE and EIA reports, and based on the adequacy of the reports the ECC Certificate will be issued.

(ii) Evaluation of Volume and Contents of ROW Acquisition and Preparation of Preliminary Resettlement Action Plan (RAP)

For implementation of the project, one of the most significant issues is the volume of ROW (Right-of-Way) acquisition, including the number of house evacuation, which is also related to the issue on the ECC Certificate. As the basic materials for project implementation, it is necessary to carefully examine the volume and contents of ROW acquisition from the beginning stage of the project matrix as shown in **Figure 3.1**. Also, the proponent needs to prepare and submit a preliminary resettlement action plan (RAP).

(iii) Receipt of Endorsement of Regional Development Council (RDC) and Signing of Minutes of Agreement (MOA)

The proponent needs to arrange a meeting with the Regional Development Council (RDC) to obtain endorsement of the project. Likewise, to confirm the sharing of roles on project implementation among the stakeholders, a Memorandum of Agreement (MOA) shall be signed between the proponent and the stakeholders, especially the LGUs, which shall shoulder the role of

promotion of ROW acquisition and also O&M after project completion. It is also necessary to arrange for the application of nonstructural measures, which will be operated under the LGUs responsibility.

(iv) Application for ICC Approval and Receipt of ICC Approval

In order to proceed to the detailed design stage, it is also necessary for the proponent to obtain approval from the Investment Coordination Committee (ICC), as required for public sector projects with foreign borrowing of at least US$5 million. For approval, the proponent needs to submit the following documents (See **Figure 3.2**, ICC-Approval Process):

- Feasibility Study results;
- Accomplished ICC-PE Forms;
- Endorsement of the concerned Regional Development Council (RDC) for region-based projects;
- Endorsement from other concerned agencies;
- Clearance from DBM;
- Endorsement from the GCMCC with respect to the financial capacity of the concerned agencies;
- Agency plan for Right-of-Way (ROW) acquisition (when applicable);
- Location map (when applicable);
- Environmental Impact Statement (EIS); and
- Environmental Compliance Certificate (ECC) for projects that fall within the EIS system set by the EMB

(v) Preparation of I/P, Application and Conclusion of L/A

The project implementing agency needs to prepare an Implementation Program, including the F/S results, funding requirements and so on, and apply for a loan from the financing agency after receiving the ICC approval. After careful evaluation by the financing agency or country concerned of the ODA, the conclusion and execution of L/A (Loan Agreement) will proceed.

(vi) Consideration of Institutional Arrangement

In this preparatory study, the institutional arrangement of the implementing agency will be examined and recommendation for institutional reform will be made, if necessary, to have it successfully perform its role and responsibility in project implementation.

(b) Detailed Design Stage

In the detailed design stage, the following works will be mainly undertaken:

- Review of F/S results and execution of detailed design work;
- Preparation of tender documents; and
- Execution of the Resettlement Action Plan (RAP).

(i) Review of F/S and Execution of Detailed Design Work

In this stage, the results of the feasibility study will be reviewed and additional information will be collected, if required. Geological and topographic surveys

also will be conducted and the detailed survey results will be considered in the detailed design work as well as in the estimation of project costs.

(ii) Preparation of Tender Documents

Based on the results of the detailed design work, a set of tender documents, including P/Q documents, will be prepared.

(iii) Execution of Resettlement Action Plan (RAP)

The Resettlement Action Plan (RAP) will be executed in parallel with the progress of detailed design work. Parcellary and census/tagging surveys will be conducted in this stage.

(3) Pre-Construction and Construction Stages

(a) Pre-Construction Stage

In this stage, the following works are mainly conducted:

- Review of results of Detailed Design Work;
- Bidding;
- Information Campaign and Publication (ICP); and
- Further execution of RAP.

(i) Review of Results of Detailed Design

The results of the detailed design work will be reviewed considering the changes of conditions after the detailed design. The changes could be detected mainly in the changes of prices of materials and equipment and foreign exchange rates, as well as in land use in future.

(ii) Bidding

In general, the bidding will be conducted in two phases: pre-bidding and bidding. The bidding process is as follows: advertisement, project site explanation, distribution of pre-qualification (P/Q) document, evaluation of P/Q document, preparation of short list, invitation of bidders in short list and so on, as shown below:

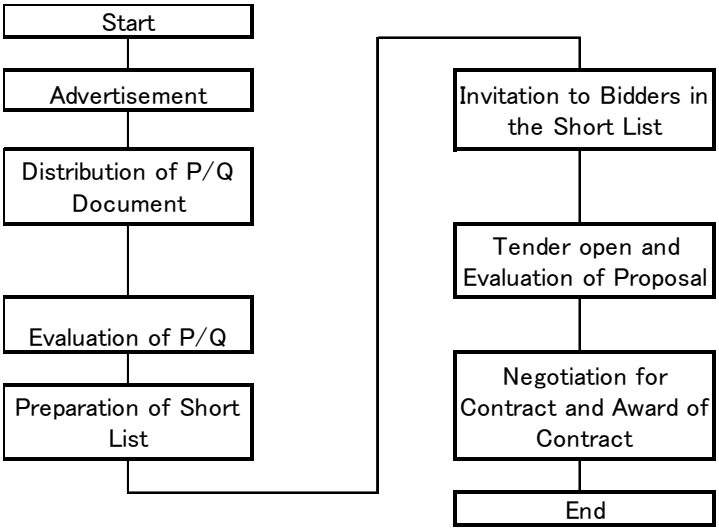


Figure R 3.2 Bidding Process in the Philippines

(iii) Information Campaign and Publication

It is necessary to widely publicize the project so that the stakeholders can fully understand its necessity and contents and support project implementation. Information Campaign and Publication (ICP) is undertaken to popularize the project mainly with the following objectives:

- Dissemination of information to obtain more consciousness on what the project intends and the facilities to be constructed;
- Neutralization of offensive action from potential opposition groups; and
- Increase of participatory action from stakeholders for smoothening the implementation of the project.

(iv) Further Execution of RAP

In parallel with the information campaign, it is necessary to further execute the Resettlement Action Plan (RAP) in the areas where the project will be mobilized in the early stage, so that land acquisition must be started as early as possible. **Figure 3.3** is a strategic framework that would serve as a procedural guide for the preparation and implementation of the RAP during the project cycle. **Table 3.2** is the compensation matrix that governs land acquisition in DPWH projects pursuant to the LARRIP Policy (2007). Compensation is defined according to the degree of impact on economic assets. **Table 3.3** is a tentative list of indicators that may be used for monitoring and evaluation. The monitoring results will be useful for management decision support and feedback system in the strategic framework of the RAP as shown in **Figure 3.3**.

(b) Construction Stage

In this stage, the following works are mainly undertaken:

- Supervision of the construction work;
- Establishment of River Basin Committee;
- Execution of RAP;

- Environmental Monitoring; and
- Arrangement of MOA and signing of stakeholders.

(i) Supervision of Construction Work

In this supervision services, one of the major works is the overall management of the progress of construction work compared with the construction schedule. In the management, the following works are included: verification of field works compared with the detailed design, calculation of work volume and construction cost, modification of design due to changes of site conditions and preparation/estimation of the bill of quantities and costs, promotion of the resettlement action plan and so on.

(ii) Establishment of River Basin Committee

For the smooth implementation of the project, coordination is necessary among the stakeholders to settle any problem arising from the progress of project implementation. For this purpose, it is necessary to organize the River Basin Committee, which shall be composed of the representatives of the stakeholders.

(iii) Execution of RAP

In parallel with the progress of the construction information campaign, it is necessary to promote the Resettlement Action Plan (RAP) in the areas where the project will be mobilized in the early stage, so that land acquisition should be started as early as possible.

(iv) Environmental Monitoring

It is also necessary to initiate the monitoring of environmental impacts that may be caused by project implementation such as noise and dust caused by the transport of construction materials and water pollution due to the drainage of wastewaters. For this purpose, it is necessary to organize a task force that shall include the stakeholders.

(v) Arrangement and Signing of MOA of Stakeholders

To clarify the role and responsibility of each stakeholder in more detail than those in the Before D/D Stage, the terms and conditions of a MOA shall be arranged and signed.

(4) Operation and Maintenance (O&M) Stages

In this stage, the following works are mainly undertaken:

- Turnover of flood control facilities from the Proponent (DPWH) to the respective LGUs;
- Conduct of O&M works by the respective LGUs, including utilization of the Disaster Response Fund (DRF); and
- Continuation of Environmental Monitoring.

(a) Turnover of Flood Control Facilities

In general, after completion of the flood control project, the flood control facilities are turned over to the LGUs which will take the responsibilities on O&M.

(b) Conduct of O&M Works

The LGUs shall conduct the O&M works for the flood control facilities and the nonstructural measures. The O&M works are mainly composed of the following contents: regular inspection for the facilities, daily maintenance of facilities, and repair works for spoiled or damaged facilities. In case that a flood control facility is seriously damaged, restoration work has to be undertaken utilizing the Disaster Rehabilitation Fund arranged by the Sector Loan.

(c) Continuation of Environmental Monitoring

Environmental monitoring shall be continued to identify the environmental impacts, so that such impacts can be minimized through the provision of appropriate countermeasures in the early stage.

3.1.2 Related Agencies and their Roles

As shown in the work matrix of the project, there are several items to be definitively arranged in each stage as the conditions, when the project proceeds to the preparatory stage to the F/S, D/D, S/V and O&M. For these items, each stakeholder is related to project implementation as described below.

(1) M/P and F/S Stage

In this stage, the M/P involving several project components is formulated and the F/S for the project components selected from the M/P is conducted. In the process, it is necessary to confirm the following items:

- Understanding of necessity of project implementation among the stakeholders;
- Confirmation of capacity of proponents for project implementation;
- Confirmation of commitment to full responsibility of stakeholders;
- Preparation of project digest (PD) for arrangement of EIA Certificate; and
- Confirmation of feasibility of the Project.

Related stakeholders for these items are shown in the table below.

Table R 3.1 Related Stakeholders for Preparatory and F/S Stages

Work Items	Related Stakeholders	Agencies responsible for Work
Understanding of necessity of project implementation among stakeholders	All stakeholders	DPWH and LGUs
Confirmation of capacity for project implementation	DPWH, LGUs	DPWH and LGUs
Confirmation of commitment to full responsibility of stakeholders	DPWH, LGUs, Benefisheries and Affected People	DPWH
Preparation of project digest (PD) and arrangement for EIA certificate	DPWH and DENR	DPWH and DENR
Confirmation of Feasibility of the Project	All stakeholders	DPWH

(2) Before D/D and D/D Stage

In this stage, preparatory works for the detailed design work will be undertaken together with the confirmation of the following items:

- Preparation of EIA and Receipt of ECC;
- Preparation of ROW acquisition and preliminary resettlement plan (RAP);
- Receipt of Endorsement of Regional Development Council (RDC) and Arrangement of MOA;
- Application for ICC Approval and Receipt of ICC Approval;
- Preparation of I/P, Application of L/A and Signing of L/A;
- Review of F/S, Conduct of D/D and Preparation of Tender Documents;
- Promotion of Resettlement Action Plan (RAP); and
- Mobilization of Information Campaign and Publication (ICP).

Related Stakeholders of these items are shown in the following table.

Table R 3.2 Related Stakeholders in Before D/D and D/D Stage

Work Items	Related Stakeholders	Agencies responsible for Work
Preparation of EIA	DPWH and DENR	DPWH
Preparation of ROW acquisition and preliminary resettlement plan (RAP)	DPWH, LGUs and Affected people	DPWH and LGUs
Receipt of Endorsement of Regional Development Council (RDC) and Arrangement of MOA	DPWH and LGUs	DPWH and LGUs
Application of ICC Approval and Receipt of ICC Approval	NEDA and DPWH	DPWH
Preparation of I/P, Application of L/A and Signing of L/A	DPWH and JICA	DPWH
Review of F/S, Conduct of D/D and Preparation of Tender Document	DPWH	DPWH
Promotion of Resettlement Action Plan (RAP)	DPWH, LGUs and Affected people	DPWH and LGUs
Mobilization of Information Campaign and Publicity (ICP)	All Stakeholders	DPWH and LGUs

In this stage, most of the work items are carried out under DPWH responsibility in cooperation with the other stakeholders such as LGUs, DPWH and NEDA.

(3) Pre-Construction and Construction Stage

In this stage, preparatory works for construction works and construction of the project will be carried out, together with the confirmation of the following items:

- Review of results of D/D;
- Tendering for selection of Contractor;
- Information Campaign and Publication;
- Promotion of Resettlement Action Plan (RAP);
- Supervision of Construction Work;
- Execution of Environmental Monitoring; and
- Arrangement of MOA of Stakeholders and Signing

Table R 3.3 Related Stakeholders in Pre-Construction and Construction Stage

Work Items	Related Stakeholders	Agencies responsible for Work
Review of Contents of D/D	DPWH	DPWH
Tendering for selection of cotractor	DPWH	DPWH
Information Campaign and Publication(ICP)	All Stakeholders	DPWH
Promotion of Resettlement Action Plan (RAP)	DPWH, LGUs and Affected people	DPWH and LGUs
Supervision of the Construction	DPWH and DENR	DPWH
Establishment of River Basin Committee	All Stakeholders	DPWH and LGUs
Execution of Environmental Monitoring	All Stakeholders	DPWH and DENR
Arrangement of MOA and Signing among Stakeholders	All Stakeholders	DPWH and LGUs

(4) Operation and Maintenance Stage

In this stage, the stakeholder related works undertaken are as shown in the following table.

Table R 3.4 Related Stakeholders in O&M Stage

Work Items	Related Stakeholders	Agencies responsible for Work
Turnover the Facilitites to LGUs	DPWH and LGUs	DPWH
Mobilization of O&M	LGUs	LGUs
Continuation of Environmental Monitoring	All Stakeholders	DPWH and DENR

3.2 Manner of Previous Approach on the Sector

In general, disaster risk management, especially for flood control projects, has been handled in the following manner:

- Individual applications for ordinary loan (individual loan/standalone project) for river basins;
- Formulation of M/P for the whole river basin and conduct of F/S for the urgent components;
- Implementation of river improvement works from river mouth to upstream; and
- In principle, application of structural measures for damage mitigation, although nonstructural measures are also examined and recommended to be employed.

In the Philippines, flood control projects have been promoted mainly for the major river basins from the river mouth towards upstream, applying individual loans (Standalone Projects). However, the projects for such major river basins had required a huge fund and it took a long term for them to be completed. Therefore, under this mode, flood control projects have hardly been promoted for other rivers that need urgent implementation of flood control works due to financial constraints.

In addition, some of the river basins with river control projects implemented have not fully received the benefits and effectiveness of flood control, because most of the river control projects are still in mid-course.

3.3 Issues on Previous Approach to the Sector

3.3.1 Issues Identified through Previous Studies

There have been several studies which pointed out issues on the implementation of flood control projects implemented under previous practices. Among the studies, the following reports are herein discussed:

- The Study on Institutional Capability Building in River Sector under Special Assistance for Project Implementation (SAPI) (Aug. 1999, JICA);
- The Study on Flood Control Project Implementation System for Principal Rivers in the Philippines under the Project Enhancement of Capabilities in FCSEC-DPWH (Sep. 2004, JICA);
- The Study on Program Formulation in Disaster Mitigation Sector in the Philippines (Dec. 2004, JICA); and

- The Study on Program Formation in the Disaster Prevention Sector in the Philippines (March 2008, JICA)

(1) The Study on Institutional Capability Building in River Sector under Special Assistance for Project Implementation (SAPI) (Aug. 1999, JICA)

(a) Objective of the Study

The objective of the SAPI study was to recommend institutional capacity building in the river sector in the Philippines, focusing on the following points:

- Clarification of problems encountered in the ongoing river projects financed by the previous OECF (i.e., before the merger with JICA);
- Study on the causes of the problems; and
- Recommendation of action plans to solve such problems.

(b) Problems encountered in OECF-Assisted River Projects

In the study, 11 projects covering 8 river basins were examined and the following problems were pointed out (See **Table 3.4** to **3.6**):

- Delay of project implementation;
- Difficulty in the resettlement of people residing along the river;
- Low capability of contractors;
- Delay in the approval process; and
- Opposition by communities and/or NGOs, etc.

(i) Causes of Core Problems

The causes of the core problems in the river projects are as discussed briefly below (See **Table 3.6**):

Contractor's Poor Capability

There is no noticeable problem with the foreign contractor(s). However, the local contractors are insufficient in their project management capabilities. This is traceable from their insufficient project staff, insufficient financial capacity, insufficient construction equipment and shortage of workers, and, particularly, lack of experience on large-scale river projects.

Difficulty of Land Acquisition and Compensation

The difficulty of land acquisition and compensation has resulted in the delay of completion of construction works. This is considered crucial because of: i) the many squatters living along the river; ii) unclear land ownership; iii) time consuming compensation; and iv) insufficient land title registration system. As a special case, the land acquisition in the Iloilo Flood Control Project has not started yet, because the implementing agency has not been decided yet [either DPWH or Iloilo City (LGU)].

Time Consuming Procedure for Approval

The government approval procedure takes a long time because it is complicated and redundant. The main issues on this matter are: i) approval

procedure for As-Staked Plans and Variation Orders; ii) coordination with the related agencies; and iii) unclear responsibility. Recognizing this situation, the DPWH examined how to simplify the procedures and issued Department Order 62, accordingly. As for the Iloilo Flood Control Project, however, the SAPI Study Team could not clarify its effect yet. The Philippine Government commented that inability of the implementing office/consultant is also a cause of the delay of project implementation; however, the cause is poor custody of data and documents as well as difficulty in timely use of the contingency funds stipulated in the consultancy contract. Furthermore, a new executive order has been issued requiring that projects involving the contract amount of more than 50 million pesos shall be approved by the President. This will again bring about additional delay in project implementation.

Opposition of Community

Opposition by communities and/or NGOs, etc., which caused so much delay in construction work, has been experienced in the Lower Agusan project and the Pampanga project. Conceivable reasons for this are i) insufficient awareness of the community on this project; ii) insufficient public information drive; and iii) other unknown factors.

(ii) Laws and Regulations

Water Code

There is the Water Code of the Philippines, but no River Code. The former is a water resources oriented code, but it is insufficient in the following provisions:

- Definition of river area and its use;
- Unclear definition of river classification; and
- NWRB's tasks and responsibilities.

NWRB is the agency/board responsible for water resources management including authority for water allocation and endowment of water rights. However, the capability of NRWB may be subject to question in view of its scarce staffing and limited experience.

WRAP-Bill

The PTFWRDM (Presidential Task Force on Water Resources Development and Management) has a plan to create a Water Resources Authority of the Philippines (so called "WRAP-Bill) under the Office of the President. This has not been established yet because there is some opposition to it. This will be a water resource oriented authority with less consideration on flood control and river environment management.

Definition of Major Rivers

The NWRB (then NWRC) has defined 18 major rivers in the Philippines (more than 1,400km^2 of river basin area). This river classification is not clear in its objective. It would be necessary to review the river classifications according to the administrative boundary, scale of economic activity in the river basin, and the influence to national economic development, among others.

(iii) Institution and Organization

Many Agencies Involved

There are various agencies relating to river management such as DPWH, NWRB, water user agencies and others. Their authority and responsibilities are not always clear.

Staff Organization of the DPWH

The organization of the DPWH seems to be a staff system. All the decision-making for large-scale projects like the New JICA (after merging with OECF/JBIC) assisted projects are done by the Secretary. The PMO-MFCP has no authority on the implementation of large-scale foreign-assisted projects.

Unclear NWRB Tasks

The NWRB is said to be an attached agency to the DPWH administratively, but it is an agency functioning independently according to the explanation given by one of its staff. The real meaning of "attached agency" is not clear.

No River Management System

The water user agencies and other agencies are undertaking their tasks independently. There is no unified agency responsible for comprehensive river basin management.

Organization of PMO-MFCP in DPWH

The DPWH is mandated to undertake flood control projects and its PMO-MFCP office is the implementing agency. This office is undertaking supervision of foreign-assisted river projects and GOP-funded projects (27 projects in total). However, it may not be able to implement the projects sufficiently, because its personnel are very limited since only 3% of the 30 personnel, or 16 engineers, are regular employees.

(c) Conceivable Scenarios to cope with the Problem (See Table 3.7)

(i) Institutional Capacity Building

The objective of the SAPI Study is to recommend institutional capacity building in the river sector. To attain this objective, the problems as presented above should be solved. The conceivable basin solutions are: i) Legislation/revision of laws and regulations; ii) Reorganization of DPWH; and iii) Human resources development (staff training).

(ii) Legislation of Laws and Regulations

Establishment of Comprehensive Water Resources Management and River Basin Management Systems

The WRAP-Bill may not be finally enacted. Therefore, a comprehensive water resources management system including river basin management should be established. The NWRB is not in favor of the WRAP. In fact, it is

aiming at strengthening itself by reorganizing the Board, creating regional offices and augmenting its staff. The SAPI Study Team suggested making a detailed study on the following alternatives:

- A Water Resources Management Bureau is established under the DPWH; and
- A new Department of Water Resources Management is established through legislation.

It is recommended that the former alternative should be realized first and a detailed study shall be conducted on the necessity of the latter alternative through the said Bureau. If the necessity is recognized, the Department of Water Resources Management should be established.

Revision of the Implementing Rules and Regulations for the Water Code

The major rivers should be clearly defined first. The national government shall manage such major rivers. The other rivers shall be placed under the management of the concerned LGU, in principle. In this case, the beneficiary-to-pay principle should be considered. The river area and its use should be clearly defined.

Preparation of Squatter Coping Program, Land Acquisition Program and Compensation Criteria

It is recommended that the following actions shall be undertaken:

- A comprehensive squatter-coping program should be established.
- The responsible agencies shall be the National Housing Authority and the LGU. (The DPWH, which is the responsible agency for implementing flood control projects, should participate actively in this program.)
- The land registration system and the standardization of compensation should be established.

Reorganization of DPWH

The following are the recommendations on the restructuring of DPWH:

- In the middle and long-term plans, the current phase-wise organization is to be transformed into a sector-wise organization. In this case, a river bureau has to be established.
- In the short-term plan, the PMO-MFCP office should be strengthened in terms of manpower and authority through power delegation from the Secretary.

Human Resources Development

The following are the recommendations on human resources development:

- Incentives to be given to government officials working in the river sector;
- Training Program;
- OJT through implementation of projects by means of force account system; and
- Implementation of the Flood Control and Sabo Engineering Center under JICA assistance.

(d) Action Plans

(i) Short-Term Action Plan

To ensure effective implementation of the short-term action plan, the following are recommended:

- Preparation of standard criteria on land acquisition and compensation;
- Preparation of standard criteria and procedures on the relocation of squatters;
- Preparation of standard criteria on the procurement of contractors;
- Preparation of a checklist of actions to be taken prior to requesting foreign assistance;
- Strengthening of BOD/BOC of DPWH and other related organizations;
- Strengthening of the PMO system;
- Improvement of the TOR for consulting services;
- Human resources development in possible extent; and
- Settlement of critical works in the ongoing projects

(ii) Long-Term Action Plan

With regard to the long-term action plan, the following are suggested:

- Establishment of a comprehensive river basin management system;
- Reorganization of the DPWH;
- Strengthening of flood control management; and
- Human resources development

(e) Recommendations

The SAPI Study Team recommended that the DPWH shall implement the above action plans as follows:

(i) Immediate Implementation of Short-Term Action Plans

This action can be undertaken by the DPWH; however, it is recommended that it be supported with the procurement of consultants or technical assistance, as required, and a task force chaired by a responsible staff of the DPWH with members from other related agencies be established.

(ii) Long-Term Action Plans

With the expectation that the long-term action plans will be implemented following the short-term action plans, the preparatory works for the long-term action plans should be carried out during the implementation of the short-term action plans.

(iii) In-House Consultant

PMO personnel are very few compared to the number of ongoing projects under the PMO. To implement supervision and coordination for river projects, it is recommended that an in-house consultant be employed, aside from the project consultant, to assist the PMO-MFCP in the central office on project

management. This in-house consultant will also contribute to the transfer of technology to PMO personnel, specifically, on project management.

(2) The Study on Flood Control Project Implementation System for Principal Rivers in the Philippines under the Project Enhancement of Capabilities in FCSEC (Sep. 2004, JICA)

The Study was conducted to prepare and propose the improvement plan of implementation system for flood control projects focusing on principal rivers (with the catchment area of more than 40 km^2) in the Philippines.

In this Study, the following issues were identified by applying the PCM workshop with the participation of stakeholders (DPWH, NEDA, DENR, DILG, NIA, NDCC, PAGASA):

(a) Problems and Issues pointed out by PCM Workshop

(i) No comprehensive implementation program of flood control is prepared for principal rivers

Since the 1970's, the Government of the Philippines (GOP) has prepared basin-wide flood control master plans for 13 out of the 18 major rivers in the Philippines.

However, no master plan for principal rivers has been prepared up to the present, except for the Jaro and Iloilo rivers in Iloilo Province, Panay Island. The following are the causative factors to this problem:

- Technical standards and guidelines for flood control plans are neither well established nor disseminated among the DPWH offices;
- Inadequate manpower to prepare flood control master plans in the DPWH regional and district engineering offices;
- Only limited basic data gathering/surveys/investigations are conducted for project planning, and processed and stored basic data/information are inadequate for use;
- Too much attention/emphasis is given to structural measures in addressing flooding; and
- Planning is not participatory. (Involvement of beneficiaries, negatively affected groups, etc. in planning is neglected.)

(ii) Roles and functions in the implementation of flood control projects for principal rivers are not clearly delineated

The problem of overlapping or absence of roles and functions of relevant agencies in the implementation of flood control projects for principal rivers is due to the following:

Relevant laws and regulations hardly meet actual conditions.

There are conflicts in jurisdiction between relevant agencies with regard to the implementation of flood control projects and management of rivers in the watersheds.

(The Water Code: PD 1067 and EO 124 designated DPWH as the responsible agency to manage all rivers in the country. The Local Government Code,

RA 7160 (1991), however, allows the LGUs to implement flood control projects for principal rivers. Furthermore, the National Irrigation Administration (NIA) has implemented flood control works to protect farmlands as well as irrigation facilities, while the DENR is undertaking flood/sediment control works through watershed management and reforestation projects.)

Inadequate Information & Educational Campaign (IEC), and consultation with beneficiaries, negatively affected groups, and other stakeholders.

Since the IEC and consultations with beneficiaries, negatively affected groups, community leaders, NGOs, LGUs, etc., are not adequate, these stakeholders do not know their roles and functions on flood control projects, especially in the maintenance of flood control works.

There is neither exchange nor transfer of data/information between DPWH and other relevant agencies.

There is no constant information exchange between DPWH and other relevant agencies, and between DPWH's central office and regional offices. This is mainly because of the absence of systematic information system resulting in limited/inadequate basic information and plans that can be obtained from these agencies.

(iii) Importance of flood control projects for principal rivers is not well recognized/understood by the government as well as the people

Flood control projects for principal rivers already undertaken are not sufficient for mitigating flood damage both in quality and quantity. There are some causes other than financial restrictions as follows:

- Flood inundation scale and damage in principal rivers are relatively smaller than those in major rivers. Therefore, the flood control works for the principal rivers are given lesser priority in government policies as compared to those for major rivers.
- Since each principal river generally affects a province or a city/municipality only, investment in flood control works in principal rivers by the national government may be perceived to result in inequality in government funding among regions.
- Flooding, particularly in principal rivers, is understood as a momentary phenomenon and reduction in flood damage attributable to flood control works is considered to be negligible. Therefore, the concerns to floods, especially by the central offices, which are located far from the damaged area, do not last.

Consequently, the central office of DPWH created the PMO for Major Flood Control and Drainage Projects to implement flood control projects for the 18 major rivers, while the flood control works for principal rivers were left under the regional offices or district engineering offices. As a consequence, flood control projects undertaken for principal rivers are not sufficient (both in quality and quantity) for mitigating flood damage.

(iv) Funds for flood control projects for principal rivers are not adequate

Due to the present economic situation of the Philippines, budget for most projects in the country is less than what is desired or required. This is

aggravated by the fact that flood control projects in principal rivers have low priority in the national budget for infrastructure projects. Flood control infrastructure development is also beyond LGU's affordability and budget.

(b) Other Issues

As for the other issues brought forward in the consultation meetings, the following were also pointed out:

(i) What should be done to enhance coordination among the agencies implementing flood control projects implementation? What should be the role of your agency in the coordination?

Almost all stakeholders indicated that in order to enhance coordination between flood control project implementing agencies, a coordinating body (e.g., Inter-Agency Technical Working Group, Technical Committee or Multi-Sectoral Task Force) should be established and made operational.

As to the respective agency's role in enhancing coordination, the following issues were identified in the consultation meetings:

- Provision of relevant data/information gathered by their respective agencies;
- Provision of funds for flood control projects that are within their agencies' scope of responsibility;
- Participation in the planning, design, implementation and monitoring of flood control projects; and
- Participation in the Information and Educational Campaign.

(ii) Who should be responsible for the O&M of flood control structures/works? What should be your role as an agency/stakeholder in the O&M of flood control structures/works?

The participants in the consultation meetings perceived the DPWH (the implementing agency of most flood control works), as well as the LGUs and direct beneficiaries as the responsible agencies/stakeholders who should be responsible for the operation and maintenance of flood control projects.

As indicated by the participants from relevant agencies, their role in the O&M of flood control projects include: (i) provision of technical assistance, (ii) conduct of information and educational campaign regarding the importance of flood control works; (iii) training of direct beneficiaries in the O&M of flood control works; and (iv) monitoring and feedback.

(iii) What are the specific impacts of flooding in your living conditions?

The specific impacts of flooding can be generally classified into direct damage/losses and indirect damage/losses. The benefits of flood control projects are the reductions in the aforementioned damage/losses resulting from the implementation of the projects.

(iv) What are the causes of flooding in your area? What are the flood control projects that should be done in order to mitigate flooding in your area?

The common causes of flooding in the selected study areas, based on those identified by the meeting participants, are: (i) reduction in river carrying capacity due to siltation; (ii) erosion of river banks; (iii) insufficient internal drainage; and (iv) improper waste disposal.

The responses of the participants to these issues show that stakeholders, especially those directly affected by flooding, are not only able to identify the causes of flooding in their areas but also come-up with proposals on the flood control projects that should be implemented to mitigate flooding. Their participation in the whole project cycle is therefore important.

(c) Summary of Problems in Flood Control Works for Principal Rivers

Through the analysis and grouping of all problems and issues, they were integrated into eight main agenda as follows:

(i) Jurisdiction of River Area

- No definition on the jurisdiction for rivers and their areas under the law.
- No coordination among governmental agencies to undertake river works.

(ii) Coordination and Cooperation between DPWH and LGUs

- Importance of flood control is not well recognized.
- Choice of projects and priority in implementation shall be dictated by actual project appropriateness.
- Study to formulate Sabo projects is urged for sustainable development/land use in sediment-related disaster-prone areas.

(iii) Proper Management System of Data/Information

- No comprehensive implementation of flood control including nonstructural measures as well as livelihood programs.
- No management body covering river basins.

(iv) Flood Control Project Identification

- Basic data gathering/surveys/investigations are limited including processing and storing.
- No proper data collection system and access to information by users.
- No proper monitoring and feedback mechanism for project implementation.

(v) Planning Resources/Capability

- Technical standards and guidelines are not well disseminated among DPWH offices.
- Hydraulic/hydrologic analytical capacities are not well developed.
- Inadequate manpower to prepare master plans of river basin flood control.

(vi) River Basin Approach and Flood Management

- No data/information exchange between DPWH and relevant agencies.

- No coordination and cooperation during construction.
- No clear arrangement for O&M between DPWH and LGUs.

(vii) Public Consultation and Participation

- Inadequate information and educational campaign, and consultation with stakeholders.
- Participation of beneficiaries and stakeholders is not well practiced in the planning, design, implementation and O&M.

(viii) Fund for Implementation and O&M

- Funds for flood control projects for principal rivers are not adequate.
- No fund and no manpower at the DPWH DEOs as well as the LGU level to undertake O&M.
- No mechanism to achieve financial sustainability is established.

The eight main agenda are categorized into the respective stages of the Infrastructure Project Cycle and summarized as follows:

Table R 3.5 Eight Main Agenda in Proposed Infrastructure Project Cycle

Issues and Problems	Infrastructure Project Cycle			
	Identification	Preparation	Implementation	Operation & Maintenance
1. Jurisdiction of River Area	●	●	●	●
2. Coordination and Cooperation between DPWH and Relevant Agencies	●	●	●	●
3. Proper Management System of Data/Information	●	●	●	●
4. Flood Control Project Identification	●			
5. Planning Resources/Capability	●	●		
6. River Basin Approach and Flood Management		●	●	
7. Public Consultation and Participatory		●	●	●
8. Fund for Implementation and O&M			●	●

The problems and issues concerning all stages of the Cycle shall be counteracted and solved in the long-term with utmost efforts by the government, while those concerning one to three stages are to be tackled by mainly DPWH and the related agencies.

(d) Conceivable Solutions to Problems and Issues

Together with the possible solutions to problems and issues mentioned above, the directions/actions and concerned agencies (except DPWH) were recognized, as follows:

(i) Jurisdiction of River Area (Legislative Body, NRWB, LGUs)

- Revision of the IRR of the Water Code
- Clarification of jurisdiction and obligation of LGUs in the Local Government Code

(ii) Coordination and Cooperation between DPWH and Relevant Agencies (DENR, LGUs)

- Basically, DPWH shall control the river flow and river area of the channel section in developed areas, and the other areas of the river basin could be controlled by DENR.
- Creation of an organization for flood management of river basins

(iii) Proper Management System of Data/Information (PAGASA, NWRB, NAMRIA, OCD)

- Enhancement/rehabilitation of observation systems of PAGASA and BRS
- Establishment of an information network for DPWH
- Addition of function of the Information Center to FCSEC

(iv) Flood Control Project Identification (DENR, OCD, NWRB)

- Conduct of inventory survey for flood and sediment disasters
- Conduct of inventory survey for rivers and river basins
- Ranking or prioritizing of river basins for flood control works

(v) Planning Resources/Capability (DENR, NWRB, NHRC, PHIVOLCS, LGUs)

- Continuation and strengthening of activities of FCSEC
- Recruitment of more engineers for FCSEC
- Reorganization of the planning sector in DPWH
- Exchange of information among the related agencies

(vi) River Basin Approach and Flood Management (DENR, NWRB, NEDA)

- Capacity development for planning in DPWH
- Expansion of FCSEC's function
- Close coordination among agencies through an organization for flood management

(vii) Public Consultation and Participatory Planning (LGUs, NEDA)

- Development of methodology for participatory planning
- Employment of results into the project evaluation
- Conduct of general IEC for flood control nationwide

(viii) Fund for Implementation and O&M (NEDA, DBM, DOF)

- Establishment of rules for cost sharing between national agency and LGUs for implementation and O&M
- Development of financial sources for flood control works

(e) Actions to be taken by DPWH to solve the Problems

The actions shown in the following Table shall be taken by DPWH in connection with the above agencies and actions. .Focusing on the actions to be taken by DPWH, it is emphasized that: 1) the Planning Section (Service) and 2) the FCSEC shall play important roles in DPWH's actions required to solve the problems and issues.

Table R 3.6 Actions to be taken by DPWH to solve Problems

Problems and Issues	Action to be Taken by DPWH
1. Jurisdiction of River Area	Agreement on jurisdiction of rivers shall be drafted by DPWH relation to LGUs and the other governmental agencies.
2. Coordination and Cooperation between DPWH and Relevant Agencies	Technical assistance shall be extended to LGUs. General coordination will be made through an organizarion of flood management.
3. Proper Management System of Data/Information	Capacities for hydrological data and its analysis shall be developed.
4. Flood Control Project Identification	Criteria (draft) shall be prepared for sediment hazard risk. Inventory survey for flood, sediment and river shall be conducted.
5. Planning Resources/Capability	FCSEC shall be continued and expanded with increasing engineers 1) in FCSEC and 2) for training. Engineers in planning sector shall be increased.
6. River Basin Approach and Flood Management	Functions of FCSEC shall be expanded especially for the concepts of flood management.
7. Public Consultation and Participatory	Public consultation and participatory planning shall be intensively employed in project formulation stage in coordination with LGUs.
8. Fund for Implementation and O&M	Projects under CDF (PADF) shall be controlled by DPWH in compliance with the MTDIP.

(i) Planning Section

Jurisdiction of River Area

The Planning Service shall draft the concepts and guidelines for jurisdiction river area in consultation with NERB and DENR. Accordingly the implementation rules and regulations of the Water Code shall be drafted and submitted to the legislative body.

Particularly, the ownership of river flow and river area shall be clarified to be under the state (the national government). The authority of LGUs to alter river area and river flow shall be limited or with consent of the national government responsible for them, i.e., DPWH and DENR.

Coordination and Cooperation between DPWH and Relevant Agencies

Presently the AMMS of DPWH is preparing and coordinating capacity training programs for employees within the Department. In case LGUs request DPWH for such programs, DPWH shall provide them in accordance with the provision of the Local Government Code of 1991. With regard to the provision of regular programs, a mutual agreement between DPWH and DILG is required. Under the rules provided for this purpose, FCSEC should take the main role of assistance.

DPWH principally controls river flow and river area (flow section and easement) of the channel sections in the developed area. DENR may control land use of other areas in the river basin including the floodplain.

Proper Management System of Data/Information

Planning sections shall lead the DPWH and PAGASA to enhance and rehabilitate the hydrological observation system. Recording and data collecting activity should involve the DEOs, ROs and the central office; the processing should be taken by FCSEC, and access authority should be given to FCSEC so that the total system should be kept in FCSEC.

Flood Control Project Identification

Project identification consists of some steps described as follows:

- Either inventory survey or past flood data shall be used for the preparation of criteria for project identification;
- Prioritization of rivers or areas for flood control projects shall be made firstly with the collection of data/information on flood damage/losses and their potential in the future;
- Analysis of the listed flood control projects with economic, financial and social aspects; and
- Evaluation and prioritization of projects based on the analysis and criteria.

The central level of planning sections or FCSEC is required to prepare the criteria for project identification and further prioritization for project implementation.

Planning Resources/Capability

In order to prepare a comprehensive flood control implementation plan, the planning resources and capability shall be strengthened. The FCSEC (Project ENCA), which was started in January 2000 shall be continued and expanded having a wider target for technology transfer. It is necessary to increase the number of engineers having training under and working in FCSEC.

Enforcement of institutional capacity is badly required for the Planning Service to promote the RBA-FC planning. Some sections for flood control shall be added to or reorganized in the Planning Service. Further, data/information of the relevant agencies shall be always provided and updated for easy access. Particularly, capability on hydrological analysis, which is the basis of project identification and formulation of flood control, shall be well-developed in the PS and FCSEC.

River Basin Approach and Flood Management

Strengthening this function for RBA-FC is to organize the existing bodies, DENR, PAGASA, PHIVOLCS, for the machinery of consultation chaired by FCSEC. At the planning stage, DPWH is required to pay more attention to involvement to IWRM and RBM. The planning sections, therefore, are required to prepare the plan of comprehensive flood control and drainage and integrated infrastructure program within the river basin utilizing guidelines and criteria provided by FCSEC.

A new concept of flood control, i.e., "*Flood Management*" shall be integrated into RBA-FC and IWRM as one of the important keys in the Philippines. A national committee on Flood Management shall also be scheduled for the RBA-FC scheme.

Public Consultation and Participatory Planning

The planning sections are required to practice the public consultation and participatory planning with guidelines prepared by FCSEC. Structure and method of sharing tasks among the central office, ROs and DEOs should be established.

Fund for Implementation and O&M

Projects are identified among the project proposals requested from DEO through RO, or some are requested from other organizations like the Regional Development Councils. In this stage the process is to identify potential projects with expected return of investments.

In the deliberation of projects at the Regional Development Council, funds for the actual implementation of a project, as well as for the proper O&M should also be identified and arranged. The national budget, local budget, request from CDF and foreign loans may be discussed.

The proposed projects are mostly made portion by portion for damaged areas or rivers. In order to rationalize the expected return, preliminary studies are conducted with assistance from the Planning Services.

(ii) Flood Control and Sabo Engineering Center (FCSEC)

Considering the requirement for flood control and Sabo works mentioned above, FCSEC should have the power and authority other than the tasks and works mentioned for the planning sections, as follows:

- To continue preparing/revising technical guidelines, standards and manuals;
- To continue promulgating technical guidelines for engineers of DPWH in regional and district levels;
- To pursue the way of promulgation of technical guidance for engineers in the LGU level;
- To brush-up the technical guidelines, standards and manuals for planning, especially for hydrological analysis, and foster the hydrological analysts;
- To prepare the guidelines, standards and/or manuals on participatory planning and socio-economic aspects;
- To prepare the guidelines, standards and/or manuals for comprehensive flood control and mitigation methodology with river basin approach on flood management under the concept of IWRM, including structural and nonstructural methods; and
- To be the core for coordination and cooperation with the other agencies concerned in flood and sediment disasters.

(3) The Study on Program Formulation in Disaster Mitigation Sector in the Philippines (Dec. 2004, JICA)

In this report, the following discussions were made:

(a) National Policy and Strategy

(i) National Policy

In the Philippines, the legal framework of disaster mitigation was formulated under Presidential Decree No. 1566 (PD 1566, enacted in 1978), Republic Act 7160 (RA 7160, otherwise known as the "Local Government Code"), Republic Act 8185 (RA 8185, amending RA 7160 Sec. 324(d)), and their bylaws. Basically, the Philippine disaster management policy is to comply with PD 1566, which stipulates the nation's principles on disaster mitigation and to realize the PD's regulations and policies. The Local Government Code stipulates that the mayors of LGUs shall conduct disaster management and that local governments shall take the necessary actions. Based on this legal background, disaster coordination councils were established at the regional, provincial, municipal and barangay level under the guidance of the Department of Interior and Local Government.

(ii) Disaster Mitigation Policy in the Medium-Term Philippine Development Plan

The Medium-Term Philippine Development Plan for 1993-1998 listed disaster mitigation policies in (i) implementing appropriate infrastructure projects for flood control and other disaster mitigation schemes; (ii) promoting disaster mitigation activities through enlightenment, disaster restoration, drills and other practices; and (iii) enhancing research on disasters. These policies aim at increasing the capacity for disaster mitigation of government agencies and each level of the Disaster Coordination Council. The Medium-Term Philippine Development Plan for 2001-2004 does not proclaim national policies and plans regarding disaster management, but it mentions implementation strategies for flood control, drainage and debris flow schemes in the subsection on water resources in Chapter 6, Accelerating Infrastructure Development. In the latest Medium-Term Philippine Development Plan (2004-2010), there is no particular description of disaster mitigation; however, regarding flood control, there are descriptions in Chapter 3, Environment and Natural Resources, and mentions names of priority flood control projects.

(b) Legal Framework

(i) Laws regarding Disaster

In addition to the basic laws, Subsection 3.4.1 of PD 1067 (Water Code) describes PD 1566 and RA 7160, the National Building Code (PD 1096, which determines the minimum requirements and design guidelines to protect buildings from fires and natural disasters), and the Fire Code (PD 1185, which lists down security measures and duties for preventing building fires) are also the major laws regarding disaster management.

(ii) Trend as of 2004

In recent years, the National Disaster Coordination Committee (NDCC) and the Office of Civil Defense (OCD) have actively drafted bills aiming at enhancing the disaster management capacity at all levels of society. Various bills regarding structural reforms, improving communities' awareness of disaster mitigation, institutional strengthening of government agencies, disaster mitigation and other related issues have been discussed in the parliament. One of the remarkable bills is Lower House Bill No. 221, the bill regarding preparation for and mitigation of disasters, which attempts to enhance disaster-related institutions at all levels from the nation to communities. Unfortunately, the disaster-related bills do not seem to be regarded as important in the parliament.

(c) Organization

The core organization on disaster mitigation in the Philippines is the National Disaster Coordination Council (NDCC). NDCC is composed of 19 line agencies. The duties for each agency are as shown in **Table 3.8**.

The disaster coordination councils at the regional, provincial, municipal and barangay level have played a central role on disaster mitigation in each area. The organizational structure is as illustrated in the following figure.

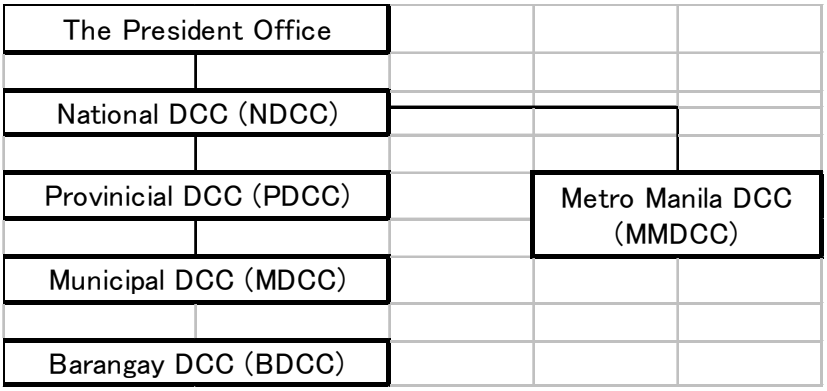


Figure R 3.3 Organizational Structure of DCCs

(d) Budget

The NDCC has no budget of its own. The line agencies have been managing their disaster mitigation related activities and programs on their own budget. As for the budgets for emergency rescue operations, restoration and reconstruction, which are required upon occurrence of disasters within the corresponding fiscal year, the National Calamity Fund is available.

In order to avail of the National Calamity Fund, however, the application of the lower level DCCs has to be submitted to NDCC through the OCD and then, after evaluation, it is endorsed to the Office of the President for approval. The ceiling amount of the National Calamity Fund in 2004 was 700 million pesos, while that in 1996 was 910 million pesos.

(e) Current Activities of Related Agencies in the Philippines

(i) The National Disaster Coordination Council (NDCC) and the Office of Civil Defense (OCD)

As shown in Subsection 2.5.5 in detail, the Office of Civil Defense (OCD), the Secretariat of NDCC, has the Natural Disaster Management Center as its headquarters and 17 regional centers in the entire country. The OCD's duties cover a wide range of national civil defense, establishing policies and plans for protecting civilians during domestic and international conflicts, defense of the state and civilians, training of civilians, NGOs and volunteers. The major task of the OCD is to develop frameworks and tools for local government units, which actually implement and play the central role in disaster mitigation administration.

The OCD has accumulated the latest data and information on disaster mitigation from many places of the world. However, due to its limited human resources, budget and basic tools, it cannot play the role sufficiently. This problem of OCD has to be solved.

(ii) The Department of Public Works and Highways (DPWH)

As shown in Subsection 2.5.1 in detail, the DPWH, which is the major government agency in charge of flood control, has ten bureaus and seven project management offices (PMOs) as of August 2004. The PMO-MFCDP (Project Management Office-Major Flood Control and Drainage Projects) and the PMO-Pinatubo have responsibilities on major flood control projects

funded by foreign aid agencies. However, mainly because of limited human resources (only 30 to 40 members, about a half of this are engineers), major flood control projects have not been adequately implemented and managed.

Small-scale infrastructure projects are conducted with local funds by 16 regional offices and/or 126 district engineering offices. The DPWH have discussed their structural reformation internally, but the contents have not been made public. According to the budget allocation to sectors in the middle-term public investment implementation plan (2004-2009), the share of the budget for flood control will be kept constantly low during the period, although the proportion against the total budget is planned to slightly increase from 11.4% to 17.3%. The budget available for flood control is estimated at approximately 5 billion pesos per year.

(f) Achievement of ODA on Flood Control Projects

Almost all of the flood control projects have been implemented. The Japanese Government ODA (Official Development Assistance) has greatly contributed not only in the implementation and construction of flood and Sabo structures but also in other ways, mainly, in the organizational reform and human resources development of DPWH. The structures constructed have functions as important social infrastructure in the regions, and the indirect benefits towards the activation of regional economy by means of flood damage reduction are enormous. Further, continuous cooperation has been gradually reinforcing core staff in the executing agencies in charge of project implementation through the respective stages of the project cycle, and the effect of the cooperation has been realized gradually.

(g) Future Issues

The issues on projects implemented under the Japanese ODA are summarized as follows:

(i) Issues on Flood Control and Sabo Projects

Accumulation of Technical Know-how

Normally, technology transfer to the counterpart agency is included in the TOR of project implementation. However, because the incentive given to the staff in the agency concerned is quite low, the effect has not been realized sufficiently.

Smooth Land Acquisition

The most serious problem in project implementation is delay of construction due to the problems of land acquisition and resettlement. Some definitive improvements are required.

Securing Budget for O&M

Due to insufficiency of maintenance, the planned and designed functions are often not realized. Therefore, securing the budget for maintenance is essential.

(ii) Issues on Overall Institutional Arrangement

Organizational Setup

DPWH was reorganized in the 1980's from the sector-wise organizational setup (e.g., highways, river/flood control and so on) to work-field organization setup (e.g., planning, design, construction, etc.). Then, the tendency to reduce the number of road projects has become significant and water-related projects have also decreased drastically. Up to the present, NWRB, NIA and MWSS are agencies separate from DPWH, established independently and transferred to other agencies. In order to realize the efficient implementation of projects, the organizational strengthening of DPWH is required.

Water Code

As the minimum means, the river administrator shall be clearly defined and all rivers in the nation shall be demarcated under two management bodies, the central and the regional governments. The responsible organization system is required to be rearranged.

Budgetary Allocation

The budget for maintenance is small and maintenance activities after project completion are not sufficiently conducted. A review on budgetary allocations becomes necessary.

Securing Staff

As for sustainable project implementation, the PMO organization shall be reformed and appropriate number of staff shall be reassigned. Staff, specially the permanent personnel for river administration shall be trained.

(iii) Overall Evaluation

After more than 30 years after the commencement of cooperation in the flood and debris disaster sector, effects of the projects implemented such as damage reduction against flooding which adversely impacts the regional economy have been gradually realized. In the aspect of capacity building of Philippine engineers through the transfer of technology in these projects, they could now manage and handle by themselves to some extent these types of technologies, so called hard technologies, such as design and construction supervision. However, the knowledge has been accumulated on the basis of each individual project, and thus, the technology on flood and debris control has not been founded yet due to the organizational problems of DPWH.

Therefore, it is essential that the Japanese Government continues to keep its basic policy in assisting the Philippines become self-sustaining with the strengthening of governmental organizations that are responsible for flood control and enabling sustainable activities. Furthermore, introducing nonstructural measures (soft technology) and new technologies (such as integrated water resources management) is also important. However, because their introduction and application could not be done by only the Philippine side, it seems necessary that the Japanese Government should extend effective

cooperation based on experiences and knowledge, particularly in the field of comprehensive river basin development and integrated water resources management.

(h) Analysis on Current Situation and Problem Identification

In this report, through the careful examination of the present practice on flood control and disaster management, issues for further cooperation are extracted as shown in **Table 3.9**. For these issues, further priority issues are also selected as shown in **Table 3.10**.

(4) Study on Program Formation in the Disaster Prevention Sector in the Philippines (March 2008, JICA)

(a) Objective of the Study

This study was conducted with the following objectives:

- To formulate middle and long term plans, including finding of the goal for assistance for the disaster prevention sector, through review of the previous study called "Program Formulation in Disaster Mitigation Sector in the Philippines (Dec. 2004, JICA)" and confirmation of the direction of the disaster mitigation program; and
- To extract projects for the technical assistance program in this sector, through verification of achievement of the previous projects and confirmation of necessity of the technical cooperation in this sector.

In this study, issues on institutional setup of the central and local governments in the Philippines, as well as project implementation in this sector, were also examined as discussed below.

(b) Overall Evaluation of Institutional Setup for Disaster Management

(i) Organization

As the consequence of serial reformation of DPWH, the following issues were detected as the features of the organization:

PMO is in principle organized for each project unit with temporary staff. After the project is finished, the PMO is dissolved and the staff is then transferred or assigned to other project units or laid off. Consequently, the well experienced staff could not get a higher position and be given incentives.

The functions of DPWH, which had originally been involved in a wide range of water-related projects, have been trimmed down with the establishment of several water-related agencies such as NWRB, NIA, LWUA and MWSS. Therefore, integrated water management could not be achieved by DPWH.

Engineers in the river sector in the regional and district engineering offices are few in number and the volume of projects in the sector is also less compared with those of the road sector. Therefore, the engineering personnel are not given incentives and encouragement.

The necessity of basic surveys for planning such as topographic and geographic surveys, as well as basic data collection, is not well recognized

and the capability for basic analysis such as hydraulic and hydrological analyses is not built up.

The number of staff for the formulation of master plans of flood control is not enough in the regional and district engineering offices.

(ii) Institutional Setup

In this report, the issues on institutional setup were taken from the study called "Program Formulation in Disaster Mitigation Sector in the Philippines (Dec. 2004), as follows:

River Administration

- There is no law or code in the Philippines that designates river administration.
- The agency responsible for the implementation of flood control projects is not clear.

Coordination and Cooperation among Agencies Concerned

- Exchange of data and information between DPWH and the other agencies concerned is not enough.
- Coordination and cooperation on project implementation between DPWH and the other agencies concerned, including LGUs, is not enough.
- Roles and responsibilities for O&M are not clear among DPWH and the LGUs.

Management of Data and Information

- Basic data and information necessary for planning are limited and not well managed.
- Monitoring of flood control facilities in the middle and small scale river basins is not undertaken.

Formulation of Flood Control Projects

- Significance of flood control projects for middle and small scale river basins is not recognized by government and residents
- Selection of flood control projects are conducted disorderly without consideration of their prioritization.
- Guidelines for sustainable development and land use in flood and sediment disaster risk areas are not prepared.

System for Project Implementation and Flood Management in River Basins

- Integrated flood control measures are not provided in cooperation with agencies concerned and the LGUs.
- Appropriate river basin management organization is not arranged after establishment of the concept of flood management.

Participation of Residents on Flood Control Projects

- Public awareness of beneficiaries and project-affected people in a manner of publicity and educational campaign is not enough for the implementation of flood control projects.

- Activities of educational campaigns and publicity to inform the public on the significance and role of flood control facilities including O&M are not undertaken sufficiently.

(iii) Budget for Flood Control Projects

In the 1990's, DPWH allocated a half of the flood control budget of about 4 to 5 billion pesos from foreign assistance funds, and most parts were from the Japanese ODA. In the 2000's, the amount of foreign assistance funds had increased up to 90% (most parts were from Japanese ODA). In the Medium-Term Philippine National Development Plan (MTPNDP) for 2005-2010, the rate is expected to be 90%, resulting in high dependence on foreign assistance funds compared with the 52% of the budget for the road sector.

In the MTPNDP, the budget for the road sector shares 73% of DPWH whole budget, while only 12% is for the flood control sector. This clearly shows that higher priority is put on road projects.

This situation results in the deterioration of capacity for management of flood control projects as emphasized in the following conditions:

- Due to the involvement of the President and the congressmen, DPWH tends to put higher priority on road sector projects, which generally require huge costs.
- Higher dependence on foreign funds leads to lowering the capacity of DPWH officials in engineering skills such as planning, surveying, designing, supervising and O&M, as well as administrative capacity.
- Budgets for implementation of flood control projects for medium and small scale river basins are not enough.
- Budget and number of staff are insufficient to conduct O&M works.
- The measures to assure sustainability of financial support are not established.

(c) Issues on Individual Items

In the report, the following issues are pointed out on each item:

(i) Issue on Structural Measures

In the Philippines, structural measures were introduced in the 1900's and spread nationwide. However, the provision of structural measures is still not enough and remains at a low level. It is crucial to arrange structural measures continuously to assure the safety of life and livelihood for the further socio-economic development of the country.

(ii) Issue on Formulation of Flood Control Plan for Each River Basin

After the 1970's, flood control plans have been formulated for major river basins and flood control facilities have been provided. However, the number of river basins with flood control plans is very limited. It is necessary to arrange flood control plans in more river basins, which shall be related to the basin development plans including the land use plan.

(iii) Issue on Preparation of Database

At present, DPWH does not have an overall database on flood control and Sabo projects, and therefore, data is collected from every available data source in every case of study on flood control and Sabo projects. To facilitate the study and formulation of plans for flood control and Sabo projects, it is essential to establish an overall database, which could be used also by other stakeholders.

(iv) Issue on Implementation of Flood Control and Sabo Projects

For the implementation of flood control and Sabo projects, land acquisition, house evacuation and relocation of illegal settlers are always big issues. To smoothly implement the projects, the following improvements except budget allocation are necessary:

- Delineation of river areas and legal arrangement for land registration; and
- Cooperation with LGU's, which have the responsibility for land development in order to obtain understanding and agreement on the project.

(v) Issue on Maintenance of Flood Control and Sabo Facilities

According to the Local Government Code, local governments have, in principle, the responsibility for O&M and restoration of flood control and Sabo facilities within their territories, but there is no code clarifying the sharing of responsibility between the central and local governments. In this connection, it is necessary to clarify the roles and responsibilities of local government units with regard to O&M.

(vi) Issue on Strengthening of Nonstructural Measures

Disaster mitigation by structural measures has a certain limit, so that it is crucial to introduce the following nonstructural measures:

- Hazard mapping;
- Early flood warning and evacuation system;
- Control of land utilization;
- Others

(d) Core Problems and Approach to solve the Problems

In the report, based on the analysis of present conditions and issues in the disaster management sector, core problems have been abstracted and approaches for the problems were set, considering the evaluation of previous cooperation results, international tendency as well as studies in Japan, and the current situation of cooperation and assistance by international donor agencies and countries. Hence, the models on which such approaches were based have been selected through collection and analyses of the best practices in Japan and developing countries.

Table R 3.7 shows the best practice as well as approach obtained through the process mentioned above.

Table R 3.7 Past Issues in Disaster Management Sector and Proposed Approach to the Solution

Lessons Learned	Approach	Best Practices	
		Japan	ODA by Japan Government
1. River Improvement Projects by Assistance for Whole River Basin requiring a Long Term	[Selection, Concentration and Integration] • Priority on prevention of disaster damage caused by flood and volcano eruption		
	• **Sustainable institutional Set-up and legal arrangement toward self governance**	Budget of Flood Control	Establishment of [Department of Water Induced Disaster Prevention] in NEP (T/C + Grant Projects)
	• Integration Approach		
	• Efficient and Prompt Appearance of the Effect: Change from a series of continuous dike to protection of core areas and basin-wide & spatial protection Approaches.	Traditional Protection Methods (Shingen-tei Dike, Ring Dike), Comprehensive Flood Mitigation Project	The Technical Cooperation Project on Riverbank Protection Works in Laos (T/C Study + Project)
	• Climate Change Adaptation: Stressing Control Works in Coastal Site		
2. Less direct contribution to poverty reduction	[Inclusion of poverty reduction in the objective of DRM]	Oota River Improvement Project Flood Control Project for Core Areas	the Colombo Environmental Improvement Project in Sri Lanka (Yen Loan+JOCV)
3. Limited Activities for the Support / Assistance to Local Communities	[Community-based Capacity Development, Superior Information Service] • Community-based Disaster Prevention and Management	Establishment of Community-based Flood Fighting Team	Mt. Merapi and Mt. Semeru Volcanic Disaster Countermeasures Project in Indonesia (Yen Loan + T/C Projects) the Project for Construction of Multipurpose Cyclone Shelters in Bagladesh (Grant Project +JOCV) The Caribbean Disaster Management Project in Calive (T/C Project)
	• Improvement in the Quality of Disaster Prevention Information for Communities	Easy-to-understand Flood Information National Water Information	Flood Forecasting and Warning System in Morrocco (T/C Study)
4. Less Participation of Communities and LGUs to Project Implementation	[Participation to Every Stage in Program Cycle] • Broad and Early Consensus-building from	Establishment of River Basin Committee	
	• Formulation of Cooperatition Framework in Project Implementation	Assignment of Gate Operators	Iloilo Flood Control Project (Yen Loan)
	•Appropriate Operation and Maintenance for River Structures	Development of Organization, Institution and Budget	Ormoc Flood Mitigation Project (Grant Project)
5. Limited Coordination Activities with Other Sectors	[Coordination with Multi-Sector] • Point of View of Community Renovation and Urban Planning	Project for Improving River Environment	
	• Watershed Management	Forest at the head of the river River Basin Management Fund	Forestation Program in Agno and Laoag River Basins in coordination with Flood Control Projects
	• Environment	Community-based Voluteer Group	

The results are as described below.

(e) Lessons Learned 1: Manner of River Improvement: Assistance for Whole River Basin requiring a Long Term

For disaster prevention related to water, sediment, earthquake and volcanic eruption, the Japanese Government has been widely assisting for more than 30 years. Through the outputs and lessons learned from the projects, it is necessary to practice prioritization in order to maximize the effectiveness of investment with the limited budget, and the direction of approach to enhance the disaster management capacity should be clarified so that the Philippine Government can obtain the capacity to handle the problems in this sector on their own initiative.

In the flood control sector, the manner of previous assistance has put more emphasis on the construction of large-scale flood control structures and donation of equipment relating to flood forecasting and warning system. Also, in technical assistance, such technologies as planning of structures and arrangement of equipment, as well as operation and maintenance have been transferred.

There exist many agencies concerned in disaster prevention. However, the role and responsibility of each agency are not clear and coordination among these agencies is not well performed. Legal arrangements as well as institutional setup including LGUs are not sufficient and the capacity of each agency on operation and management is very limited. So far, Japanese assistance has been limited in capacity development.

Many flood control projects have been formulated previously through master plan and feasibility studies. However, when such projects proceed to the implementation stage with financial assistance from international funding agencies, the projects sometimes experience delay in completion resulting in the increase of project cost.

River improvement plans in most cases have been formulated in a manner of continuous dike from the river mouth to the origin in mountainous areas for the protection of flood prone areas along the river. Hence, it takes a long time to complete the project and acquire the project benefit.

In terms of damage mitigation measures for disasters caused by earthquake and volcanic eruption, the following assistance have been provided: arrangement of monitoring system for the events, capacity development for disaster management, arrangement of basic data on expected damaged areas, and formulation of action plans.

It can be said that these assistance could achieve a certain level of project target, so that the major target in the disaster risk management sector will be flood damage reduction; namely, the main objective of the sector will be the alleviation of flood damage.

(i) Selection, Concentration and Integration (Approach 1)

i-1. Priority on Prevention of Disaster Damage caused by Flood and Volcanic Eruption

As mentioned earlier, in terms of damage mitigation measures for disasters caused by earthquake and volcanic eruption, the following assistance have been provided: arrangement of monitoring system for the events, capacity development for disaster management, arrangement of basic data on expected damaged areas, and formulation of action plans. It can be said that these assistance could achieve a certain level of project targets. From now on, the major target in the disaster risk management sector is to be flood damage reduction; namely, the main objective of the sector is the alleviation of flood damage.

i-2. Sustainable Institutional Setup and Legal Arrangement toward Self-Governance

Assistance will be provided to achieve self-governance, so that the responsible agencies can sustainably implement flood control projects and provide necessary information, coordination and so on among stakeholders on

their own capacity. Namely, the assistance will be conducted showing the model approaches in the field of integrated approach [refer to (i-3)], protection of core areas [refer to (i-4)] and adaptation of climate change [refer to (i-5)), which can contribute to the capacity of responsible agencies on the realization of governance on their own capacity.

In the context of assistance on policy and institution, which is one of the major components for the "creation of strong community and nation against disaster," the restructuring of organization and creation of institution for responsible agencies shall be targeted, so that model approaches can be settled among these agencies.

i-3. Comprehensive Approach

Comprehensive approach shall be introduced covering the following four layers, in addition to the previous assistance in a manner of conventional structural measures:

- Assistance to policy and institution
- Strengthening of community capability in terms of disaster response
- Capacity development for disaster risk management and O&M
- Application of conventional structural measures

Assistance shall be undertaken comprehensively for the whole sector program dividing it into four (4) layers.

i-4. Prompt Appearance of Effectiveness: Changing from a series of Continuous Dike to Protection of Core Areas and Spatial Protection

Flood mitigation in major river basins can be realized with prompt appearance of effectiveness in each stage, whenever the investment can be done; namely, changing the approach of provision of dike from a series of continuous dike to partial dike for core protection. Also, flood mitigation is undertaken not only in the limited area along the river course to increase the flow capacity, but also introducing spatial protection considering the facilities in the flood prone area/areas and natural topographic conditions.

Thus, flood mitigation will be formulated as a sub-project for the protection of core areas, and will assist in 1) formulation of flood mitigation plan for core areas (economically and administratively significant cities or areas) in major river basins, and 2) formulation of plan in principal river basins, which are significant from socio-economic points of view.

i-5. Adaptation to Climate Change: Giving high priority on coastal protection in a flexible manner

It is expected that disaster risk will be enhanced due to climate change especially in coastal lowlands where urbanization is being promoted. To adapt to the influence of climate change, assistance shall be comprehensively undertaken by applying not only improvement works but also introducing nonstructural measures such as flood prone management and land utilization.

Thus, arrangements in coastal lowlands in Metro Manila as well as major urban centers will be promoted in the context of sub-programs for urban flood.

(f) Lessons Learned 2: Less Direct Contribution to Poverty Reduction

There are a huge number of poor people who had moved to habitual inundation areas caused by flood and high tide looking for business opportunities. These poor people are in general weak against disasters. Previous projects have not contributed to the benefit of such poor people, but have been affecting them in the form of relocation for project implementation. From the viewpoint of life security, it is necessary to assure the livelihood of poor people.

(i) Inclusion of Poverty Reduction in the Objective of DRM (Approach 2)

Assistance to poor people living in flood prone areas should be included as a part of the project objectives in a manner of improvement of lifestyle and enhancement of living standard, and the poor should not be treated as the target people for house relocation.

Thus, assistance shall be undertaken by arranging the measures in coastal lowland areas in Metro Manila and the other major urban centers including the objective of improvement of living standard for urban poor people.

(g) Lessons Learned 3 (Limited Assistance to Local Community)

In the field of disaster mitigation, many stakeholders including community, central and local governments, private sector and NGOs are concerned. Especially, the role of communities, which are obliged to be involved against disasters prior to the other stakeholders, is significant. As for the operation of flood forecasting and warning systems, assistance has been provided putting more emphasis on the provision of system including equipment and enhancement of capability for engineers in the central government with not much consideration on the involvement of local communities.

The information disseminated by PAGASA is not clear in its contents to show the expected damage area, time and magnitude of flood and is poor in quality. It is necessary to enhance the quality of information, so that the information will contribute to the early warning and evacuation of communities.

(i) Capacity Development for Community and Provision of Qualified Information (Approach 3)

iii-1. DRM at Community Level

The Philippine Government is keen to the establishment of early warning and evacuation systems at the community level in habitual disaster areas. GOP has been promoting the preparation of hazard maps in higher disaster risk areas, introducing assistance from international donor agencies such as UNDP. Assistance shall be undertaken toward strengthening the disaster prevention capacity mainly for communities.

In concrete terms, assistance shall be provided on the following items: formulation of disaster management plan by local community, identification of disaster risk considering the contents of disasters such as flood, sediment disaster and volcanic eruption and geographical features, establishment of early warning and evacuation system, construction of small scale structures, participation of communities in the maintenance work, and promotion of education on disaster risk management and dissemination of information.

Thus, in the course of the "Project for Creation of Nation and Communities Strong Enough for Disaster Prevention," a model in the pilot areas will be developed and expanded nationwide. In the case of "Mayon Volcano Sub-Program" as the spread model, the coordination system between the central government and the LGUs was created and will be used nationwide.

iii-2. Enhancement of Contents of Disaster Information to Community

It is necessary to assist in the capacity development of agencies concerned with the issuance and dissemination of disaster information including PAGASA, so that the agencies can provide more effective information for the implementation of disaster prevention activities.

Thus, in order to enhance the contents of disaster information to communities, improvement shall be done at the time of receiving the forecasting and warning information. Assistance will be mainly undertaken in the following points: improvement of contents of information and strengthening of dissemination system of information to assure the receipt by communities.

(h) Lessons Learned 4: Less Involvement of LGUs and Communities

For the formulation of flood control plan such as the master plan, it is crucial to take a process for obtaining the consensus among a wide range of stakeholders. Involvement of communities and LGUs is indispensable in the following points: 1) to avoid delay of implementation due to problems derived from ROW acquisition and house relocation; and 2) to assure smooth implementation and sustainability through sufficient O&M. Until now, in most of the disaster prevention projects, the involvement of communities and LGUs has been very limited.

Hence, the construction of many facilities and structures shall be completed under the financial assistance projects, and these facilities and structures are to be managed by the LGUs. In this connection, it is necessary to arrange the organization for O&M of these facilities and structures including the issues on budget for the purpose. The manner to return the profits accruing from the projects to the community shall be examined.

(i) Involvement during Whole Project/Program Cycle (Approach 4)

iv-1. Formulation of Consensus in Early Stage of Planning

For the formulation of a river basin master plan, the information should be shared among stakeholders including community and LGUs, and arrangement of opportunities such as holding seminar or forum is necessary in the early stage of planning.

Thus, Assistance shall be arranged to set up the system for discussion among stakeholders in the course of the "Project for Creation of Nation and Communities Strong Enough for Disaster Prevention."

iv-2. Creation of Cooperation System for Project Implementation

It is significant to create the system in which the related community and LGUs have recognition of their role on disaster risk management and create the organization for cooperation with their own involvement. With regard to house relocation problems due to project implementation, LGUs shall

shoulder the responsibility for enhancement of living standard and social services.

Project implementation will bring about benefits to the land protected in a manner of increase of land price. These benefits should be returned to the local society through coordination with related activities such as land development.

Thus, assistance shall be undertaken to set up the framework for the involvement of local communities and LGUs and return of profit due to development in the course of the "Project for Creation of Nation and Communities Strong Enough for Disaster Prevention."

iv-3. Enough Operation and Maintenance of Structures

To assure enough operation and maintenance of provided structures such as dike, gate and weir, capacity development for the related agencies and involvement of LGUs and communities is needed in the following points: assurance of operators and periodical inspection. It is also necessary to clarify the sharing of roles between the central government and the LGUs and the assistance policy of the central government.

Thus, assistance shall be undertaken for the capacity development on O&M for the structures provided in previous assistances in the course of the "O&M Project for River Structures."

(i) Lessons Learned 5 (Limited Coordination with Other Sectors)

Disaster risk management needs coordination with the other sectors. In general, flood protection measures have been provided in river areas, so that coordination with the other sectors affecting the flood phenomenon such as land development, deterioration of environment and deforestation have not been sufficiently undertaken.

(i) Coordination with Other Sectors (Approach 5)

v-1 Consideration of Urban Planning

In the areas where urban development is proceeding, flood control measures should be arranged considering the areal detention of flood discharge coordinating with the urban planning as follows: 1) Measures to control run-off discharge in flood plains such as arrangement of retention pond and percolation of rain into underground; 2) Restriction of land use for putting the idea of disaster prevention into urban planning; 3) Arrangement of flood control facilities together with other facilities related to urbanization along the river course; and 4) Arrangement of flood control structures together with the roads.

Thus, assistance shall be undertaken in the course of the "Project for Creation of Nation and Communities Strong Enough for Disaster Prevention" for the manner of coordination with urban planning and road planning, as well as assistance to institutional setup in this point. The arrangement of flood control structures also shall be promoted in the coastal lowland areas in Metro Manila and major urban centers in the course of the "Sub-Program for Urban Flood Control."

v-2: River Basin Management

In the flood control sector, integrated management covering the whole river basin is significant. In the upper reaches, sediment control measures such as forestation and forest management are required, while areal measures which are included in urban planning like restriction of land use are necessary. Assistance should be put on the necessary arrangement for coordination and cooperation among DENA, LGUs, NGOs and community and promoted, and further river basin management incorporating it with the disaster risk management should be promoted.

Thus, in the course of the "Project for Creation of Nation and Communities Strong Enough for Disaster Prevention," assistance shall be undertaken so as to arrange the opportunity for coordination with the other sectors.

v-3. Environmental Impact

It is necessary to coordinate on urban planning as well as the preservation of urban environment in order to assure the drainage function, which is hampered by the dumping of garbage into drainage channels, and also preserve better environment through the provision of greenbelt and waterfront.

Thus, assistance shall be undertaken in the course of the "Project for Environmental Improvement in the Waterfront" through campaign activities at the site and participation of local inhabitants in the project.

3.3.2 Issues Identified through this Study

The issues pointed out in the previous studies are examined in this study through investigation of the projects shown in the following Table.

Table R 3.8 Projects Examined in this Study and the Status of MOA on O&M Activities between DPWH and LGUs

Name of the Project	JBIC Loan Agreement
The KAMANAVA Area Flood Control and Drainage System Improvement Project	JBIC Loan Agreement No. PH-P212 (Loan Amount: 8,929 million Japanese Yen (3,571.6 million Philippine Peso at Php 1.0=JPY2.5)
Metro Manila Flood Control Project – West of Mangahan Floodway	JBIC Loan Agreement No. PH-P179 (Loan Amount: ¥ 9,411million Japanese Yen)
The Agno River Flood Control Project, Phase II	PH-P193 (Phase II-A) and PH-P223 (Phase II-B)
	¥6,734 million Japanese Yen (Php 2,172 million, Php 1.0= ¥3.10)+ ¥2,789 million Japanese Yen (Php 996 Million, Php 1.0=¥2.80)
Iloilo Flood Control Project (Phase II)	Loan Agreement No. PH-P230 (Loan Amount: 6,790 million Japanese Yen (2,952 million Philippine Pesos, Php 1.0=JPY2.3)
The Project for Flood Mitigation in Ormoc City (Phase I & II)	Phase I: Grant Amount: ¥1,111million Japanese Yen
	Phase II: Grant Amount: ¥2,144 Million Japanese Yen

The issues identified in this study concerning the above projects are described in **Annex-1**. To summarize these issues, the following two points, which were also pointed out in the previous studies, are emphasized:

- Delay of Implementation inducing Project Cost Increment due to ROW Acquisition Problems; and
- Lack of O&M Activities resulting in the Decrease of Project Benefit and Effectiveness.

3.3.3 Summary of Issues

(1) Composition of Issues

As discussed in the previous sections, several issues have been pointed out in each of the previous studies (refer to **Table 3.11 and 3.12**). Although it is difficult to summarize these issues because of the involvement of several factors, they may be broadly expressed as the relation between the core issue and the causes under certain layers, as shown in the following figure.

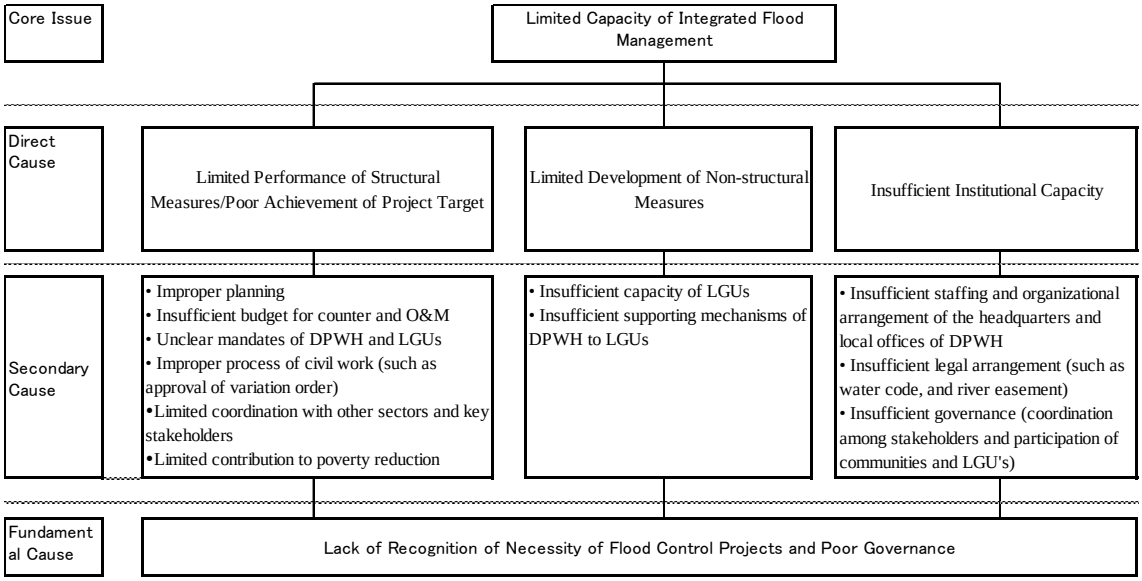


Figure R 3.4 Elements of Issues

(2) Core Issue and the Direct Cause

As shown in the figure above, the core issue of insufficient disaster management is attributed to "Limited Capacity of Integrated Flood Management."

The major direct causes of the core issue are the "limited performance of structural measures/poor achievement of project target," "limited development of nonstructural measures" and "insufficient institutional capacity."

(3) Secondary Causes of Core Issue

As the secondary causes of each direct cause of the core issue, the following issues are pointed out:

(a) Secondary Cause of Direct Cause of "Limited Performance of Structural Measures/Poor Achievement of Project Target

As for the secondary causes of "limited performance of structural measures/poor achievement of project target," the following items are concerned:

- Improper planning
- Insufficient counterpart budget and O&M

- Unclear mandates of DPWH and LGUs
- Improper processing of civil works (such as approval of variation order)
- Improper resettlement planning and measures
- Limited coordination with other sectors and key stakeholders
- Limited contribution to poverty reduction

(i) Improper Planning

In the previous approach, the planning process judging from the economical, financial, technical and environmental points of view had not always been properly taken, so that problems have emerged in the implementation, especially, the requirement of ROW acquisition and house relocation.

(ii) Insufficient Counterpart Budget and O&M

In general, flood control projects are conducted introducing loans from international financing agencies which require a counterpart budget for project implementation. After completion of the project, the flood control facilities need enough operation and maintenance funds. However, these counterpart budgets and O&M funds are insufficient and not timely arranged, so that the project cannot be completed on time and flood control facilities do not function sufficiently.

(iii) Unclear Mandates of DPWH and LGUs

DPWH is mandated to undertake planning, design, construction and maintenance of major infrastructures including flood control facilities, while LGUs have also the responsibility to provide the flood control facilities as one of the basic services under the Local Government Code. However, the extent or limit of the mandate to DPWH and LGUs is not clear, which sometimes causes insufficient performance of the mandates, especially on the responsibility for operation and maintenance of flood control facilities.

(iv) Improper Processing of Civil Works (such as approval of Variation Orders)

In the implementation stage of projects, events which sometimes require change of original design and/or construction method emerge and need approval from higher authorities. However, it takes a long time to obtain the approval due to improper processing, which causes the delay of project implementation.

(v) Improper Resettlement Planning and Measures

One of the significant issues on project implementation involves the resettlement plan and measures. In general, the resettlement plan and measures arranged are not welcome by project affected people due to insufficient coordination and communication from the beginning of the project. As the result, the project cannot be smoothly promoted.

(vi) Limited Coordination with Other Sectors and Key Stakeholders

From the project planning to the implementation stage, it is essential to coordinate other related sectors and key stakeholders for smooth project

promotion. However, due to insufficient coordination with other sectors and key stakeholders, the project cannot be smoothly promoted, because opposition or claims are brought about resulting in project suspension.

(vii) Limited Contribution to Poverty Reduction

In general, flood control projects are planned to mitigate flood damage to local inhabitants in flood prone areas including riverine areas. Usually, however, the project requires land acquisition and house evacuation of inhabitants along the river course which sometime include low income people. Hence, flood control projects do not always contribute to poverty reduction.

(b) Secondary Cause of Limited Development of Nonstructural Measures

As for the secondary causes of "limited development of nonstructural measures," the following items are concerned:

- Insufficient Capacity of LGUs
- Insufficient Supporting Mechanism of DPWH to LGUs

(i) Insufficient Capacity of LGUs

In general, LGUs do not have enough capacity to develop nonstructural measures due to shortage of engineers as well as knowledge and budget, so that it may be difficult to develop nonstructural measures with their own resources and capacity.

(ii) Insufficient Supporting Mechanism of DPWH to LGUs

Under the above conditions, it is necessary for DPWH to support the LGUs in developing nonstructural measures, since DPWH has enough engineers and knowledge to develop them. However, the supporting mechanism or system of DPWH to LGUs has not been set up or insufficient.

(c) Insufficient Institutional Capacity

As for the secondary causes of "insufficient institutional capacity," the following items are concerned:

- Insufficient staffing and organizational arrangement of the headquarters and local offices of DPWH
- Insufficient legal arrangement (such as Water Code and river easement)
- Insufficient governance (coordination among stakeholders, and participation of communities and LGUs)

(i) Insufficient Staffing and Organizational Arrangement of the Headquarters and Local Offices of DPWH

In general, the number of river engineers and flood control experts is not enough and as the organizational arrangement, the DPWH Planning Service, which covers both road and flood control sectors, can hardly manage both sectors equally. In the Headquarters of DPWH, there are two PMO-MFCPs, which exclusively manage the flood control projects for mainly major river basins. However, these PMO-MFCPs may not be able to implement the project sufficiently, because its personnel are very limited as only a few

percent of the personnel are regular employees. To enhance the capacity of DPWH on disaster risk management, the FCSEC has been setup and a technical assistance program is ongoing. However, as for the FCSEC, the following are pointed out for further enhancement: (1) To continue to prepare/revise technical guidelines, standards and manuals; (2) To continue to promulgate technical guidelines for engineers of DPWH in regional and district levels; (3) To pursuit the way of promulgation of technical guidelines for engineers in the LGU level, and so on.

It is also pointed out that coordination, agreement and cooperation among the DPWH central office, regional and district engineering offices may take some time to receive for the promotion of the project.

(ii) Insufficient Legal Arrangement (such as Water Code and other Regulations)

There are conflicts in jurisdiction among relevant agencies with regard to the implementation of flood control projects and management of rivers in their watersheds. The Water Code, PD 1067 and EO 124, designated DPWH as the responsible agency to manage all rivers in the country. The Local Government Code (RA 7160); however, it allows the LGUs to implement flood control projects for principal rivers. Furthermore, the National Irrigation Administration (NIA) has implemented flood control works to protect farmlands as well as irrigation facilities, while the DENR is undertaking flood/sediment control works through watershed management and reforestation projects. Thus, insufficient legal arrangements cause unclear river management including implementation of flood control projects.

(iii) Insufficient Governance (Coordination among Stakeholders, and Participation of Communities and LGUs)

As gathered from the results of the PCM workshop participated by stakeholders (DPWH, NEDA, DENR, DILG, NIA, NDCC, PAGASA) during the "Study on Flood Control Project Implementation System for Principal Rivers in the Philippines under the Project Enhancement of Capabilities in FCSEC (Sep. 2004 JICA)," almost all stakeholders indicated the necessity of enhancement of coordination between flood control project implementing agencies related to the following issues: (1) No provision for enough, relevant data/information; (2) No provision of funds for flood control projects undertaken within the agency's scope of responsibility; (3) No participation of stakeholders in the planning, design, implementation and monitoring of flood control projects; and (4) No action for the information and educational campaign.

(4) Fundamental Cause of the Core Issue

As the fundamental cause of the core issue, the recognition of necessity and governance of flood control project is poor among the stakeholders including the local residents. All issues on disaster risk management relating to the core issue seem to be rooted on the lack of recognition of necessity of flood control projects and poor governance.

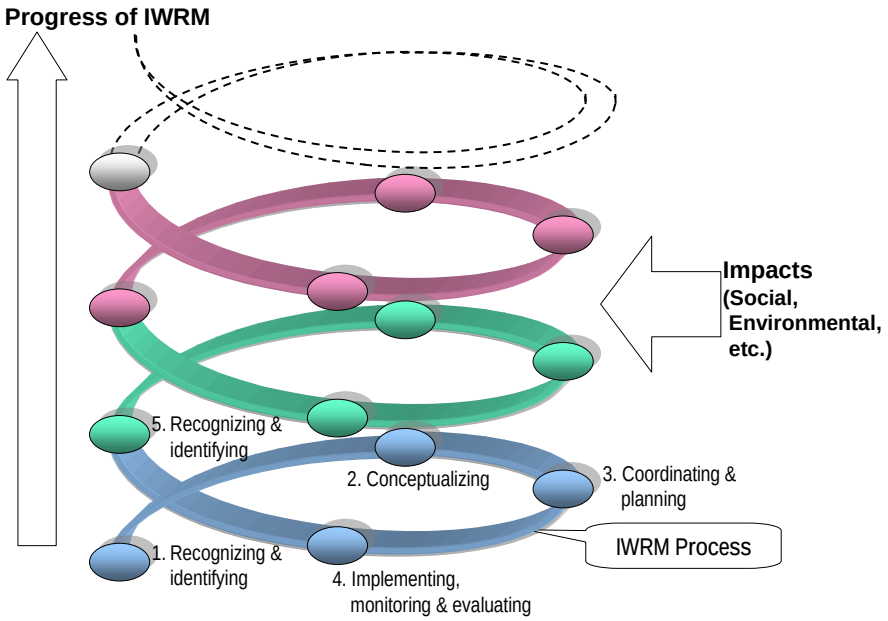
3.4 Efforts Taken by DPWH to Cope with the Issues on Project Implementation

For the issues pointed out by the previous studies, DPWH had taken some alleviation efforts making them as turning points through the creation and establishment of procedural manuals, guidelines and policies, as well as legislations, as shown in **Table A2.2** in the Annex. It seems, however, that DPWH needs to make further efforts to settle the issues.

3.5 Key to Success of Flood Management and Consideration of Financial Issue

3.5.1 Key to Success of Flood Management

In the IWRM Guidelines recently prepared by UNESCO to facilitate the practical implementation of Integrated Water Resource Management (IWRM) at the river basin level, the following statement is provided as the key to success in flood management: *"A key for success to flood management is a key that can be used in practice to help make IWRM succeed. They are keys to establishing breakthroughs in challenging situations, or to opening the door for better IWRM. They provide tips and clues for making progress in the IWRM process."* (See **Fig. R 3.5**)



Source: IWRM Guidelines at River Basin Level (UNESCO)

Figure R 3.5 Spiral of IWRM

As shown in **Fig. R 3.5**, the key to the success of flood management starts from "recognizing & identifying," and then proceeds to "conceptualizing," "coordinating & detail planning," "reaching an agreement" and reach up to "implementing, monitoring & evaluating." Then, the process returns to recognizing again as the spiral and iterates.

(1) Phase 1: Recognizing and Identifying

The important part of this phase is to "recognize" the need for IWRM (flood management) and to grasp the overall picture of existing issues in the basin. Things to note in this phase are:

- Do you understand the needs and problems? Are you in need of IWRM (flood management)?
- Are you aware of past evaluation results and the current situation?

- Are you thinking into the future?

Recognizing the need for IWRM through identification of needs and problems in the basin becomes the catalyst for improving water resources management in the basin. It is important to proactively "recognize" the needs, and your understanding of the situation can be measured by how well you can make others understand. You can identify existing basin-wide issues by exploring the needs for improving existing approaches or schemes based on existing or past evaluation results, and by being alert to newly-arisen problems and needs as a result of socio-economic and environmental changes.

In this phase, Key, "Why and How" are shown in **Table 3.13**.

(2) Phase 2: Conceptualizing

The point of this phase is to understand the overall structure of the problem and to conceptualize future actions. Things to note in this phase are:

- Is it in line with social demands?
- Is it well balanced?
- Do you understand the constraints and are you exploring "what you can do"?

By viewing the structure of the problem from a broader perspective, you will be able to find clues or a place to start to find a solution. Furthermore, you will have to consider the course of action and the relevant stakeholders and their relationships in order to tackle the problem. You can conceptualize possible solutions by laying out various alternatives that meet the basin-wide balance as well as the balance between supply and demand and the balance among stakeholders, then narrow down the list on the basins of the given constraints. You may have to disregard certain aspects of your ideal plan in order to make implementation a reality.

In this phase, Key, "Why and How" are also shown in **Table 3.13**.

(3) Phase 3: Coordination and Detail Planning

This phase finalizes the concepts formulated in Phase 2 into a detailed plan and coordinates with stakeholders toward reaching an agreement. Things to note in this phase are:

- Is transparency secured (satisfying to the reason)?
- Are stakeholders convinced (satisfying to the heart)?
- Is it socially fair (satisfying to the law)?

Coordination for reaching agreement on a draft plan means revising the plan based on the opinions of relevant stakeholders. A transparent process and public awareness are prerequisites for ensuring effective stakeholder participation. They also ensure the social fairness of the process. Striving to improve the situation of all stakeholders will facilitate reaching an agreement.

In this phase, Key, "Why and How" are also shown in **Table 3.13**.

(4) Phase 4: Implementing, Monitoring and Evaluating

The aim of this phase is to implement, develop, manage and operate the agreed scheme or framework (including infrastructure development or establishment of legislation or institutional framework). Things to note in this phase are:

- Is the implementation program executed promptly?
- Is the system adapted and functioning?
- Are there any new problems with the new approach/scheme?

Prompt execution of the implementation program and early realization of its impacts and effectiveness is important for the IWRM (flood management) process. However, things do not always turn out as planned. There are times when the established approach or scheme does not function in the way expected. Thus, monitoring is an important aspect of an IWRM process. Furthermore, it is necessary to retain a broad view and be alert for new problems caused by social changes, etc.

It is also important to evaluate the impacts of issues not addressed in the current plan and see if such issues need further attention in the future. This leads to the "recognizing and identifying" phase in the next stage of the IWRM (flood management) spiral.

In this phase, Key, "Why and How" are also shown in **Table 3.13**.

(5) Important Aspect of the IWRM Process: Policies/National Strategies, Legislative Frameworks and Financing

Policies/national strategies, legislative frameworks and financing are important throughout the entire IWRM (flood management) process. Things to note in this phase are:

- Can you move ahead with just the consensus built among stakeholders or do you need a formal framework?
- Are you working bottom-up to influence national or higher level organizations?
- Do you have financial sources in mind?

Policies/national strategies and legislative framework are established at the national level except in the case of special regional or local laws and regulations. These have significant impacts on water resources management. However, it takes enormous time and effort to establish a new framework or amend existing ones. It is important to always consider whether these are really necessary in order to proceed with the IWRM (flood management) process. If it can be achieved through consensus among stakeholders instead of laying out a national level framework a lot of time will be saved.

Furthermore, financing is an important aspect of the IWRM process. You must be aware of the budgeting schedule and undertake the necessary actions. If you are expecting financial assistance from donors you must also be aware of their approval and procedural schedules.

In this phase, Key, "Why and How" are also shown in **Table 3.13**.

3.5.2 Consideration of Financial Issue

As discussed in Section 3.6, Previous Issues, one of the significant issues is the financial issue, which is the fundamental issue related to every issue on project implementation. In this section, discussion is made on financial issue from the following points:

- Project benefit
- Expected monetary income
- Consideration of the other aspect

(1) Project Benefit

In general, a flood control project is implemented with the expectation of benefit, which can be evaluated by the reduction of flood damage with- and without-the-project situations. The items to be considered are as shown in the following table:

Table R 3.9 Benefits resulting from the Project

Category	Type	Classification	Item	Sub item
Tangible Benefit	Direct Benefit	Private Property	Built-up Area	House, house hold, Industry
			Agriculture	Farmland, Livestock
			Fishpond	Fish
			Others	Transportation
		Public Property	Infrastructure	Road, Irrigation, Electricity
			Public Facilities	School, Government Building
	Indirect Benefit			Commercial Activities
Intangible Benefit				Life of human being
				Business Opportunity
			Environmental Improvement	Waterborne Disease
				Value and Real Property
				Tourism Industry
				Others

(2) Financial Source for Project

In general, project viability can be verified in terms of economic internal rate of return (EIRR), which can be calculated based on project benefit and project cost. In this sense, the project financial sources may be assured as long as project viability is confirmed. However, the substantial government revenue may be slightly different in the aspect of project benefit. Herein, the increase of revenue through a flood control project is broadly examined to encourage the promotion of flood control projects.

(a) Central Government

The revenue of the central government is mainly derived from taxes, and the sources of such taxes in the Philippines are summarized in the following tables:

Table R 3.10 National Taxes in the Philippines

Table National Tax		
Item	Sub-item	Tax Rate
Individual Income Tax		3%-30%
Passive Tax	Interest, Dividends, Capital Gains, Fringe	-
Corporation Tax		32%
Value Added Tax (VAT)		10%
Other Tax	Excise, Documentary Stamp, Estate and donor's	-

In this table, it is expected that the flood control projects will contribute to the increase of revenue of the central government in the following manner:

- Individual income tax will directly increase because of increase of individual income through reduction of flood damage.
- Corporation tax will also directly increase under the same reason
- The other tax such as passive tax and value added tax may also increase secondarily due to the enhancement of economic activities, though the relation may not be clearly identified.

Since the share of the individual income tax and corporation tax is around 40% of total tax revenue, the increase of these items through flood control projects surely contributes to increase of the national revenues, though it may difficult to identify the amount definitively.

(b) Local Governments

In the case of local government, the sources of income are as shown in the following table:

Table R 3.11 Source of Income of LGUs in the Philippines

Category	Item	Share (1996) (%)
TAX		88.3
	Internal Revenue Allotment	66.6
	Local Tax on real estate	8.9
	Other local tax	12.8
Other (except tax)		11.7

Among these, items of local tax are as shown in the following table:

Table R 3.12 Local Taxes in the Philippines

Table Local Tax

Local Gov.	Item
Province	Tax on Transfer of Real Property Ownership
	Tax on Business of Printing and Publication
	Franchise Tax
	Tax on Sand, Gravel and Other Quarry Resources
	Professional Tax
	Amusement Tax
	Anuual Fixed Tax for Every Delivery Truck or Van--
Municipalities/Cities	Tax on Business
	Community Tax
Barangay	Tax on strores or retailers

In comparison with the above tables, the increase of revenue for the local governments derived from benefit by flood control project may not be so large; namely, the share of shadow parts in total revenue of local government is very

limited (less than 20%) and only the part of shadow in the table contributes to the increase of revenue.

In case of the Ormoc and Cavite studies, the composition of the benefit is as shown below:

Table R 3.13 Composition of Benefit of M/P of the Cavite Study and F/S of the Ormoc Study

Table Composition of Benefit with Flood Control Project

Type	Classification	Item	Sub Item	Composition of Benefit (%)	
				Ormoc	Cavite
Direct Benefit	Private Property	Built-up Area	House, House Hold, Industry	46	80
		Agriculture	Farmland, Live Stock	0	1
		Fishpond	Fish	0	0
		Others	Transportation	21	5
	Public Property	Infrastructure	Road, Irrigation, Electricity	24	-
		Public Facilities	School, Government Building	-	-
Indirect Benefit			Commercial Activities	9	14

In these cases, the increase of revenue will be derived from certain percent of those of commercial activities and reduction of expense due to damage reduction for infrastructures, which may be small to fulfill the project cost of flood control, even though total economic return is quite large.

However, in case of Ormoc, which had suffered from the devastating flood damage in 1991, the flood control project implemented took 3 years of construction period with completion in 2000. The economic indicators in Ormoc City such as population and revenue are shown in **Table 3.14**. According to this table, there are no remarkable changes in the revenue of Ormoc City before and after the completion of the flood control project, but the value of land became double after 2000 compared with that in the 1990's.

There is also a noticeable change in development of the urban areas, which is emphasized with the increase of tall buildings like shopping malls and business office buildings, and also remarkable increase in prices of real estate and land, though there is no statistical data to show such change. It can be said that this situation surely contributes to the increase of revenue of Ormoc City, though it may be difficult to evaluate the increase of revenue caused by the flood control project itself quantitatively, since there are many other factors which contribute to the increase of revenue.

(3) Consideration of Other Aspect

As discussed earlier, recognizing the necessity of the project is the key for success to flood management. For promotion of the recognition, it seems to be necessary to consider the necessity of flood control as follows:

(a) Necessity of Flood Control Project compared with other Infra-Projects

Needless to say, a flood control project is necessary to protect every kind of asset from flood damage and to assure the safety of inhabitants against flood. The issue, however, is the significance of a flood control project compared with the other infra-projects such as road, irrigation and energy. For this issue, the following considerations can be made:

- The safety of certain areas cannot be guaranteed without flood control facilities.
- Therefore, the effectiveness of investment in the area will not accumulate since such effectiveness of investment will be lost once in several years due to flood.
- Products such as agriculture and industry in the areas will not be enough in quantity and quality to compete with those in the other areas protected by flood control facilities.
- Consequently, opportunity of production in the area without flood control facilities will be less and less, and people in the area will be forced to leave and transfer to the other area where the safety against flood is guaranteed.
- This results in abundance in the area, even though other infrastructures like road, irrigation, energy supply and so on are provided.
- In this context, a flood control project is one of the most significant and fundamental projects compared with the other infra-projects.

(b) Issue on Methodology for Calculation of Project Benefit of Flood Control

In general, the benefit derived from a flood control project is evaluated in terms of reduction of flood damage with/without project, which is further evaluated in terms of EIRR for the comparison with other infra-projects.

However, the current methodology for calculation of project benefit seems to be very modest, and the other benefits by flood control projects are expected much more than the reduction of flood damage as discussed in the above item (a), though the methodology to calculate such benefits is not established yet.

(c) Defense Budget to Protect the Territory

Flood is a kind of enemy which attacks and destroys life in a territory, and flood control facilities are a kind of defense facilities for the territory. In this sense, the budget for flood damage protection is regarded as a kind of national defense budget. Therefore, the budget for flood control projects should be arranged considering the above situation.

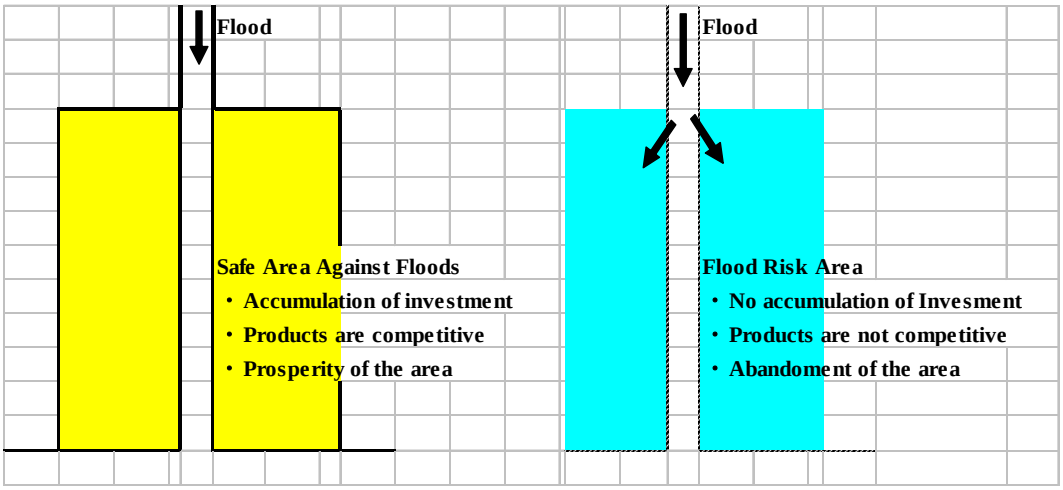


Figure R 3.6 Diagrammatic Illustration of Benefit of Flood Control Projects

CHAPTER 4 IMPROVEMENT WITH NEW APPROACH THROUGH INTRODUCTION OF SECTOR LOAN

4.1 Necessity of the Sector Loan Project

4.1.1 Necessity of Disaster Risk Management Verified from the National Policy

As mentioned in the background of the Study and previous sections, it is essential to alleviate damages caused by natural disasters, especially by floods, which result in one of the major causes of poverty and also hamper socio-economic development of the country. To this end, the GOP gives high priority on disaster risk management and has been making every effort to cope with the flood problems as verified from the national development policy (MTPDP).

4.1.2 Necessity of Application of the Sector Loan

In the previous study known as "The Nationwide Flood Risk Assessment Study," 58 river basins have been selected and arranged in the order of priority as objective river basins for flood control projects to be implemented during the period of 26 years from 2009 and 2034. However, the prioritized river basins with middle level priorities have to wait for a long time to receive funding for project implementation, while the stakeholders also desire implementation of flood protection measures in even such middle level priority river basins believing that flood disasters will occur in all river basins.

Under the circumstances, the implementation of flood control projects in many river basins is considered not for the whole river basin but only for the selected core areas, which are scattered in several middle level priority river basins. In this sense, a Sector Loan is necessary to cover many river basins as a package but for the protection of only the core areas in the basins.

4.2 General Framework for the Sector Loan

The framework of the Sector Loan is presented in the subsections below based on the informative discussions in some levels, such as the TWG and SC or joint meetings.

4.2.1 Target Issues to be improved and Direction to Improvement

As the target issues to be improved, those discussed in Chapter 3 are nominated as shown below, and direction to improvement for these issues is also shown in **Table R 4.1** (refer to attached **Table 4.1 and Figure 4.1**):

Table R 4.1 Target Issues to be improved by Sector Loan

Item	Contents	Direction to Improve
Core Issue	Limited Capacity of Integrated Flood Management	Enough Capacity of Integrated Flood Management
Direct Cause	Limited Performance of Structural Measures/Poor Achievement of Project Target	Enough Performance of Structural Measures/Full Achievement of Project Target
	Limited Development of Non-structural Measures	Enough Development of Non-structural Measures
	Insufficient Institutional Capacity	Sufficient Institutional Capacity
Secondary Cause	Limited Performance of Structural Measures/Poor Achievement of Project Target	Enough Performance of Structural Measures/Poor Achievement of Project Target
	Improper Planning	Proper Planning
	Insufficient budget for counter and O&M	Sufficient budget for counter and O&M
	Unclear mandates of DPWH and LGUs	Clear mandates of DPWH and LGUs
	Improper process of civil works (such as approval of variation order)	Proper process of civil works (such as approval of variation order)
	Improper resettlement planning and measures	Proper resettlement planning and measures
	Limited coordination with other sectors and key stakeholders	Enough coordination with other sectors and key stakeholders
	Limited contribution to poverty reduction	Enough contribution to poverty reduction
	Limited Development of Non-structural Measures	Enough Development of Non-structural Measures
	Insufficient capacity of LGUs	Sufficient capacity of LGUs
	Insufficient supporting mechanisms of DPWH to LGUs	Sufficient supporting mechanisms of DPWH to LGUs
	Insufficient Institutional Capacity	Sufficient Institutional Capacity
	Insufficient staffing and organizational arrangement of the headquarters and local offices of DPWH	Sufficient staffing and organizational arrangement of the headquarters and local offices of DPWH
	Insufficient legal arrangement (such as water code)	Sufficient legal arrangement (such as water code)
	Insufficient governance (coordination among stakeholders, an participation of communities and LGUs	Sufficient governance (coordination among stakeholders, an participation of communities and LGUs
Fundamental Cause	Lack of Recognition of Necessity of Flood Control Projects and Poor Governance	Enough Recognition of Necessity of Flood Control Project and Good Governance

As mentioned in the above table, the direction of improvement for the core issue "limited capacity of integrated flood management" is "enough capacity of integrated flood management," which can be achieved through improvement of the fundamental cause of "lack of recognition of necessity of flood control projects and poor governance" and several secondary causes and then three direct causes of "limited performance of structural measures/poor achievement of project target," "limited development of nonstructural measures" and "insufficient institutional capacity."

It may take a long time to improve these causes, some of which will be undertaken in the long term strategy, while the other causes must be settled immediately. In the sector loan, actions will be taken toward improvement of these causes through introduction of tools as discussed hereafter.

4.2.2 Basic Technical Approach to the Sector Loan

As described in Section 3.2 to 3.5 in the previous chapter, the current approach to flood control mitigation have caused several issues on project implementation, including financial preparation and operation and maintenance activities. The previous approach and process are as follows:

(1) The Previous Approach and Process

- Master plan is formulated covering the whole river basin and feasibility study is conducted for urgent project components.
- The river improvement, which is one of the most fundamental flood control measures commonly applied for flood control project, is initiated from river mouth and proceeds to upstream until the major target areas for urgent project component.

- In principle, structural measures are applied for major project components, while nonstructural measures are recommended to be introduced by the local side.

In this connection, the Sector Loan has been conceived and proposed containing new approaches described in e Section 3.5 in terms of legal systems, cooperation methods among stakeholders and techniques of project implementation. Thus, in the Sector Loan, the following technical approach is applied:

(2) New Approach to the Sector Loan

- Feasibility study is conducted for core areas, which are selected based on the previous master plans.
- Flood control project by structural measures is implemented for protection of the core areas.
- Nonstructural measures as well as structural measures are required to be put into implementation to alleviate the flood damage in the core areas and also the other areas except core areas.

4.2.3 Basic Tools utilized for Improvement

For improvement of the above issues, introduction of the following tools are considered:

- Introduction of Sector Loan with Cooperative Agreement (commitment by Philippines side);
- Allocation of Disaster Rehabilitation Fund; and
- Introduction of Technical Assistance Program.

In principle, improvement of the previous issues on disaster risk management will be promoted through the implementation for flood control projects (sub-projects) utilizing these tools, such as realization of cooperative agreement, the operation of DRF and the activities on T/As. The relation between sub-projects and these tools may be broadly expressed as follows:

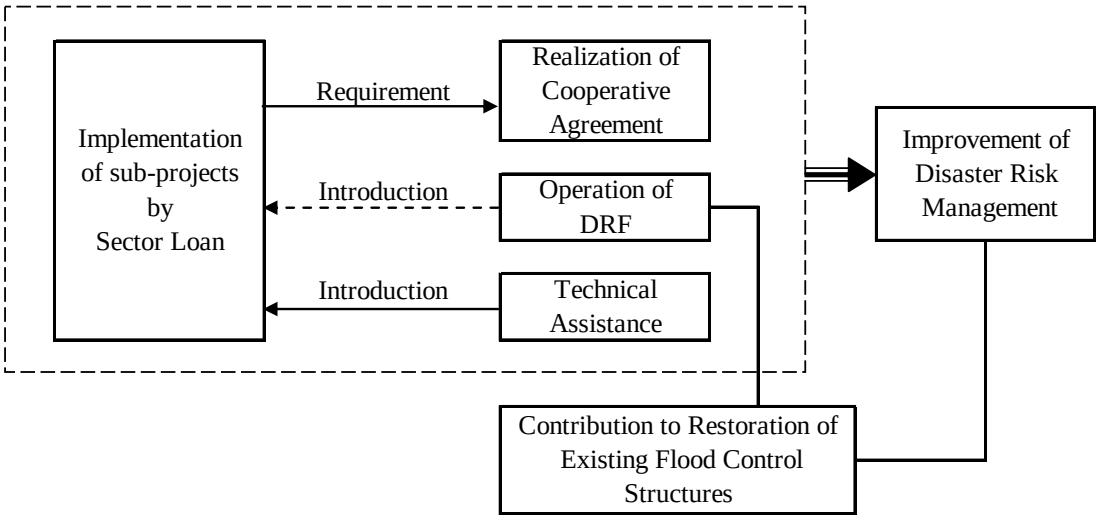


Figure R 4.1 Relation between Implementation of Sub-Projects and Tools for Improvement on DRM

Among these tools, realization of cooperative agreement and technical assistance are directly related to implementation of sub-projects, and improvement of disaster risk management can be

achieved through implementation of sub-projects and, further, through implementation of other flood control projects in the future.

On the other hand, operation of DRF will mainly contribute to the restoration of existing structures provided by previous flood control projects, but may partially or indirectly relate to implementation of sub-projects and through continuation of the system of DRF, the tool will contribute improvement of disaster risk management.

Detailed contents of these tools are discussed in the following sections (refer to **Figure 4.1**).

4.2.4 Expected Investment Amount, Phasing of Sector Loan and ICC Process

(1) Expected Investment Amount

In principle, the amount of the Sector Loan has been finalized through the identification of sub-projects to be covered by the loan. The provisional amount, which is around 200 million US dollars (including the "Disaster Rehabilitation Fund"), was implied in the meeting between DPWH and the JICA Study Team in the presence of the JICA Advisory Team on March 6, 2009.

(2) Phasing of Sector Loan

In the same meeting, the following conditions were also implied:

- The sector loan is to be disbursed for three batches of projects.
- The number of river basins included in one batch is around three.
- The river basins covered in the first batch are those where F/S was conducted in this Preparatory Study.

(3) ICC Process

For project implementation in the Philippines, it is required to receive approval of the NEDA-ICC board (Investment Coordination Committee) through presentation of necessary documents related to the project. Through the discussion among the agencies concerned (NEDA, DPWH and JICA), the umbrella type of ICC is, in principle, acceptable for the ICC approval in the following manner:

- For the first batch, completed Feasibility Studies (F/S) are necessary.
- For the second and third batches selected from short-listed projects, only project features with preliminary project cost and indicative economic analysis are required considering that these will be subjected to ICC evaluation after the completion of the respective F/S.
- Reprioritization among short-listed projects may be possible for as long as the same is justified.

The image of the framework is shown in **Figure R 4.2** below.

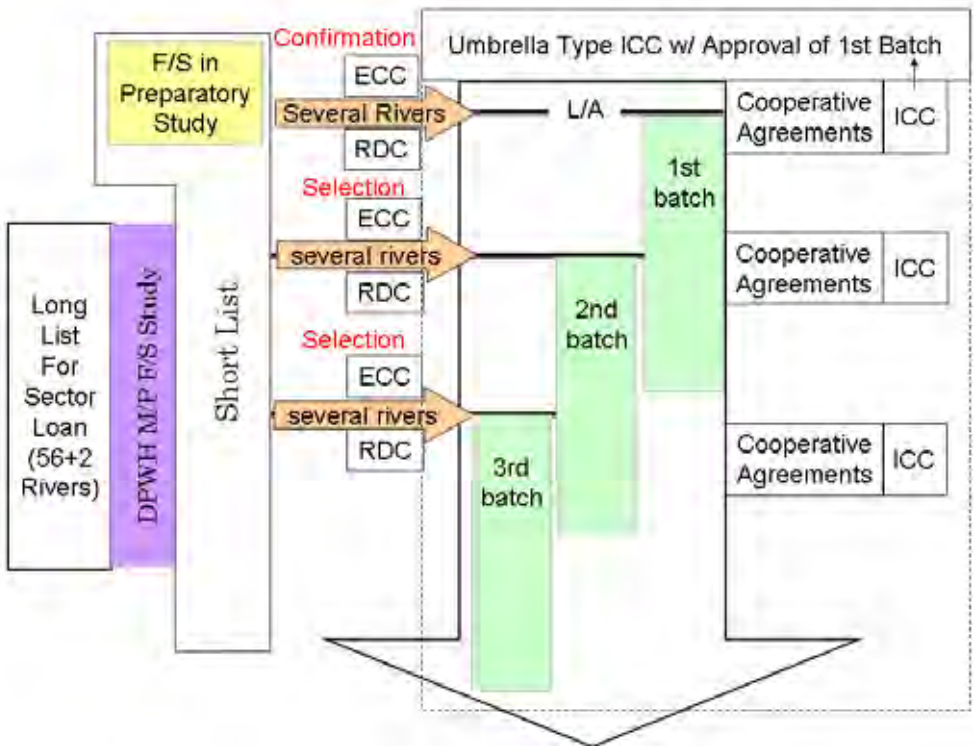


Figure R 4.2 Image of Framework of the Sector Loan Project

4.3 Introduction of Sector Loan with Cooperative Agreement

4.3.1 Conceivable Cooperative Agreement to Improve the Issues

In principle, improvement of the issues on disaster management will be promoted through implementation of a flood control project applying the sector loan. In this connection, it is necessary for the Philippine side to shoulder the role for realization to improve the issues previously pointed out. Judging from the previous issues pointed out and direction for improvement the following items should be included in the cooperative agreement subject to the continued discussions between JICA and DPWH with agencies concerned related to the detailed items of cooperative agreement and their stages/timings till loan appraisal:

- Strengthening of DPWH capacity (PS, FCSEC and Local Offices)
- Strengthening of Management System for DRF, QRF and GAA
- Development of Nonstructural Measures (DPWH's Supporting Mechanism to LGUs)
- River Basin Governance including Establishment of Project Process (Participatory Planning and Resettlement Planning ICP, River Basin Forum, involving LGUs and Communities in all Project Cycle), and Coordination with LGUs and other Organizations in a manner of MOA for O&M, River Basin Management and Environmental Improvement

The relation between the directions to improve mentioned earlier and the conceivable cooperative agreement is as illustrated in the following figure:

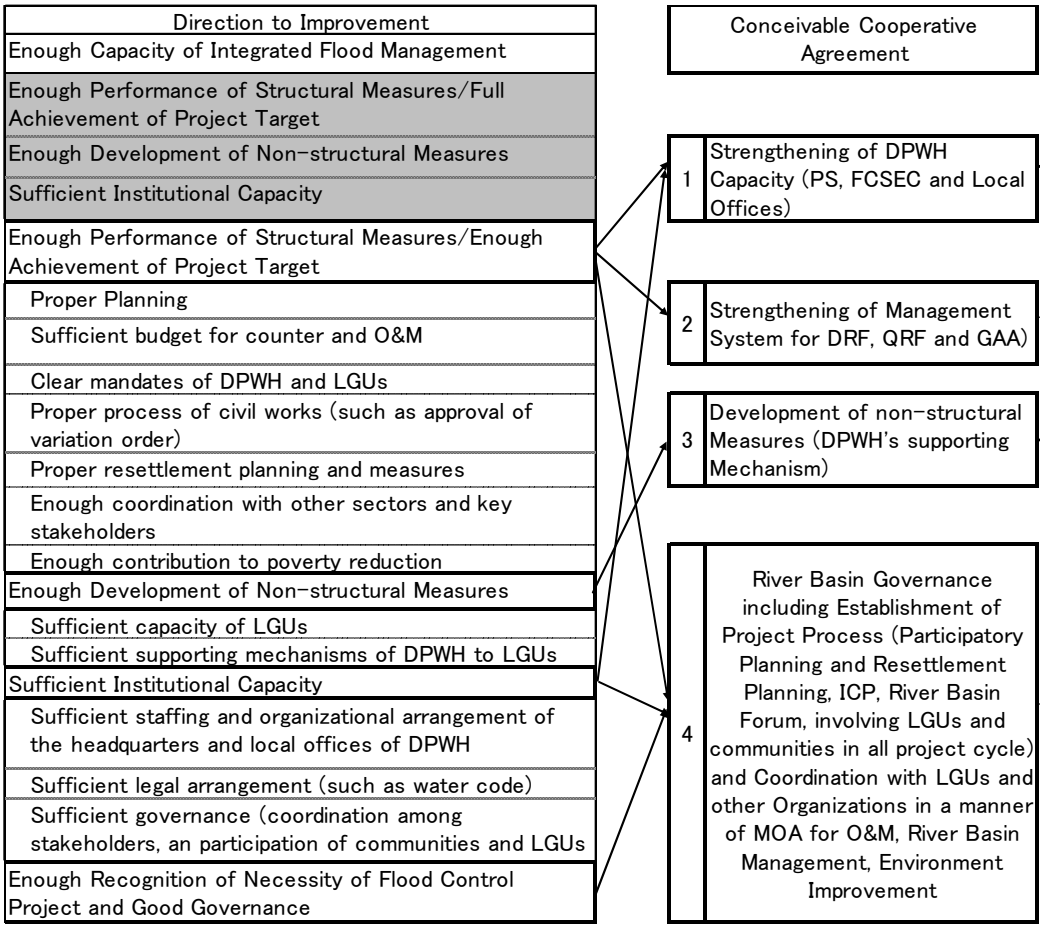


Figure R 4.3 The Relation between the Direction to Improve and Conceivable Cooperative Agreement

4.3.2 Strengthening of DPWH Capacity (PS, FCSEC and Local Offices)

(1) Major Issues on DPWH with regard to Disaster Risk management

As discussed in Chapter 3, DPWH holds the following major institutional issues to pursue flood control projects as the responsible agency:

- Insufficient capacity for disaster risk management as well as river basin governance in human resources and equipment; and
- Insufficient budget for implementation of flood control projects.

(2) Administrative Arrangement of DPWH for Disaster Risk Management

As the response of DPWH to the above strategy, actions toward improvement of flood management have been taken in the following manner:

- Establishment of a new organization for Disaster Risk Management; and
- Proposal of Organization for Management of Sector Loan Project including setup of Institutional Capacity Development (ICD) Team.

(a) Establishment of New Organization for Disaster Risk Management in DPWH

In DPWH, a "Disaster and Risk Management Team" was established in January 2009 with the following organizational structure in the central government level:

Organizational Structure for Risk Management Team

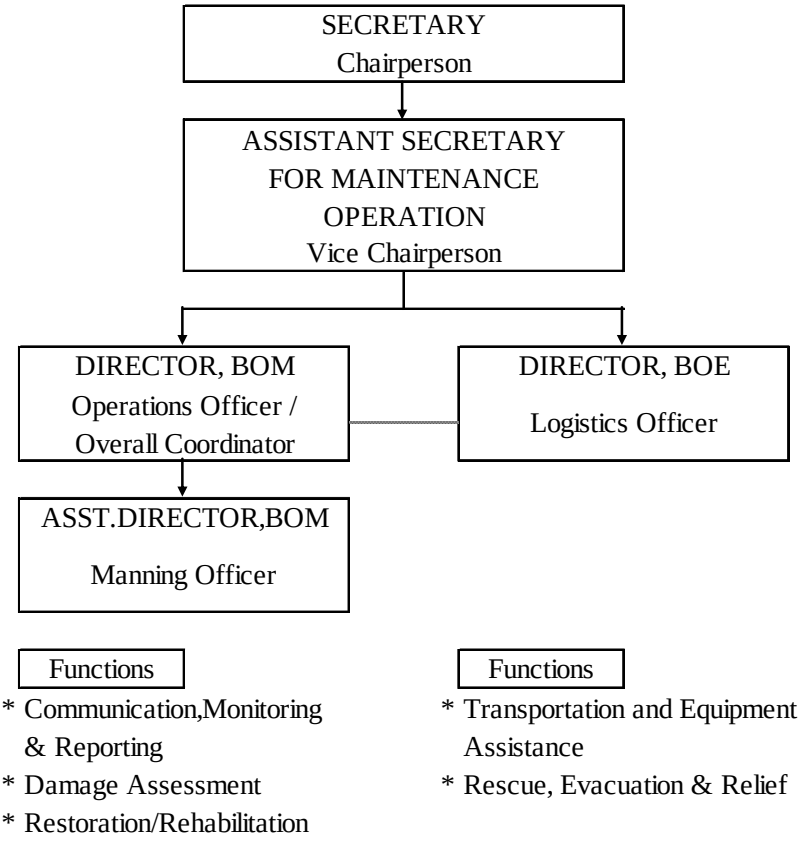


Figure R 4.4 Organizational Structure of DPWH Disaster and Risk Management Team (National Level)

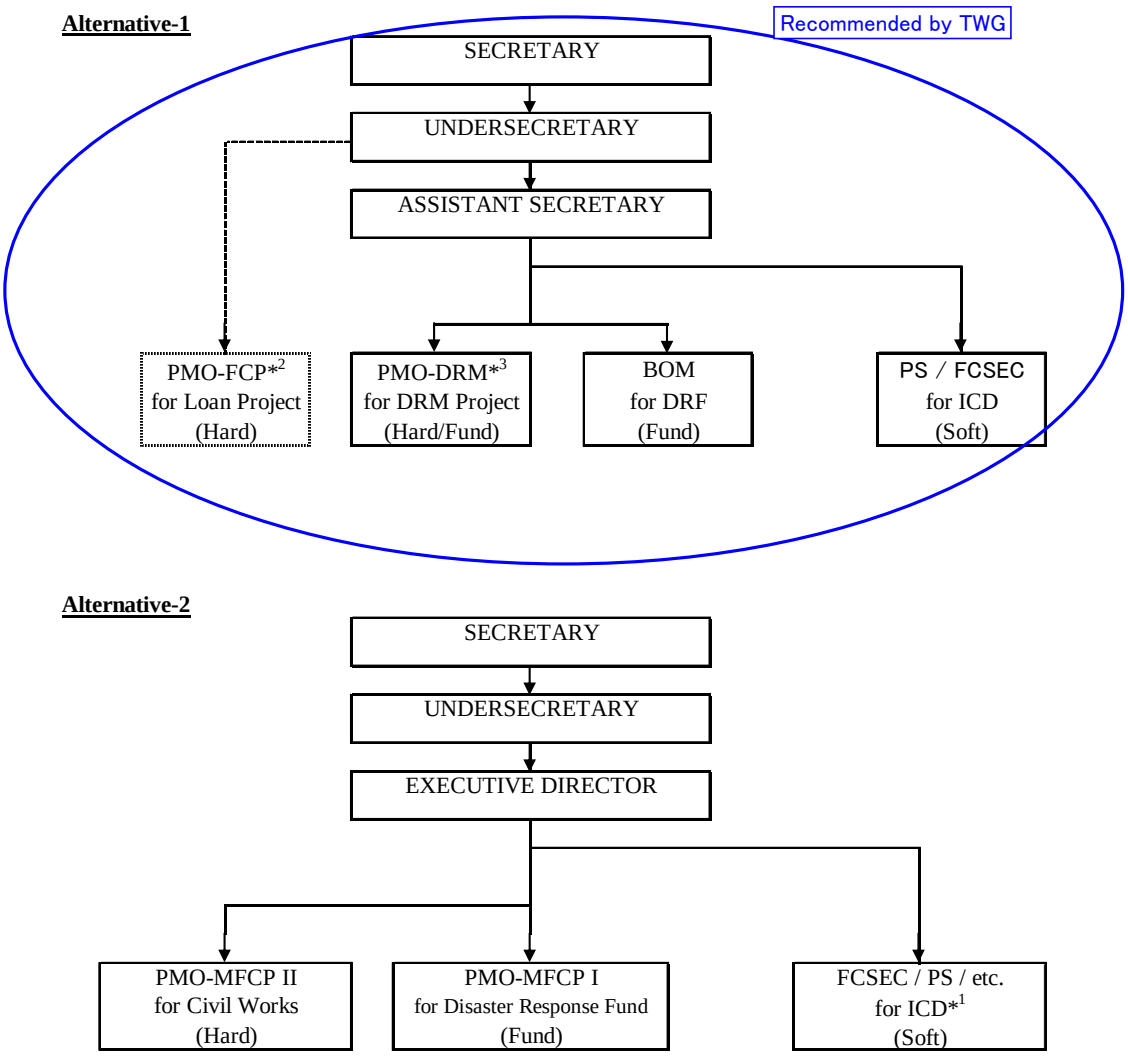
Likewise, in the regional and district engineering offices, similar organizations have been setup.

These organizations, in principle, cover every kind of natural disaster which includes those unplanned events that occur as a result of natural processes such as earthquakes, tornadoes, tsunami, typhoon, fires, extreme heat, draught, or insect infestation.

(b) Proposed Organization for Management of Sector Loan Project including Setup of Institutional Capacity Development (ICD) Team

For management of the sector loan project, it may be necessary to setup a new organization similar to the existing Disaster and Risk Management Team. As for the new organization including setup of the institutional capacity development (ICD) team, two alternatives are proposed to manage (1) the DRF; (2) the implementation of sub-projects (hard component); and (3) the institutional capacity development (soft component) as shown in the figure below.

The major difference of these two alternatives is the office which should manage the DRF among the PMO-MFCPs and BOM. Through the series of discussions among the members of the TWG for this study, Alternative-2 was proposed because of the advantage that BOM currently handles a fund similar to DRF like the quick response fund (QRF) for restoration of damaged flood control works (refer to Subsection 4.4, Disaster Rehabilitation Fund). The adequacy of this organization has been approved, in principle, in the Steering Committee Meeting.



Note : *1 : ICD: Team/Task Force for Institutional Capacity Development; including preparation of manual for DRF, Supprt Activities (Research & Provision of Standard) and cooperative activities in association with other Bureaus, such as BOM and BOD
*2 : FCP: Flood Control Projects
Individual Yen Flood Control Project
*3 : DRM: Management of River Improvement Work in Sector Loan on Disaster Risk Management

Figure R 4.5 Conceived DPWH Structural Organization to Manage the Sector Loan Project and Flood Control

(3) Further Strengthening of DPWH in terms of Flood Control as Necessary Cooperative Arrangement to improve the Issues

(a) Strategy for DPWH's Institutional Improvement in Flood Management as well as River Basin Governance

As discussed above, DPWH has been making efforts to strengthen its flood management capacity. However, in order to improve the aforementioned issues, it is necessary to further strengthen the capacity for planning of flood control projects. In this connection, the following points should be clarified as the strategy of DPWH both in the headquarters and local offices (regional offices and district engineering offices):

- In the DPWH headquarters, an ICD team should be setup for the strengthening of flood management and formulation of strategy toward the improvement of institutional capacity in flood management as well as river basin governance.
- Then, action toward the improvement in accordance with the strategy should be initiated.
- In DPWH local offices such as regional offices and district engineering offices, a strategy should also be formulated toward the improvement of institutional capacity in flood management as well as river basin governance.
- The strategy should include the nomination of person-in-charge and clarification of budgetary allocation for flood management.
- In the DPWH headquarters, the program for permanency of FCSEC and ICD should be clarified.

(b) Conceivable Process to Further Strengthening

In general, it is conceived that the following process will be taken to realize the above strengthening of DPWH:

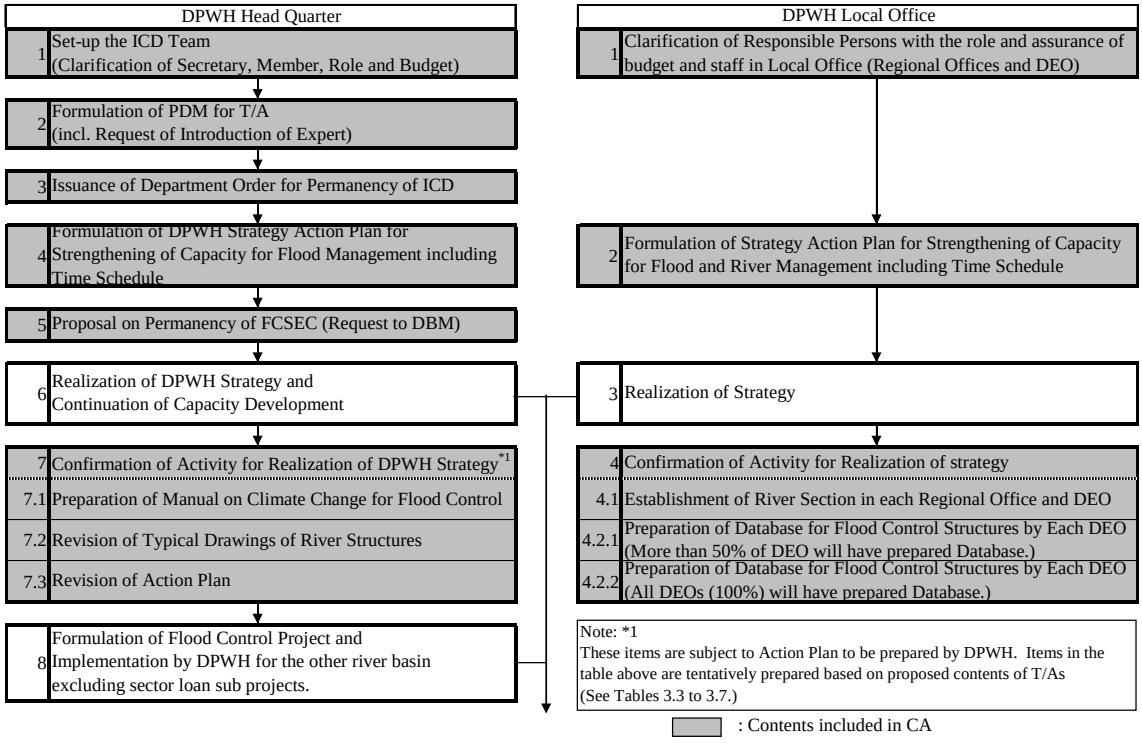


Figure R 4.6 Process to Realize the Strengthening of DPWH

(c) Cooperative Agreement

In the above process, the following items, together with the proper timing, should be assured to apply the sector loan as the minimum requirement in the cooperative agreement:

- Setup of ICD including roles and members
- DPWH strategy and action plan for strengthening of capacity for flood management
- Program of permanency of FCSEC and ICD
- Preparation and Revision of Necessary Manuals and Drawings, Completion of Database of Flood Control Structures by All DEOs and Revision of strategy and action plan as needed

Among these items, it is considered that the DPWH strategy should be prepared before the L/A together with the strategy of permanency of FCSEC, and It is required to revise the vision and strategy of action plan as needed. In this connection, the timing for realization of the above items is as shown in the Table below.

Table R 4.2 Schedule of Strengthening of DPWH

Direction to Improvement through introduction of Cooperative Agreement	Major Actions	Relatded Agency	Contents of Actions	Expected Schedule for Application of Loan and Realization of Major Actions: Preparation for Loan / D/D and Implementation of Sub-project for First Batch / Preparation for ICC for Second Batch / D/D and Implementation of Sub-project for Second Batch / Preparation for ICC for Third Batch / D/D and Implementation of Sub-project for Third Batch
				Preparation of Umbrella ICC document and Submittal to NEDA; ICC-TB; A/M; L/A; ICC-CC and Board; Selection of objective River Basin for Second Batch and Submittal of ICC Doc. To NEDA; ICC-TB, CC & Board; JICA concu-rrence; Selection of objective River Basin for Third Batch and Submittal of ICC Doc. to NEDA; ICC-TB, CC & Board; JICA concu-rrence; Completion of D/D for Third Batch; Commencement of Construction for Second Batch; Commencement of Construction for Third Batch; Completion of Construction for First Batch; Completion of Construction for Second Batch; Completion of Construction for Third Batch
Strengthening of DPWH Capacity (PS, FCSEC and Local Offices)		PS, FCSEC	1. ICD Set up (Member, role, budget)	◎
			2. Formulation of PDM for T/A	◎
			3. Issuance of Department Order for Permanency of ICD	◎
			4. Formulation of DPWH Strategy Action Plan for Strengthening of Capacity for Flood Management including Time Schedule	◎
			5. Proposal on Permanency of FCSEC	◎
			6. Realization of DPWH Strategy	---
			7. Confirmation of Activities for Realaization of DPWH Strategy	
			7.1 Preparation of Manual on Climate Change for Flood Control	◎
			7.2 Revision of Typical Drawings of River Structures	◎
			7.3 Revision of Action Plan	◎
			8. Formulation of Flood Control Project and Implementation by DPWH for the other river basins excluding sub-project	---
		Local Offices	1. Clarification of Responsible Persons with the role/resnponsibility and assurance of budget and staff in Local Office (ROs and DEO)	◎
			2. Formulation of Strategy Action Plan for Strengthening of Capacity for Flood Management including Time Schedule	◎
			3. Realization of strategy	---
			4. Confirmation of Activities for Realaization of DPWH Strategy	
			4.1 Establishment of River Section in each Regional Office	◎
			4.2.1 Preparation of Database for Flood Control Structures by Each DEO (More than 50% of DEO will have prepared Database.)	◎
			4.2.2 Preparation of Database for Flood Control Structures by Each DEO (All DEOs (100%) will have prepared Database.)	◎

Note: ◎ : Timing of realization of Cooperative Agreement

In this connection, the contents of cooperative agreement together with the timing of realization are summarized in the following table:

Table R 4.3 Contents of Cooperative Agreement and Timing of Realization related to Strengthening of DPWH Capacity

Contents of C/A	Agencies Responsible	Timing for Realization
1. ICD Set up (Clarification of Secretary, Member, Role and Budget)	DPWH H.Q.	by preparation of ICC Doc.
2. Formulation of PDM for T/A (incl. Request of Introduction of Expert)		by preparation of ICC Doc.
3. Issuance of Department Order for Permanency of ICD		by Appraisal
4. Formulation of DPWH Strategy Action Plan for Strengthening of Capacity for Flood Management including Time Schedule		by Appraisal
5. Proposal on Permanency of FCSEC (Request to DBM)		by L/A
6. Confirmation of Activity for Realization of DPWH Strategy		*1
6.1 Preparation of Manual on Climate Change for Flood Control		by JICA Concurrence at the Commencement of D/D for the Second Batch
6.2 Revision of Typical Drawings of River Structures		by JICA Concurrence at the Commencement of D/D for the Second Batch
6.3 Revision of Action Plan		by JICA Concurrence at the Commencement of D/D for the Third Batch
1. Clarification of Responsible Persons with the role/responsibilities and assurance of budget and staff in Local Office (Regional Offices and DEO)	DPWH. Local Offices	by Appraisal
2. Formulation of Strategy Action Plan for Strengthening of Capacity for Flood and River Management including Time Schedule		by Appraisal
3. Confirmation of Activity for Realization of strategy		
3.1 Establishment of River Section in each Regional Office and DEO		by JICA Concurrence at the Commencement of D/D for the Second Batch
3.2.1 Preparation of Database for Flood Control Structures by Each DEO (More than 50% of DEO will have prepared Database.)		by JICA Concurrence at the Commencement of Construction for the Second Batch
3.2.2 Preparation of Database for Flood Control Structures by Each DEO (All DEOs (100%) will have prepared Database)		by JICA Concurrence at the Commencement of Construction for the Third Batch

(Refer to Table 4.13 and 4.14)

Note: *1: These items are subject to Action Plan to be prepared by DPWH. Items in the table above are tentatively prepared based on proposed contents of T/As (See Tables 4.8 to 4.12.)

4.3.3 Strengthening of Management System for DRF, QRF and GAA

(1) Necessity of Strengthening of Current System for Management of DRF

As discussed in Subsection 4.2.3, introduction of a Disaster Rehabilitation Fund (DRF) allocating a part of the sector loan is proposed. The purpose of the fund is to improve such situation that damaged flood control facilities remain as mal-functional facilities without restoration works due to shortage of budget for the works. For utilization of this fund, it is necessary to strengthen the current system for management of DRF through setting up of the Institutional Capacity Development (ICD) Team or task force, to maximize the effectiveness of use of the fund.

As for the contents of the fund, the details are given in Section 4.4.

(2) Basic Role and Function of ICD in managing DRF, QRF and GAA

For the management of DRF, QRF and GAA, the ICD should have the following roles and functions to effectively use the fund:

- To prepare the guideline for utilization of the fund;
- To manage and release the fund when the necessity of utilization is identified;
- To evaluate and monitor the utilization of the fund; and
- To revise the guideline, when necessary.

(3) Conceivable Process to Strengthen the Management System for DRF, QRF and GAA

For strengthening the current system for management of DRF, QRF and GAA, the following process is conceived:

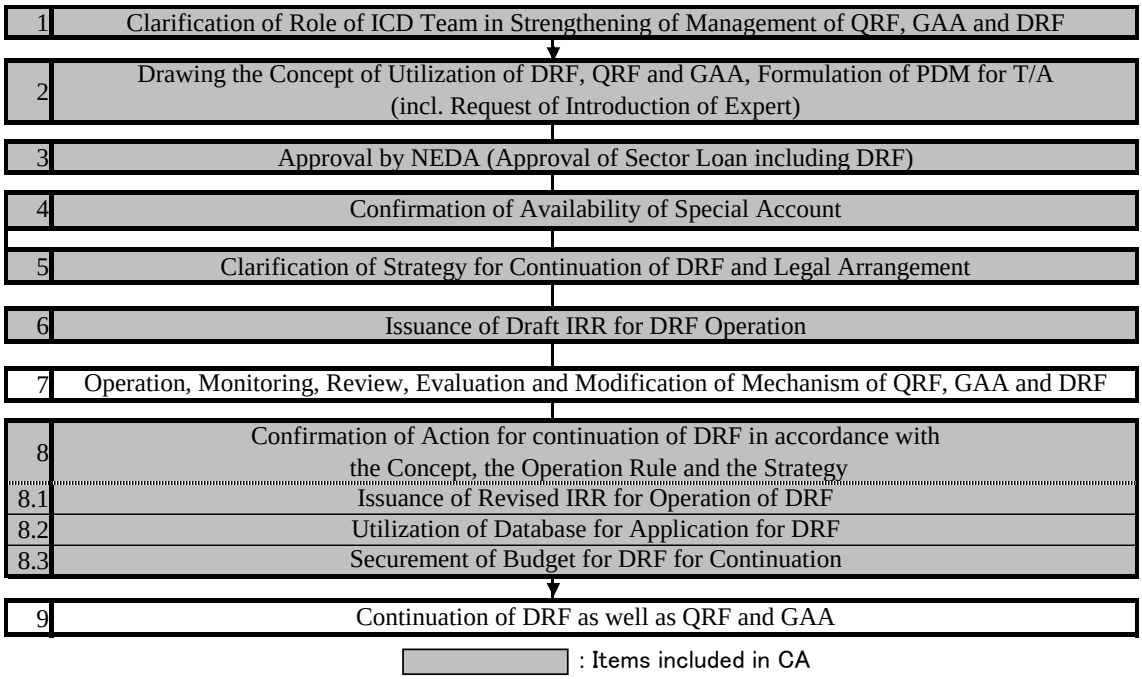


Figure R 4.7 Process to Strengthen the Management System for QRF and GAA including DRF

(4) Cooperative Agreement to Strengthen the Management System for DRF, QRF and GAA

In the above process, it is necessary to confirm the following items in cooperative agreement:

- Clarification of Role of ICD Team in Strengthening Management of QRF, GAA and DRF;
- Setup of Mechanism and preparation of Guideline for Operation of QRF, GAA and DRF;
- Drawing the Concept and Plot of Utilization of DRF, QRF and GAA and Formulation of PDM for T/A (Technical Assistance);
- Approval by NEDA;
- Preparation of Special Account;
- Clarification of Strategy for Continuation of DRF and Legal Arrangement; and
- Confirmation of Action for continuation of DRF in accordance with the strategy.

Among these items, the following points are to be carefully monitored:

- Drawing of concept and plot of utilization of DRF, QRF and GAA and formulation of PDM for T/A.
- Clarification of Strategy for Continuation of DRF and Legal Arrangement.
- Confirmation of Action for continuation of DRF in accordance with the strategy.

(a) Drawing of concept and Plot of Utilization of DRF, QRF and GAA and Formulation of PDM for T/A.

Through analysis of issues on the current operation system for QRF and GAA, it is necessary to draw the concept and plot the utilization of DRF as well as QRF and GAA to improve the issues in the current operation system. Then, T/A programs should be arranged to fulfill such requirement (refer to Section 4.4 and 4.5).

(b) Clarification of Strategy for Continuation of DRF and Legal Arrangement

As mentioned earlier, a certain amount of the fund for DRF shall be arranged in this sector loan. However, it is expected to consume such amount within a certain period and it is essential to continue the system of DRF with financial arrangement by the Philippine Government. In this case, the following cases are conceived in principle:

- Setup of the fund by DPWH as the continuation of DRF; and
- Arrangement of of funds in the GAA for the purpose

According to information, legal arrangement may be required to setup the fund in DPWH in the former case, while in the latter case, the budget for a certain amount must be arranged every year, because such budget could not be carried over to the following fiscal year even if a certain amount would not be spent.

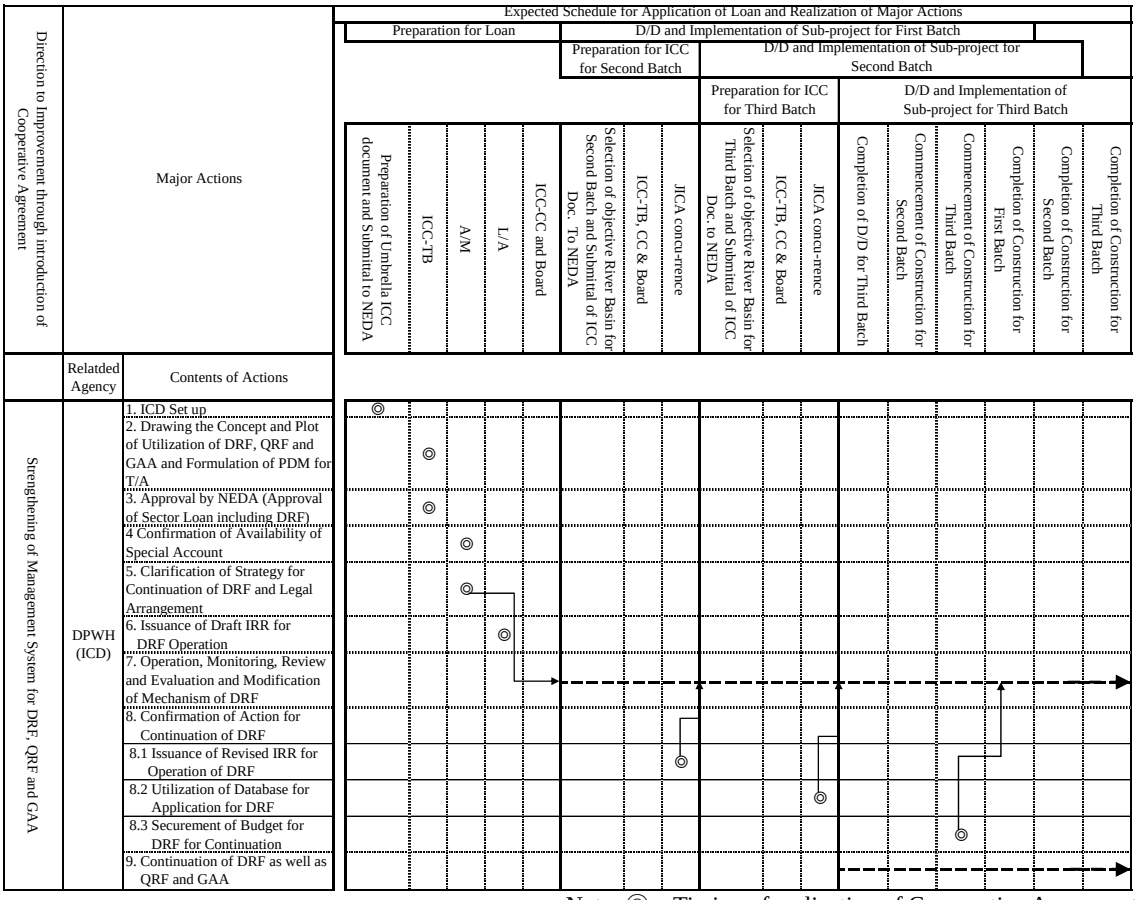
In this connection, it is necessary to clarify the strategy for continuation of the DRF by DPWH, whether which case will be taken.

(c) Confirmation of Action for Continuation of DRF in accordance with the Strategy

Furthermore, it is necessary to confirm the action for continuation of DRF in accordance with the strategy step by step in the process of implementation of sub-projects by sector loan; namely, progress of the action should be confirmed at the timing of release for the second and third batches.

The following table shows the contents of the cooperative agreement and timing of realization of such cooperative agreement:

Table R 4.4 Schedule of Strengthening of Management System for DRF, QRF and GAA



Note: ◎ : Timing of realization of Cooperative Agreement

In this connection, the contents of cooperative agreement with the timing of realization are summarized in the following table:

Table R 4.5 Contents of Cooperative Agreement and Timing of Realization related to Strengthening of Management System for DRF

Contents of C/A	Agencies Responsible	Timing for Realization
1. ICD Set up	DPWH-ICD	by preparation of ICC Doc.
2. Drawing the Concept and Plot of Utilization of DRF, QRF and GAA Formulation of PDM for T/A		by ICC-TB Approval
3 Approval by NEDA (Approval of Sector Loan incl. DRF)		by ICC-TB Approval
4. Confirmation of Availability of Special Account		by Appraisal
5. Clarification of Strategy for continuation of DRF and Legal Arrangement		by Appraisal
6. Issuance of Draft IRR for DRF Operation		by L/A
7. Confirmation of Action for continuation of DRF in accordance with the Concept, the Operation Rule and the Strategy		
7.1 Issuance of Revised IRR for Operation of DRF		by JICA Concurrence at the Commencement of D/D for the Second Batch
7.2 Utilization of Database for Application for DRF		by JICA Concurrence at the Commencement of D/D for the Third Batch
7.3 Securement of Budget for DRF for Continuation		by JICA Concurrence at the Commencement of Construction for the Third Batch

(Refer to Table 4.13 and 4.14)

4.3.4 Development of Nonstructural Measures (DPWH Supporting Mechanism to LGUs)

(1) Necessity of Introduction of Nonstructural Measures

As emphasized in the MTPDP (2005-2010), nonstructural measures are essential to strengthen the Philippine Disaster Management Capability under the philosophy that flooding cannot be completely controlled by human techniques. Furthermore, in case of sector loan, the concept of protection of core areas is applied, so that there will be several areas remaining without flood control facilities. Thus, nonstructural measures are indispensable to alleviate flood damage as one of the major components of sub-projects funded under the sector loan.

(2) The Responsibility of Introduction and Operation of Nonstructural Measures

According to the Local Government Code of 1991 (Sec.17), LGUs have the responsibility to deliver basic services including flood control facilities, which are intended primarily to service the needs of the municipality or province and funded out of municipality or province. In this context, it is regarded that LGUs also have the responsibility for introduction and operation of nonstructural measures.

(3) Current Operation Condition of Nonstructural Measures by LGUs

At present, there are a few examples on the introduction and operation of nonstructural measures by LGUs such as the case of Camiguin Island. In this island, nonstructural measures in a manner of preparation of hazard map, setup of monitoring system and communication system, preparation of guidelines and execution of evacuation drills have been introduced and under operation after the devastating disaster in November 2001 by Typhoon Nanang.

However, as discussed in Part II, "Feasibility Study," in this report, such nonstructural measures have not been introduced yet in the objective areas for feasibility study.

(4) Major Cause of Poor Operation Condition of Nonstructural Measures by LGUs

As the major causes of poor operation condition of nonstructural measures by LGUs, the following are pointed out:

- Poor recognition of the necessity of nonstructural measures of LGUs;
- Insufficient knowledge to introduce and operate the nonstructural measures; and
- Insufficient engineering staff and budget for development of nonstructural measures.

To improve the situation, it is essential for DPWH to setup a supporting mechanism for LGUs, which shall have enough knowledge, engineering staff and experience on the development of nonstructural measures. However, it also seems to be necessary to introduce assistance from overseas with the invitation of experts.

(5) Conceivable Process for Development of Nonstructural Measures

For realization of development of nonstructural measures by LGUs through the setup of supporting mechanism by DPWH, the following process for each objective river basin applied with sector loan is conceived:

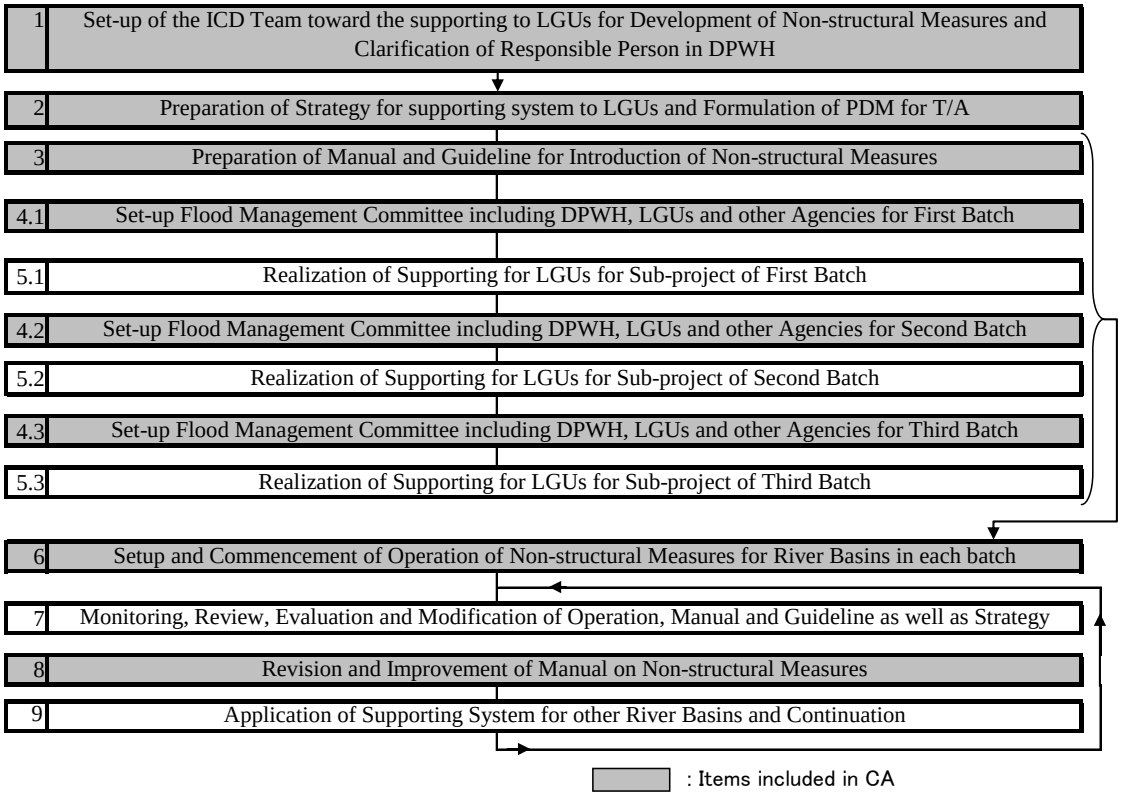


Figure R 4.8 Process for Development of Nonstructural Measures

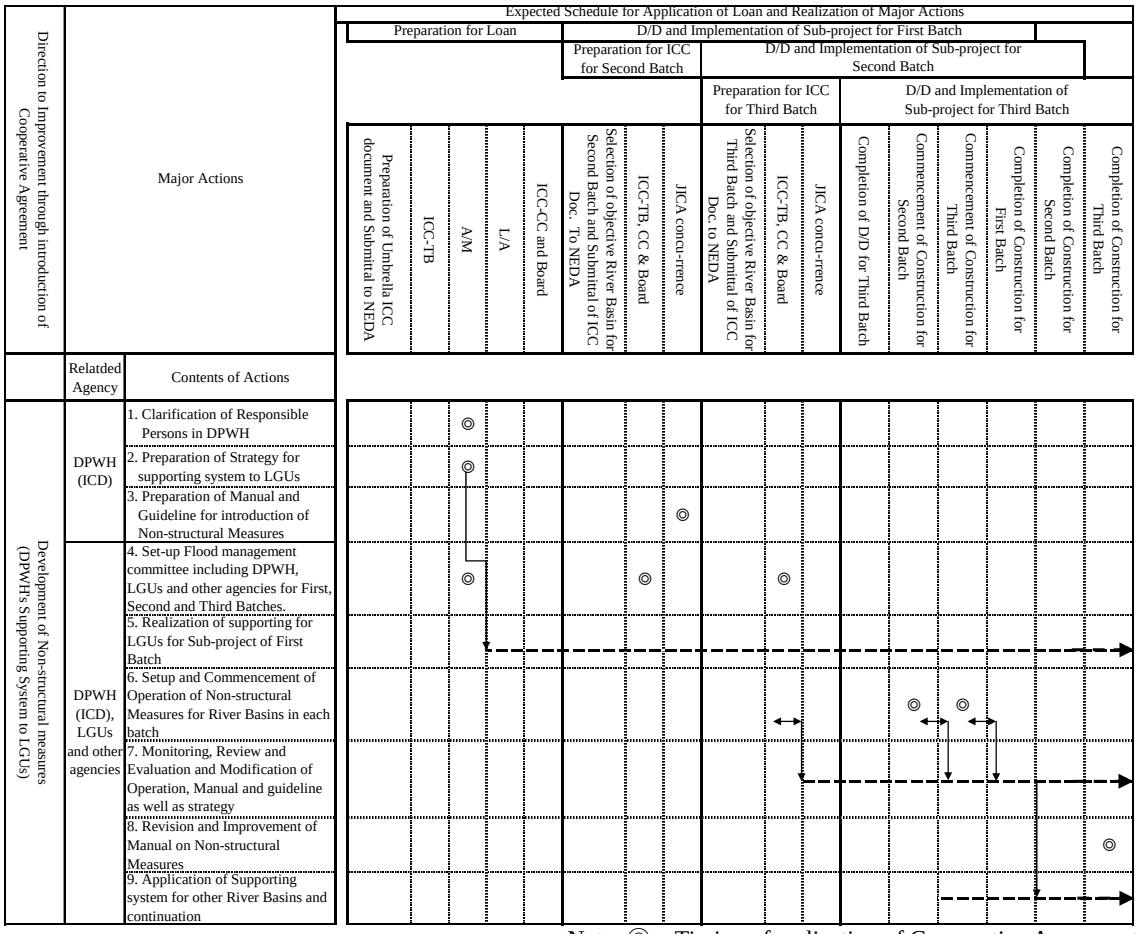
(6) Cooperative Agreement for Development of Nonstructural Measures (DPWH's Supporting System to LGUs)

Regarding the introduction and operation of nonstructural measures, it is considered to clarify the commitment in the cooperative agreement for release of sector loan. Although it is desirable to introduce nonstructural measures in parallel with the progress of feasibility study or before release of the sector loan, it may take time for the study and introduction of appropriate nonstructural measures. However, it is necessary, at least, to setup the Flood Management Committee to clarify the responsible organization to receive such support from DPWH for development of nonstructural measures before the conclusion of L/A.

In this connection, as shown in Figure R4.6, it is considered that the following items should be included in the cooperative agreement (refer to **Table R 4.6**):

- Setting-up of flood management committee for the objective river basins included in the first batch before conclusion of L/A; and
- Setting-up of flood management committees for the objective river basins for the approval of the second and third batches.
- Preparation of Manual and Guideline on Non-structural Measures prior to the commencement of construction works of First Batch.

Table R 4.6 Schedule of Development of Nonstructural Measures



Note: ◎ : Timing of realization of Cooperative Agreement

In this connection, the contents of cooperative agreement with the timing for realization are summarized in the following table:

Table R 4.7 Contents of Cooperative Agreement and Timing of Realization related to Development of Non-Structural Measures

Contents of C/A	Agencies Responsible	Timing for Realization
1. Clarification of Responsible Persons in DPWH	DPWH H.Q.	by Appraisal
2. Preparation of Strategy for supporting system to LGUs and Formulation of PDM for T/A		by Appraisal
3. Preparation of Manual and Guideline for introduction of Non-structural Measures		by JICA Concurrence at the Commencement of Construction for the First Batch
4. Set-up Flood management committee including DPWH, LGUs and other agencies for each Batch.	DPWH, LGUs and Other agencies	by Appraisal for First Batch
		by ICC-TB Approval for Second Batch
		by ICC-TB Approval for Third Batch
5. Setup and Commencement of Operation of Non-structural Measures for River Basins in each batch		Non-structural measures for First Batch will be operated for JICA Concurrence at the Commencement of Construction for the Second Batch
		Non-structural measures for Second Batch will be operated for JICA Concurrence at the Commencement of Construction for the Third Batch

(Refer to Table 4.13 and 4.14)

4.3.5 River Basin Governance including Establishment of Project Process (Participatory Planning and Resettlement Planning, ICP, River Basin Forum, involving LGUs, and Communities in all Project Cycle) and Coordination with LGUs and other Organizations in a manner of MOA for O&M, River Basin Management and Environmental Improvement

(1) Necessity of River Basin Governance

As pointed out in Chapter 3, one of the significant issues on the successful realization of "Integrated Flood Management" is the lack of capacity for river basin governance, which includes establishment of project process and coordination with LGUs and other organizations. Establishment of project process means involvement of participatory planning and resettlement planning, information campaign and publicity (ICP), and river basin forum involving LGUs and communities in all project cycle, while coordination with LGUs and other organization means arrangement of MOA for O&M, river basin management and environmental improvement.

The project will be choked up when the participatory planning, suitable resettlement planning, ICP and river basin forum are not arranged enough in all project cycle due to strong opposition from the affected people who regard their opinions for project as neglected. In this connection, it is necessary to establish a suitable project process including participatory planning and resettlement planning for smooth project promotion.

Table 4.15 shows the reference material for the establishment of project process, which covers major items undertaken in the project process from the M/P stage to O&M involving stakeholders.

(2) Concept of Participatory Planning and Resettlement Planning

(a) Concept of Participatory Planning

The concept of participatory planning is to create a platform for leaning rather than plunging directly into problem solving. The process is expected to enhance the following items:

- Identification of the felt needs of the people;
- Bringing forth consensus;
- The empowerment of local disadvantaged groups;
- Integration of local knowledge systems into project design;
- Two-way leaning process between the project and local people;
- Political commitment and support; and
- Accountability in local governance

The planning process introducing participatory planning will produce two sets of results as the salient features:

- In the short term, the tools of participatory planning will generate a two-way learning process, which will shape project interventions to local needs, opportunities and constrains.
- In the long term, this learning process will lead to local empowerment and effective support in the institutional level.

These are considered preconditions for strengthening both institutional capacities for central and local governments.

(b) Concept of Resettlement Planning

According to the Operational Directive of the World Bank Operational Manual (OD4.30), the following concept is raised as the resettlement one for the involuntary resettlement: "where displacement is unavoidable, resettlement plans should be developed. All involuntary resettlement should be conceived and executed as development programs, with resettlers provided sufficient investment resources and opportunities to share in project benefits. Displaced persons should be (i) compensated for their losses at full replacement cost prior to the actual move; (ii) assisted with the move and supported during the transition period in the resettlement site; and (iii) assisted in their efforts to improve their former living standard, income earning capacity, and production levels, or at least to restore them. Particular attention should be paid to the needs of the poorest groups to be resettled.

Under the above policy, resettlement planning is arranged as follows:

Where large-scale population displacement is unavoidable, a detailed resettlement plan, timetable, and budget are required. Resettlement plans should be built around a development strategy and package aimed at improving or at least restoring the economic base for those relocated. Experience indicates that cash compensation alone is normally inadequate. Voluntary settlement may form part of a resettlement plan, provided measures to address the special circumstances of involuntary resettles are included.

The content and level of detail of resettlement plans, which will vary with circumstances, especially the magnitude of resettlement, should normally include a statement of objectives and policies, an executive summary, and detailed provision for the following:

- Organizational responsibilities;
- Community participation and integration with host populations;
- Socio-economic survey;
- Legal framework;
- Alternative sites and selection;
- Valuation of and compensation for lost assets;
- Land tenure, acquisition, and transfer;
- Access to training, employment, and credit;
- Shelter, infrastructure, and social services;
- Environmental protection and management; and
- Implementation schedule, monitoring and evaluation.

(3) Examples of Good Governance through Promotion of ICP by LGU

In DPWH, ICP was introduced in the Detailed Design Stage of the Pasig-Marikina River Channel Improvement Project in November 2000, with the following background, objectives and schedule:

(a) Background

It was found while the Philippine Government is progressively embarking on a flood control program to minimize flood damage and loss of lives, that there is apparent insufficient awareness or understanding on the part of the people on the importance of flood control facilities. Construction of major flood control projects

is delayed because of difficulties encountered by the government in the acquisition of right-of-way for the resettlement of informal settlers.

While there are laws, ordinances, rules and regulations that prohibit illegal encroachment, enforcement of these regulations has not been very successful. Thus, to enlighten the people on the government's flood control activities, the DPWH set out to conduct an intensive information campaign and publicity for the Pasig-Marikina River Channel Improvement Project.

(b) Objectives

(i) General Objectives

The general objective of the ICP is to raise the level of awareness among the people about the project and flood disaster management and to solicit their support and assistance in order to attain an effective disaster management and environmental enhancement.

(ii) Specific Objectives

The ICP has the following specific objectives:

- To formulate and prepare a detailed action plan for a sustainable information campaign and publicity program;
- To gain public acceptance and support for the project; and
- To be able to establish an organization that would handle information campaign and publicity in line with the objective of raising public awareness and consciousness among the people, companies and LGUs towards human-related improvement.

(c) Schedule of Activities

The ICP was started with the following schedule:

Table R 4.8 Schedule of ICP for the Pasig-Marikina Project

Phase	Description	Schedule
I	Formulation of Plan	Oct.2000 – Apr.2001
II	Monitoring	May.2001 – Sep.2001
III	Conduct of Campaign/Publicity	Oct.2001 – Mar.2004

(d) Consequence and Effect of ICP

Actually, the ICP for the Pasig-Marikina River Improvement Project is still continuing, since the response of stakeholders is quite favorable. As the effect of ICP, most of the inhabitants along the river course became aware of the necessity and effectiveness of the project for their own benefit. Since project implementation has just been mobilized, the substantial effect of ICP could not be evaluated at the moment, but it is assured that the efforts of DPWH in project implementation have been fully recognized and understood. Therefore, it is expected that the project will be much more smoothly implemented compared to the previous and similar projects without ICP.

(4) Major Items of Coordination with LGUs and Other Organizations

In general, flood control projects involve several agencies and coordination with such agencies is indispensable for smooth promotion as well as implementation. As for the coordination with the related agencies, the following points are emphasized:

- River basin management
- Environmental improvement
- O&M and arrangement of MOA
- Others

(a) River Basin Management

In general, it is said that river basin management is an essential element to managing water resources as well as flood control, leading to long-term social, economic and environmental benefits. In addition, it is necessary to take a step-by-step process of managing water resources as well as flood control in a harmonious and environmentally sustainable way by gradually uniting stakeholders and involving them in planning and decision-making process, while accounting for evolving social demands due to such changes as population growth, rising demand for environmental conservation, changes in perspectives of the cultural and economic value of water and climate change.

In the Philippines, there are many water related agencies as discussed earlier, and coordination with these agencies is indispensable to achieve the successful flood management as well, since activities for flood management affect the activities for the river basin management undertaken by them.

(b) Environmental Improvement

A flood control project is conducted to improve the environmental condition of inhabitants in the flood prone areas, especially along the river course. On the other hand the structures applied as the flood control measures may disturb the natural environmental conditions. To promote the project smoothly, it is essential to coordinate related agencies from the environmental point of view.

(c) O&M and Arrangement of MOA

As pointed out in the previous reports, one of the significant issues on flood control projects is insufficient maintenance activities for measures provided, especially flood control structures. To improve the situation, a Memorandum of Agreement (MOA) for project implementation between the Central Government (DPWH) and LGUs was initiated after enforcement of the Local Government Code of 1991, since the responsibility for O&M of flood control facilities is to be turned over to the LGUs after the completion of project implementation.

As for the previously arranged MOA, the following issues are pointed out:

- No clear stipulation in legal arrangement for the responsibility;
- Insufficient consideration of river basin management and environmental improvement; and
- Insufficient budget for O&M and no fund source to cover the O&M works.

To facilitate project implementation, it is necessary to improve the provision in previous MOAs considering improvement of these points. In this connection, a sample MOA is arranged as shown in Annex-3 and further discussions should be made to prepare a more preferable MOA.

(5) Conceivable Process for Improvement of River Basin Governance

For improvement of River Basin Governance, the following process shall be taken:

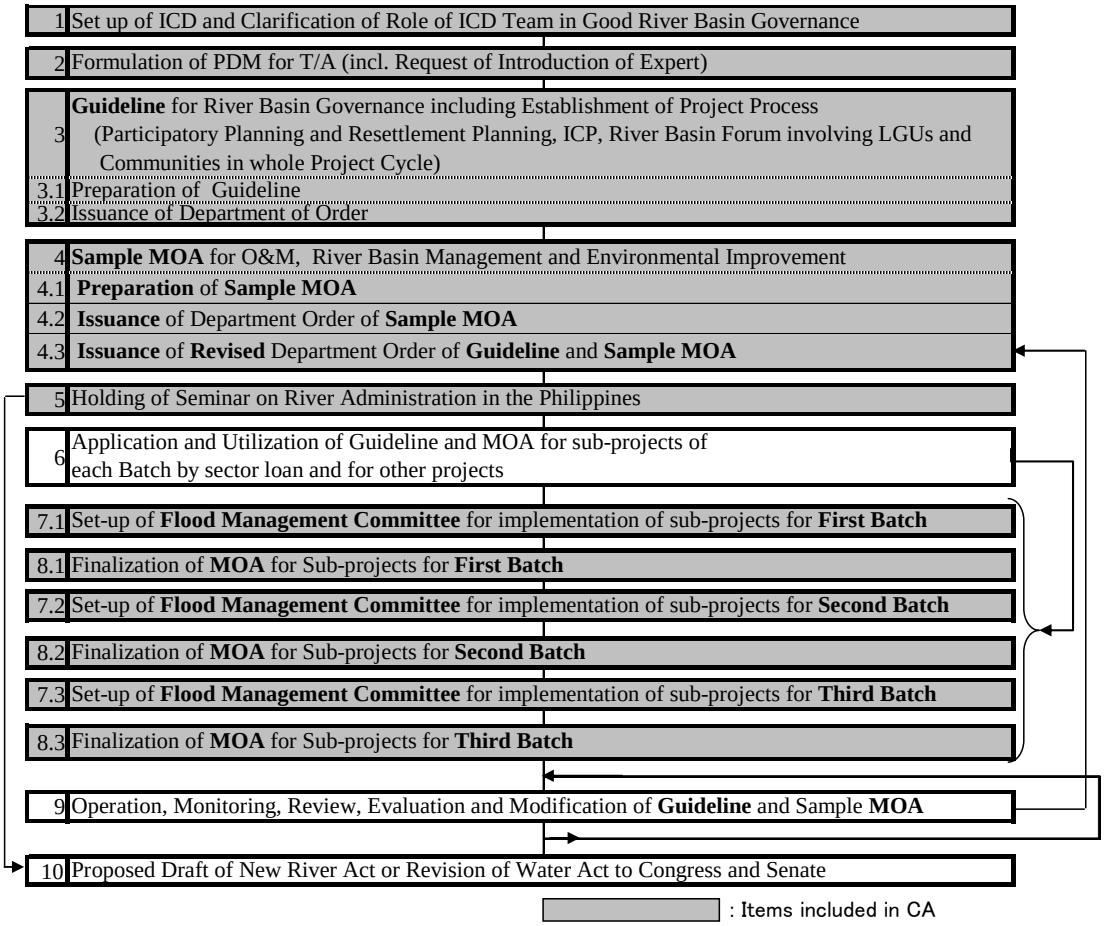


Figure R 4.9 Process for Improvement of River Basin Governance

(6) Cooperative Agreement for Improvement of River Basin Governance

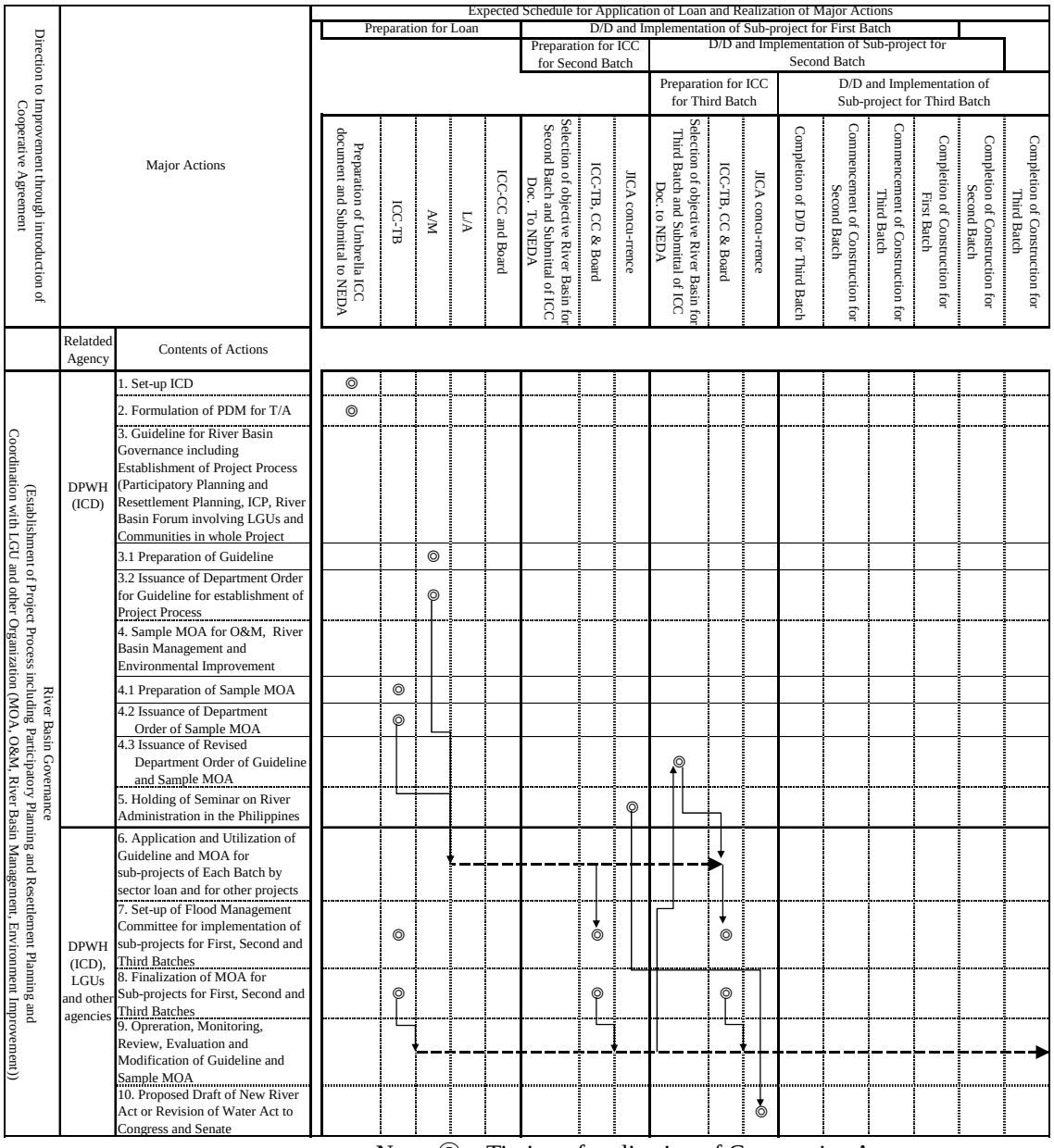
As for the processes for issues to be solved in items (1) to (4) aforementioned, it is desirable to initiate the activities for good river basin governance immediately. However, it may not be realistic to expect the realization of such activities within the limited time for application of the loan. Considering the current situation, it seems to be realistic, at least, to cover the steps shown in Figure R4.9 above.

Then, the following items should be included in the cooperative agreement (refer to **Table R 4.3** and **Table 4.14**):

- Setup of guideline for the Establishment of project process;
- Preparation of sample MOA; and
- Setup of Flood Management Committee for the sub-project river basins

- Revision of Sample MOA and Guideline for improvement; and
- Holding of Seminar on River Administration and Proposed Draft of New River Act or Revision of Water Act to Congress and Senate.

Table R 4.9 The Items to be included in Cooperative Agreement for Improvement of River Basin Governance



Note: ◎ : Timing of realization of Cooperative Agreement

In this connection, the contents of cooperative agreement including the timing of the realization are as summarized in the following table:

Table R 4.10 Contents of Cooperative Agreement and Timing of Realization related to River Basin Governance

Contents of C/A	Agencies Responsible	Timing for Realization
1. ICD Set up (Clarification of Secretary, Member, Role and Budget)	DPWH H.Q.	by preparation of ICC Doc.
2. Formulation of PDM for T/A		by preparation of ICC Doc.
3. Guideline for River Basin Governance including Establishment of Project Process (Participatory Planning and Resettlement Planning, ICP, River Basin Forum involving LGUs and Communities in whole Project Cycle)		
3.1 Preparation of Guideline		by Appraisal
3.2 Issuance of Department Order for Guideline for establishment of Project Process		by Appraisal
4. Sample MOA for O&M, River Basin Management and Environmental Improvement		
4.1 Preparation of Sample MOA		by ICC-TB Approval for First Batch
4.2 Issuance of Department Order of Sample MOA		by ICC-TB Approval for First Batch
4.3 Issuance of Revised Department Order of Guideline and Sample MOA		by ICC-TB Approval for Third Batch
5. Holding of Seminar on River Administration in the Philippines		by JICA Concurrence at the Commencement of D/D for the Third Batch
6. Set-up of Flood Management Committee for implementation of sub-projects for First Batch, Second Batch and Third Batches	DPWH, LGUs and Other agencies	by ICC-TB Approval for First Batch
		by ICC-TB Approval for Second Batch
		by ICC-TB Approval for Third Batch
7. Finalization of MOA for Sub-projects for First Batch, Second Batch and Third Batches		by ICC-TB Approval for First Batch
		by ICC-TB Approval for Second Batch
		by ICC-TB Approval for Third Batch
8. Proposed Draft of New River Act or Revision of Water Act to Congress and Senate		by JICA Concurrence at the Commencement of D/D for the Third Batch

(Refer to Table 4.13 and 4.14)

4.4 Disaster Rehabilitation Fund (DRF)

As described in Subsection 4.2.3, the Disaster Rehabilitation fund (DRF) is introduced to rehabilitate river facilities deteriorated by calamities as one of the basic technical approaches in the Sector Loan.

4.4.1 Current Situation of Budget for Restoration for Damaged Facilities

At present, DPWH utilize the following funding sources for the restoration works of damaged infrastructure facilities:

- National Calamity Fund
- Quick Response Fund
- General Appropriations Act

(1) National Calamity Fund

The National Calamity Fund is arranged by the General Appropriations Act (GAA) under the NDCC Memorandum Order Number -02, Series of 1999. The GAA for fiscal year 2006 (SEC. 36), provides the following statement: "All departments, bureaus, offices and agencies are authorized to use their appropriations to implement projects designed to address disaster prevention, mitigation, and preparedness activities pursuant to PD 1566. Implementation of this section shall be in accordance with the guidelines issued by the NDCC in coordination with the DBM."

(a) Definition of Calamity

Calamity/Disaster is an event, natural or man-made, sudden or progressive which impacts with such severity on people's lives and properties, livelihood, essential services, lifelines and major public infrastructures, and the environment, that the affected community has to respond with exceptional measures, and may need additional external assistance from other communities/areas.

(b) General Process for Release

The general process to release the National Calamity Fund (NCF) is as follows:

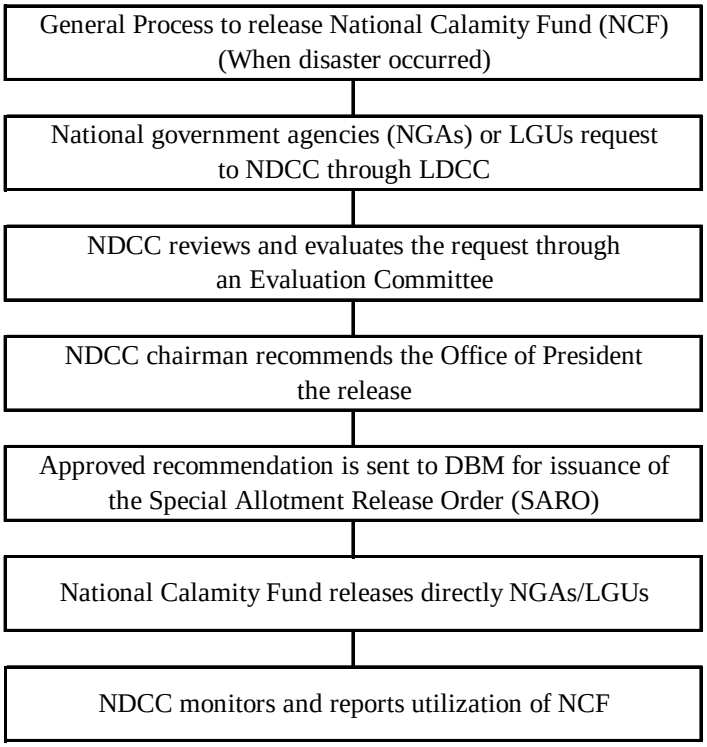


Figure R 4.10 General Process to Release the NCF

(c) Priority for Release of NCF

NCF is applied in the following order of priority:

(i) Priority I

For urgent and emergency relief operations, health services, settlement and rehabilitation of affected populations, as well as the emergency repair and rehabilitation of vital public infrastructures and lifelines damaged by calamities occurring within the budget year, such as hospitals and health facilities, schools, major roads and bridges, and farm to market roads, among others.

(ii) Priority II

For repair, rehabilitation and reconstruction of other damaged public infrastructures/facilities which are not emergency in nature but are necessary for disaster mitigation.

(iii) Priority III

For pre-disaster activities outside the regular budgets of line agencies and capital expenditures proposed for pre-disaster operations.

(d) Budget for National Calamity Fund (NCF)

Budget for the NCF is shown in the attached **Table 4.4**. According to the table, the NCF has been allocated with around 700 million pesos from 2002 to 2005, but the allocation was increased to 4,283 million pesos in 2008 because severe flood damages occurred in the year.

(e) Allocation of NCF

The NCF is allocated, in general, to the following purposes:

- Quick Response Fund (QRF)
- Contribution to NGAs
- Contribution to LGUs

(2) Quick Response Fund (QRF)

The Quick Response Fund (QRF) is to be released by the NDCC to line agencies such as the DPWH, DA, DECS. As the budget allocation, 25% of the NCF is to be allocated to the QRF, but actual allocation was 29% in 2006, 40% in 2007 and 16% in 2008. As for the DPWH, 20% of the total QRF and 5% of the total NCF is released.

(3) GAA

The DPWH allocates a budget for restoration of damaged facilities using a part of the appropriations from the GAA for DPWH. The amount of general appropriations for flood control facilities is as shown in **Table 4.2.**

(4) Management of these Budgets

In principle, these budgets except the NCF for restoration of flood control facilities are handled by BOM, while NCF is released to the Regional Offices from the Central Office of DPWH.

(5) Total Amount Released from These Funds

The total amount released from these funds for restoration of damaged flood control facilities is as shown in **Table R 4.4** (refer to **Table 4.2, 4.3** and **4.4**).

Table R 4.11 Total Amount Released from Current Funds/Budget for River Facilities (DPWH)

Fund	Average Released Amount (mil. Pesos/year)	Released Year		Remarks
		from	To	
QRF	58	2002	2009	Managed by BOM
GAA	167	2002	2007	
NCF*	55	2004	2008	

Note : * ; The fund is directly released to Regional Office of DPWH

(6) Comparison with the Damage Amount for Flood Control Facilities

Table 4.5 shows the comparison between the total amount of budget for restoration works and the damage amount for flood control facilities. As noted from the table, the budget for restoration works is not enough to cover the restoration works for damaged flood control facilities (refer to **Table 4.5** and **Table R 4.5** below):

Table R 4.12 Comparison between Total Amount of Budget for Restoration Works and Damage Amount for Flood Control Facilities

Unit: million pesos

Item	Amount (mil. Pesos)	Possibility to cover and expected shortage		
		GAA	QRF and NCF	Shortage
1. Accumulated Amount to repair past damaged facilities	-1,200*	1,200***	-	0
2. Expected Annual Average Damage Cost on River Structures	-260/year**	-	110/year	150/year****

*: Based on the required budget for 2008 (BOM-DPWH) **: Based on the previous damage amounts from 2004-2008
: Based on approved budget in 2009 GAA *: Possibility of utilization of DRF (150x 6~8years =Approx1,000) (Refer to Table 4.5)

4.4.2 Issues on Current Situation of DRF for Restoration Works and Necessity of DRF

As discussed in the preceding subsection, the restoration works for damaged flood control structures have been undertaken at a certain level, but the following issues have been detected through this study:

- Budget for restoration works is not enough.
- Effectiveness of current utilization of the fund could not be identified.

(1) Shortage of Budget

The shortage of budget currently provided for restoration works can be clarified through comparison between expected annual average damage cost (260million pesos/year) and average allocated budget from the fund (110million pesos/year). The shortage of budget is roughly 110 million pesos/year.

Besides, there are several damaged structures remaining without restoration work in the past, but the GAA budget for restoration of these structures approved in 2009 has not been released yet.

Therefore, the damaged structures further deteriorated resulting in the malfunction of flood control structures.

(2) Effectiveness of Current Utilization of the Fund (QRF)

The current utilization of the QRF is based on requests from DEOs, which submit reports on damaged structures and the necessary amount for restoration to the RO, BOM and OCD/NDCC. Approval of release fromthe fund is handled by OCD/NDCC, and final damage report is submitted by the DEO to OCD/NDCC through RO and BOM. The current system of utilization of the QRF and GAA is shown in **Table 4.6 and Figure 4.2.**

However, in this system of utilization of the QRF, as well as funds from the GAA, the following points are not clear:

- Cause of damage of structures
- Extent of restoration work for damaged structures

- Adequacy of methodology and design applied to restoration works
- Adequacy of cost estimation for the restoration works
- Others

(3) Necessity of Introduction of DRF

To improve these situations, it is necessary to allocate enough funds for the restoration works, together with the preparation of guidelines for the utilization of funds.

Although the amount allocated for the DRF may not be enough to cover all the restoration works, it can be the trigger to arrange the guidelines and enough budget for the purpose. With such an objective, it is necessary to introduce the DRF in the context of improvement of the issues previously pointed out on the disaster risk management system.

4.4.3 Necessary Arrangement for the Introduction of DRF

For the introduction of DRF, the following arrangement is necessary, in principle:

- Responsible Organization for Management of the DRF
- Extent of Utilization of Fund (Applicable Facilities, Activities and Type of Calamity)
- Basic Procedure for Utilization of the DRF

(1) Organization Responsible for Management of the DRF

As discussed earlier, the organization to manage the sector loan has been, in principle, accepted in the SC meeting. i.e., the DRF is to be managed by the BOM in cooperation with the ICD (refer to **Figure 4.2**).

(2) Extent of Utilization of DRF

As for the extent of utilization of the DRF, the following items need to be clarified:

- Applicable Type of Calamity
- Applicable Facilities
- Applicable Activities

(a) Applicable Type of Calamity

The calamity fund prepared by NDCC and the Asia-Pacific Disaster Response Fund (APDRF) established by ADB require NDCC's recommendation based on the recognition of occurrence of a serious calamity or officially declared state calamity.

However, collapse or deterioration of flood control facilities might occur due to local downpour or landslide in limited areas. Therefore, application of the Disaster Rehabilitation Fund (DRF) should be flexible depending on the type of calamity and disaster without relation to any national statement.

The application of the Fund shall initially be owed to bulletins from regional offices and finally be judged by the organization for the management of DRF in accordance with the Damage Report through research activities conducted by the staffs of the organization based on the staffs of Planning Service and FCSEC as shown in **Figure 4.2**. In this regard, the implementing rules and regulations (IRR)

for the Fund shall be created prior to its use. The formulation of an IRR might be assisted and supported by the Technical Assistance Activities (T/A) proposed in Section 4.5.

(b) Applicable Facilities

As discussed in the preceding subsection, current budgets for restoration works, such as the National Calamity Fund (NCF) and the Quick Response Fund (QRF) are unfortunately insufficient due to cumulative calamities.

In this connection, the Disaster Rehabilitation Fund (DRF) in the Sector Loan for Disaster Risk Management should concentrate basically, on rehabilitation and restoration of damaged flood control facilities unless otherwise directed with the approval or concurrence of JICA and NEDA prior to the rehabilitation work (refer to **Table 4.7**).

(c) Applicable Activities

It is essential, for river and flood control facilities, to evaluate the cause of collapse or damage. Therefore, research activities are mandatory expenses. Based on the evaluation and cause of collapse, the recovery design concept or adoption of typical repair works for damaged structures should also be imperative to minimize the expenses and to lengthen the life of rehabilitated structures. In addition, estimates of proper contract costs are imperative.

In view thereof, sudden expenditures induced by research, creation of design concept enumerated in **Table R 4.13** may be chargeable, but not limited to, from the budget of T/A and DRF when DPWH budget is insufficient.

Table R 4.13 Applicable Activities that might be shouldered by the T/A or DRF when DPWH Budget is Insufficient

Item	Research, Design and Cost Estimate	Implementation
Applicable Activities	• Trip Expense for research and design by Task Force Member • Topographic Survey/Cross Section Survey, if necessary • Soil Investigation Survey	• Construction Cost • Trip Expense for inspection by Task Force Member
Implementation	Newly Established Organization for Institutional Capacity Development (ICD)	Basically, all construction cost shall be shouldered by DRF.

(3) Basic Procedure for the Utilization of DRF

As shown in **Figure 4.2**, research for clarification of damaged structures including discussion with administrative offices (DEO/LGUs) and the determination of the rehabilitation policy will be conducted by the established organization in cooperation with the proposed T/A. On the other hand, detailed design for recovery/rehabilitation and cost estimate will be conducted by the consultant supervising the sub-projects in association with BOD.

Application of the DRF shall be coordinated with the other fund releases in case the calamity statement is issued by the national government (the President, etc.) headed by BOM.

4.4.4 Proper Cycle of O&M and Rehabilitation Utilizing DRF together with QRF

The effectiveness of DRF is to lead the system of maintenance and operation for river facilities eventually to the cycle of the appropriate integrated river administration conducted by DPWH. In this connection, it is expected that the DRF will play a role as seeding money together with the proposed T/A described in the next section.

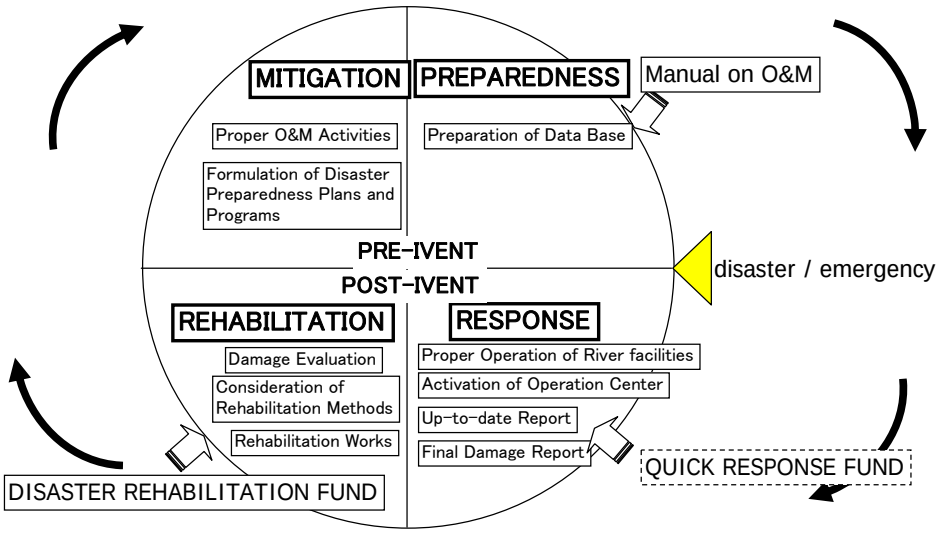


Figure R 4.11 Proper Cycle of O&M and Rehabilitation utilizing DFR and QRF for River Facilities

According to **Table 4.5**, the difference between the average damage amount on river facilities and the average released QRF/NCF for them during 2004-2008 is Php 150 million per annum. In addition, the duration of service in which the DRF be utilized will be 7~10 years depending on the term in which the construction work for sub-projects will be undertaken. Therefore, the expected amount required during the service is estimated at Php 1,050 million (Php 150 x years x percentage), at least, provided that the service term is 8 years.

4.5 Introduction of Technical Assistance Program (T/A)

For the improvement of disaster risk management through introduction of the sector loan, there are several items to be improved as discussed in preceding sections. It is desirable to pursue these improvements by the efforts of stakeholders, especially, DPWH and LGUs in parallel with the implementation of the sub-projects by the sector loan. However, it is a fact that the necessity of improvement of these items has been pointed out for a long time and hardly realized.

One of the main objectives, aims and outcomes for the implementation of the Sector Loan Project is to enhance the disaster risk management in the Philippines. In addition, it is expected that the project management system will be improved through implementation of the sub-projects and operation of the DRF. In this connection, the following five (5) Technical Assistance Activities (T/A) are proposed:

- Assistance on Setup of Nonstructural Measures
- Capacity Building for DPWH
- Advice on Legal System Arrangement for River Administration

- Setup of Mechanism of Utilization of Disaster Rehabilitation Fund (DRF)
- Advice on Collection System Arrangement for O&M Budget and Capacity Development on Drainage Improvement

The relation between these T/As, cooperative agreement and direction to improvement is as shown below:

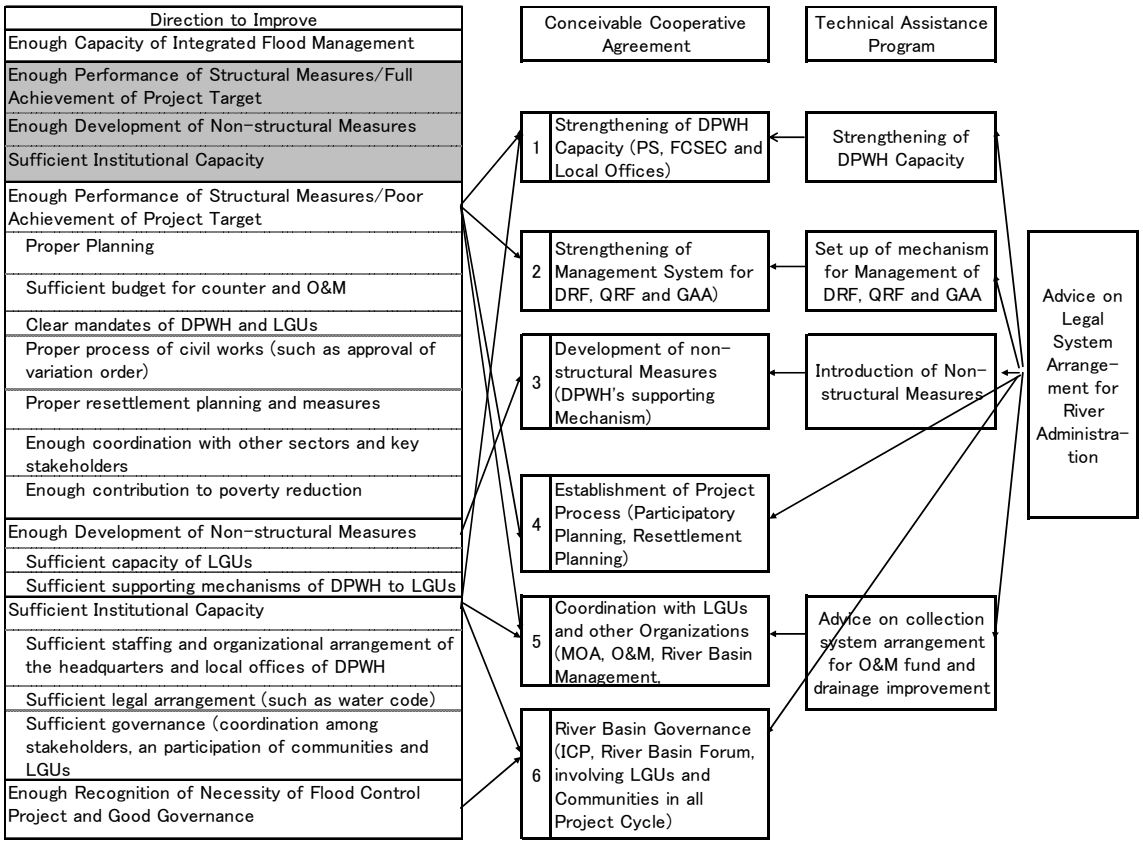


Figure R 4.12 The Relation between T/As, Cooperative Agreement and Direction to Improvement

The Work Breakdown Structures (WBS) of the proposed T/As are shown in **Table 4.8 to 4.12**.

4.5.1 Present Status of Technical Assistance Programs on River Administration

Ongoing technical assistance programs related to river administration and their status are as follows:

Table R 4.14 Status of Technical Assistance Programs

Name of Cooperation	Termination
JICA Expert on Integrated River Management	June 2010
Strengthening of Flood Management Function of DPWH	June 2010

As tabulated above, ongoing technical assistance activities will terminate prior to the commencement of the Sector Loan. Therefore, it is essential for appropriate execution of the Sector Loan Project to consider and harmonize the succeeding several technical assistance programs to be expected/prepared.

4.5.2 Strengthening of DPWH Capacity

(1) Necessity of Technical Assistance Program

As discussed in Subsection 4.2.1, the following issues have been identified:

- Insufficient capacity for disaster risk management as well as river management.
- Insufficient budget for implementation of disaster risk management.

For smooth implementation of flood control projects through the sector loan, it is essential to strengthen the DPWH disaster risk management capacity as well as its river management capacity. In the cooperative agreement, improvement of these issues is proposed and DPWH should take actions toward this direction. However, it may take a long time to improve this situation by the sole effort of DPWH. To accelerate the actions, it is essential to introduce experts through international cooperation agencies.

(2) Overall and Program Targets

(a) Overall Target

The overall target of this technical assistance is to consolidate the organization for implementation, as follows:

- To enhance the capacity of PS and FCSEC in order to strengthen DPWH's capacity for disaster management.

(b) Program Target

As the program target, the following achievements are expected:

- River engineers in DPWH (PS and FCSEC) can formulate flood control plans through their participation in project formulation for several river basins.
- River engineers in DPWH (PS and FCSEC) can obtain knowledge on several kinds of river structures, and can have the capacity to design such structures.
- Contents of database and manuals are consolidated and utilized nationwide.

(3) Expected Activities in this Program

In this program, the following activities are expected as the input:

- Training of river engineers in DPWH for strengthening of capability for project formulation, research and design of river structures;
- Improvement of manual for river planning;
- Preparation of manual for climate change;
- Preparation of manual for estimation of project benefit;
- Preparation of database for design of river structures;
- Preparation of database of good and bad examples from previous experiences; and
- Setup of collection system for hydrological and hydraulic data nationwide.

The Work Breakdown Structure (WBS) for this program including input of experts from international cooperation agencies is shown in **Table 4.8**.

4.5.3 Setup of Mechanism for Utilization of DRF

(1) Necessity of Technical Assistance Program

As discussed in Section 4.3, the Disaster Rehabilitation Fund (DRF) is to be introduced and basic ideas for the setup of an exclusive task force together with operational rules for the management of DRF in DPWH are recommended. However, it is necessary to make further discussions to finalize the form of the task force and operational rules and this may take a long time, if the discussion is made only among the officials in DPWH, who are affected by their own intentions. To obtain neutral ideas of outside experts and accelerate the setup, the introduction of the technical assistance program is recommended.

(2) Overall and Program Targets

(a) Overall Target

As the overall target, the following point is conceived:

- Flood control facilities will sufficiently fulfill the designed purpose with appropriate and prompt restoration works through utilization of the Fund.

(b) Program Target

As the program targets, the following outputs are expected:

- Utilization of DRF with appropriate rules and guidelines;
- Selection of appropriate structures and design of damaged structures with reasonable cost for restoration;
- Prompt action for restoration works through release of DRF; and
- Enhancement of technical knowledge for restoration works as well as O&M.

(3) Expected Activities in this Program

The following activities are introduced in the program:

- Review and identification of issues of current operation rule and organization for similar funds (QRF and GAA);
- Preparation of manual for O&M recording and reporting;
- Preparation of database for river structures; and
- Preparation of manual for research, planning, designing, construction method and cost estimation of damaged river structures.

The Work Breakdown Structure (WBS) for this program, including input of experts from international cooperation agencies, is shown in **Table 4.9**.

4.5.4 Introduction of Nonstructural Measures

(1) Necessity of Technical Assistance Program

As discussed in Subsection 4.2.3, the following issues have been identified:

- The introduction of nonstructural measures is indispensable to apply the sector loan, since the concept of sector loan is to protect only the core areas but not the whole river basin from flood damage with structural measures; hence, there will exist areas remaining without protection by structural measures.

- The introduction and operation of nonstructural measures are responsibilities of LGUs. However, in LGUs, shortage of river engineers to arrange such nonstructural measures has been pointed out and even DPWH is facing shortage of such engineers to cover the works.

Under the circumstances, it is necessary to invite experts through international cooperation agencies who will assist in providing nonstructural measures for the alleviation of flood damage.

(2) Overall and Program Targets

(a) Overall Target

The overall target of technical assistance is as follows:

- To alleviate disaster risk in the Philippines through the introduction of nonstructural measures.

(b) Program Target

The program target is as follows:

- To enable LGUs in the F/S areas operate the nonstructural measures on their own responsibility.

(3) Expected Activities in this Program

In this program, the following activities are expected in the selected F/S areas:

- Identification of causes of flood damage and flood vulnerable areas;
- Selection of suitable nonstructural measures;
- Introduction of selected nonstructural measures; and
- Training and publication on the operation of nonstructural measures.
- Land Use Control / Designation of Flood Risk Area into Urban Planning

The Work Breakdown Structure (WBS) for this program, including input of experts, is shown in **Table 4.10.**

4.5.5 Advice on Legal System Arrangement for River Administration

(1) Necessity of Technical Assistance Program

As discussed earlier, the following issues have been identified; namely, insufficient legal arrangement, which is emphasized with such situation that only the Water Code has an stipulation on river administration. The situation is attributable to the following issues:

- Unclear definition of administration of rivers
- Unclear definition of easement of river bank
- Inconsistency of other laws and regulations

It will take a long time to solve these issues, since legal arrangement is indispensable for their solution. On the other hand, for improvement of these issues, DPWH should step forward as early as possible. For the purpose, it is necessary to arrange experts through technical cooperation from international cooperation agencies.

(2) Overall and Program Targets

(a) Overall Target

The overall target of this technical assistance program could be as follows:

- To assure the provision of a sustainable disaster risk management system in the country.

(b) Program Target

On the other hand, the program target is as follows:

- To introduce the legal basis for river administration to be successfully pursued without any confusion among water-related agencies.

(3) Expected Activities in this Program

In this program, the following outputs are expected:

- Recognition of issues on river administration among stakeholders.
- Recognition of necessity of disaster management in the Philippines.
- Setup of strategy for river administration in the Philippines.
- Recognition of other issues related to river administration and climate change.

To obtain these outputs, the following activities shall be undertaken:

- Carrying out of a study on current roles and functions on river administration among agencies concerned.
- Carrying out of a study on issues of the current legal system for river administration.
- Carrying out of a study on the direction to settle the current issues.
- Collection and compilation of legal systems applied in other countries.
- Collection and compilation of information on measures taken by other countries in relation to climate change.
- Carrying out of a study on measures applicable to the Philippines to adapt to climate change.

The Work Breakdown Structure (WBS) for this program, including input of experts from international cooperation agencies, is shown in **Table 4.11**.

4.5.6 Advice on Collection System Arrangement for O&M Fund

(1) Necessity of Technical Assistance Program

As discussed earlier, the following issues have been pointed out for the successful disaster risk management by LGUs:

- Not enough O&M for flood control facilities due to shortage of budget.
- Not enough management of drainage system due to shortage of engineers and technical knowledge.

Although the responsibility for O&M of flood control facilities and the construction and management of drainage systems is burdened to LGUs, the capacity to cover the work is hampered by the shortage of staff and budget.

Improvement of the situation is essential to achieve the target for successful disasters risk management, so that it is necessary to introduce technical assistance from international cooperation agencies.

(2) Overall and Program Targets

(a) Overall Target

The overall target of this program is conceived as follows:

- To assure the success of disaster risk management in the Philippines.

(b) Program Target

The program targets are as follows:

- To assure O&M for flood control facilities and to enhance the capacity of LGUs on the construction and management of drainage facilities.

(3) Expected Activities in this Program

In this program, the following activities are to be undertaken:

- Carrying out of a study on revenue and budget allocation of LGUs for disaster risk management as well as O&M.
- Carrying out of a study on necessary budget for the O&M of river structures.
- Carrying out of a study and prepare a manual on funding sources for O&M.
- Preparation of O&M manual for the execution of O&M of river structures.
- Enhancement of the capacity for research, planning, detailed design and O&M of drainage facilities.

The Work Breakdown Structure (WBS) for this program is shown in **Table 4.12**.

CHAPTER 5 PREPARATION FOR IMPLEMENTATION OF FLOOD CONTROL PROJECT (SUB-PROJECTS) WITH SECTOR LOAN

5.1 Arrangement of Long and Short Lists of Sub-Projects in the Sector Loan Project

One of the main objectives of the Sector Loan is to implement flood control works as sub-projects in core areas, which will be divided into three batches. The sub-projects to be implemented will be selected through the basic approaches described below.

5.1.1 Basic Technical Approach for Implementation of Sub-Projects under the Sector Loan

The basic technical approach to the implementation of Sub-Projects under the Sector Loan is illustrated in **Figure R 5.1** below. The detailed procedure and implementation program are as shown in the attached **Figure 5.1** and **Figure 5.2** respectively.

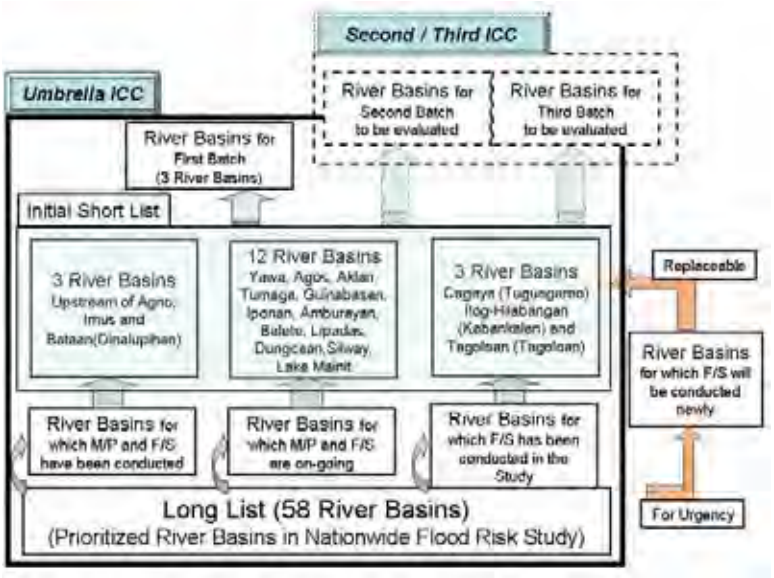


Figure R 5.1 Basic Approach to Implementation of Sector Loan Sub-Projects

5.1.2 Arrangement of Long List

Basically, the Sub-Projects to be implemented under the Sector Loan Project shall be selected from the Long List. The Long List means the list containing the names of fifty-eight (56+2=58) river basins that have been proposed and selected as priority areas for implementation of river improvement works or flood control projects during the period 2009-2034 in the Nationwide Flood Risk Study, unless otherwise requested additionally by DPWH. These 58 river basins are shown in the attached **Table 5.1** and **Figure 5.3**.

5.1.3 Arrangement of Short List

Short List means the list containing the name of candidate river basins and core areas with completed and/or ongoing feasibility studies to have river improvement works or flood control projects implemented as candidate sub-project components of the Sector Loan Project for Disaster Risk Management.

In accordance with the definition explained above, to clarify the contents of Sub-Projects in the Sector Loan Project and obtain approval on the implementation of the Sector Loan Project

through a series of ICC evaluation systems, a short list has been created through several evaluation processes including the assumed implementation volume/cost, regional consideration, expected benefits and the consideration of assumed difficulties due to expected issues on ROW and house relocation activities that may cause the delay or suspension of the works.

In this connection, the river basins and core areas to comprise the Short List could be classified into the following three (3) categories:

- Category-A: River Basins and Core Areas in which F/S has already been conducted in terms of urgency and strong requirements among stakeholders;
- Category-B: River Basins and Core Areas in which the M/P and F/S on river improvement works or flood control projects of DPWH are presently ongoing; and
- Category-C: River Basins and Core Areas in which F/S has been conducted in this Preparatory Study and expected to be candidate river basins in the first batch of sub-projects.

As the result, seventeen (17) river basins have been nominated to comprise the Short List, as shown in the **Location Map** and **Table 5.2**. The process of nomination was, as follows:

(1) River Basins in which F/S were completed in Previous Studies (Category-A)

In the Long List, there were ten (10) river basins for which F/S have been completed in Previous Studies; namely, Panay/Mambusao, Cagayan, Upstream of Agno, Upper Marikina, San Juan, Imus, Bicol, VOM, Upper Pampanga, Iloilo (Stage-II) and Dinalupihan-Hermosa-Lubao. The proposed flood control components in each F/S are described in **Annex-2** in detail.

The present Preparatory Study had conducted pass/fail evaluations in terms of urgency of the project, possibility of dividing the project scale to qualify as Sub-Project of the Sector Loan Project, and consideration of assumed difficulties due to expected issues on ROW and house relocation activities that may cause the delay or suspension of the works.

As the result, the following three (3) river basins have been selected (See **Table 5.1** to **5.3**):

- Cagayan
- Imus
- Dinalupihan-Hermosa-Lubao (Bataan)

(2) River Basins in which M/P and F/S on River Improvement Works or Flood Control Projects of DPWH are Ongoing (Category-B)

As explained in Chapter 1, DPWH is at present formulating the M/P and is conducting feasibility studies for twelve (12) river basins selected from the Long List. The river basins are summarized as follows:

- The assumed project cost of river basin to be comparatively small. (River basin of which the project cost would be less than Php 1.0 billion according to the Nationwide Flood Risk Study.)
- River basins to be selected are evenly distributed nationwide.
- Total project cost of river basins selected is within Php 5 billion.

As the result, DPWH had selected the following river basins, and the locations are as indicated in the **Location Map**.

- Yawa (Legazpi City)
- Agos
- Aklan
- Tumaga
- Guinabasan
- Iponan
- Amburayan
- Balete
- Lipadas
- Dungcaan
- Silway, and
- Lake Mainit Tubay

(3) River Basins where F/S has been conducted in this Preparatory Study (Category-C)

It is assumed that the ongoing M/P and F/S being done by DPWH for the twelve (12) river basins will be completed in February 2011. Therefore, it is difficult to include them in the expected first batch of sub-projects of the Sector Loan Project.

In this connection, the Preparatory Study had conducted F/S for three (3) river basins selected from the 58 river basins, but excluding the twelve (12) river basins in which F/S are or will be conducted by DPWH.

The process of selection of the three (3) river basins as sub-projects of the Sector Loan Project are described in detail in the attached **Table 5.4** and **5.5** and in Section 5.2, and summarized as follows:

- High Prioritization of river basins in the Nationwide Flood Risk Study (river basins within the top 10 river basins were initially selected);
- Possibility of dividing the project in each basin into appropriate project scale so as to qualify as sub-project of the Sector Loan Project;
- Consideration of assumed difficulties due to expected issues on ROW and house relocation activities that may cause delay or suspension of the works;
- Elimination of river basins where flood mitigation works have already been prepared with other funds such as the local fund and funds from other international cooperation agencies (WB, ADB, etc.);
- Elimination of river basins where the core areas are already protected from high probable flood discharge; and
- Regional Considerations.

As the result, the following river basins and targeted core areas have been selected:

Table R 5.1 Selected Three (3) Basins for the Conduct of F/S in the Preparatory Study

Name of River Basin	Targeted Core Area	Province/Region
Cagayan River	Tuguegarao, Enrile	Cagayan / Region II (Luzon)
Ilog-Hilabangan	Kabankalan, Ilog	Negros Occidental / Region VI (Visayas)
Tagoloan	Tagoloan	Misamis Oriental / Region X (Mindanao)

5.1.4 Procedure for the Selection of Sub-Projects

Certain sub-projects have been selected for each of the three batches from the candidate river basins in the Short List. The proposed policies and order of prioritization as basis for the selection of sub-projects in each batch are as follows:

(a) Completion of F/S (ECC/CNC Issuance, RDC Approval);

(b) MOA on compliance and cooperative agreement with LGUs;

(c) Recommendation of EIRR higher than 15%; and

(d) Regional distribution.

The detailed procedure for the selection of sub-projects in each batch is as described in the attached **Figure 5.1.**

On the assumption that the total number of sub-projects to be implemented would be nine (9), the assumed total sector loan amount for implementation of the sub-projects is estimated at Php 8,649 million, including consultancy services and price contingency, as shown in **Table 5.2**.

5.2 Selection of Objective River Basins for F/S in this Preparatory Study

In parallel with the selection of sub-projects in the sector loan, the selection of objective river basins for F/S in this preparatory study has been conducted in the following manner:

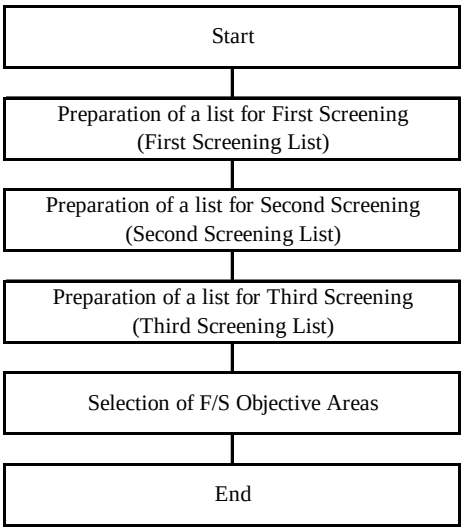


Figure R 5.2 Flow of Selection of Objective River Basins for F/S in the Preparatory Study

5.2.1 Preparation of List for First Screening (First Screening List)

As the first step to select the objective river basins for the feasibility study, the list for the first screening was prepared in the following process:

- The river basins included in the first screening list were, in principle, narrowed down from the previous "Flood Risk Assessment Study" which recommended 56 river basins, and dividing them into two groups: the foreign-assisted group and the local fund group.
- Firstly, river basins in the top 10 position in the two groups were selected individually for the first screening list.
- Then, the river basins recently highlighted with the necessity of flood control projects were also included in the first screening list; namely, three (3) river basins from the foreign-assisted group and eleven (11) river basins from the local fund group. The 11 river basins mainly cover the objective river basins for feasibility study conducted with local funds.

In total, 34 river basins composed of 13 river basins from the foreign-assisted group and 21 river basins from the local fund group were selected for the first screening list (See **Table 5.1** for the Foreign-Assisted Group and **Table 5.3** for the Local Fund Group).

5.2.2 Preparation of List for Second Screening (Second Screening List)

From the above first screening list, a second screening list is prepared in the following manner:

(1) For the Foreign-Assisted Fund Group

For the river basins in the foreign-assisted fund group, the following considerations were made for preparation of the long list:

- Since the ceiling of the loan amount has been set, the project cost that can be accommodated within a certain amount is firstly prioritized, and the project target areas are narrowed down to the core areas. (As the index, roughly Php 2,500 million per one river basin is applied.)
- From the social environmental points of view, easiness of land acquisition and house evacuation are prioritized.
- From the list, the river basins where study or project implementation related to flood control has not been scheduled, are considered to avoid duplication of investment.
- From the point of view of present safety level for floods, the river basins still remaining with a low safety level are prioritized.
- From the easiness of project promotion, the river basins with higher flood control project maturity such as preparation of M/P, F/S and D/D are prioritized.

Finally, 5 river basins out of 13 from the foreign-assisted fund group were included in the list for second screening (**See Table 5.4**).

(2) For the of Local Fund Group

For river basins in the local fund group, the following considerations were made for preparation of the long list:

- Firstly, the river basins with higher flood control project maturity are prioritized.

- River basins recently highlighted with the necessity of flood control project are also prioritized.
- River basins where flood control projects have never been implemented are prioritized.
- River basins where no flood control project has been scheduled under any other fund, are also prioritized.

Finally, 18 river basins out of 21 were included in the second screening list from the local fund group (Refer to **Table 5.5)**.

Eventually, 23 river basins (=5+18) were included in the second screening list (See **Table 5.6**).

5.2.3 Preparation of List for Third Screening (Third Screening List)

The third screening list has been prepared to select the objective river basin for F/S in this preparatory study in the following manner:

(1) For the Foreign-Assisted Fund Group

Since the total number of river basins is three from both the foreign-assisted fund group and the local fund group, two river basins were selected from the foreign-assisted fund group considering, in principle, the ranking of priority; namely, (1) Cagayan River Basin and (2) Ilog-Hilabangan River Basin, as shown below:

Table R 5.2 Result of Third Screening List for the Foreign-Assisted Fund Group

Rank	Name of River Basin	Catchment Area (km2)	Region	Selection
5	Cagayan	27,743	II, CAR	Yes
7	Ilog-Hilabangan	2,162	VI, VII	Yes
10	Guagua	1,605	III	No
18	Cavite	112	IV-A	No
19	Tuganay	747	XI	No

(2) For the Local Fund Group

For the river basins in the local fund group, the following considerations were made for the third screening list:

- Firstly, the 12 objective river basins with F/S conducted by DPWH were excluded, since the F/S was conducted in parallel with this study.
- For the remaining 5 river basins, the maturity of project is considered; namely, the river basins where F/S or M/P hasbeen conducted were prioritized.

Finally, four (4) river basins from the local fund group remained in the third screening list, as shown below.

Table R 5.3 Result of Third Screening List for the Local Fund Group

Rank	Name of River Basin (First Screening List)	Catchment Area (km2)	Region	Selection
1*	Yawa (Legazpi City)	126	V	No
4	Tagoloan	1,762	X	Yes
6*	Agos	483	IV-A	No
7	Santa Rita/Kalaklan	102	III	Yes
8*	Aklan	1,010	VI	No
9	Buayan-Malungon	1,400	XI, XII	Yes
10*	Tumaga	255	IX	No
13*	Guinabasan	131	VII	No
15*	Iponan	412	X	No
16*	Amburayan	1,307	I, CAR	No
17*	Balete	132	IV-B	No
19*	Lipadas	163	XI	No
23*	Dungcaan	176	VIII	No
24*	Silway	577	XII	No
29*	Lake Mainit Tubay	473	XIII	No
-	Bataan(Dinalupihan) urgent project		III	Yes
-	Amany-Patric	993	IV-B	No
*: F/S is to be conducted by DPWH				

Eventually, a total of six (6) river basins, i.e., (2 river basins from the foreign assisted fund group and 4 river basins from the local fund group), were included in the third screening list.

5.2.4 Selection of Objective River Basins for the F/S Study

Three (3) objective river basins for F/S have been selected from the six (6) river basins in the third screening list, as follows:

- Firstly, TWG and Steering Committee meetings were held on April 20 and April 28, 2009 respectively. Through these meetings, the following river basins were selected for the feasibility study, considering the prioritization made in the Nationwide Flood Risk Assessment Study and regional distribution (See Appendix-2):

Table R 5.4 Three River Basins for the F/S Conducted in the Preparatory Study

Region	Selected River Basin
Luzon	Cagayan
Visayas	Ilog-Hilabangan
Mindanao	Tagoloan

- Second, stakeholders' meetings and field reconnaissance surveys were conducted for these river basins to confirm site conditions for the implementation of flood control projects, as well as the progress of the F/S. (Refer to Section 5.3 to 5.6 for the status of

F/S such as initial concepts for the flood mitigation plan and methodologies. See **Appendix-6** for the Minutes of the first stakeholders' meetings.)

5.3 Expected Schedule for Implementation of Disaster Risk Management by Sector Loan

5.3.1 Major Activities to be included in the Disaster Risk Management

In principle, the following activities are tackled in relation to the implementation of disaster risk management by sector loan after the completion of this preparatory study:

- ICC approval
- Award of Loan Agreement and Implementation of Sub-Projects
- Realization of Cooperative Agreement
- Operation of DRF
- Operation of Technical Assistance Program

5.3.2 Expected Schedule for the Above Major Activities

The Draft Final Report on the Preparatory Study was made available in November 2009 and the Study was terminated in January 2010. After then, the related actions toward the implementation of sub-projects can be started. The expected schedule for the above activities is as follows:

(1) ICC Approval

The activities for the approval of an umbrella type ICC can be initiated by the end of November 2009 using the data and information in the Draft Final Report as well as the previous study results. In general, it takes around one-half year for the endorsement of ICC-TB (Investment Coordination Committee - Technical Board) and, further, about 3 months will be necessary for the endorsement of ICC-CC (Cabinet Committee). During these periods, the other related activities for endorsement from the other agencies such as RDC resolution and ECC could be undertaken.

The expected schedule for ICC approval, therefore, will start in November 2009 and end around September 2010.

(2) Execution of Loan Agreement (L/A) and Implementation of Sub-Projects

The Loan agreement (L/A) could be executed after 3 months from the issuance of ICC approval. Then, the implementation of sub-projects could be started immediately after the execution of L/A. The execution of L/A is expected at the beginning of 2011, and the implementation of sub-projects will follow immediately. Implementation of the sub-projects is expected to take around 7 years.

(3) Realization of Cooperative Agreement

Before starting the implementation of sub-project, DPWH and related LGUs are required to take actions for realization of the cooperative agreement. The timing of actions is expected to be around the second quarter of 2010 when the process for ICC approval is proceeding and the possibility of approval is broadly clarified. The activities for

realization of the cooperative agreement shall continue until the end of the loan period and also expected to be continued after then.

(4) Operation of DRF

The operation of DRF should start immediately after execution of L/A in parallel with the start of implementation of sub-projects. The expected start of DRF operation is around the second quarter of 2011 and continued for around 8 years for the allocated fund of 20 million US$. The operation of DRF is expected to be further continued through allocation of budget by the Philippine Government, though the system of funding may be changed.

(5) Operation of Technical Assistance Program

It is expected that the technical assistance program will start in advance of the start of implementation of sub-projects, subject to JICA's arrangement. The continuation of the program will depend on its contents.

The expected schedule of the above activities is shown in **Figure 5.2,** the assumed implementation schedule.

5.4 Consideration of Climate Change

5.4.1 Current Situation of Climate Change

The Philippine climate is influenced by large-scale atmospheric phenomena that bring in substantial amounts of rain almost all year round. However, due to the uneven distribution of rain with respect to time and space and the occurrences of extreme events such as floods and droughts, the country's water resources have in the past experienced imbalances. The Intergovernmental Panel on Climate Change (IPCC) has warned on climate change associated with global warning. Climate change includes the rise of temperature, storm rainfall intensity and sea level, which could further aggravate flooding conditions in the Study Area.

Recognizing the significance of the influence of climate change, the Philippine Government initiated actions to cope with the situation, which is emphasized with the promulgation of the "Climate Change Act of 2009" (expected to be signed by the President within 2010) (refer to Chapter 2). The Japanese Government also put priority to support in this point, through the dispatch of a mission for the "Preparatory Study for Projects on Measures for Climate Change" in 2009. The study, proposed the list of measures to cope with climate change, classifying the following sectors: (1) Agriculture; (2) Fishery; (3) Biodiversity; (4) Water resources management; (5) Disaster risk management; and (6) Public health. In sector (5), Disaster Risk Management, project ideas relating to themes such as information and database generation, support to disaster risk reduction and so on are proposed.

5.4.2 Expected Impact of Climate Change

As discussed in the reports on F/S for each river basin (Part-II), the computed probable peak discharge and safety levels in return period would change in line with global warming; i.e., probable discharge would increase by 10 to 20% in 2050 and by 14 to 29% in 2100. As a result of the above increscent effects of flood discharge, the safety level of flood control structures would decrease in line with the progress of global warming. The

safety level of 25-year is likely to decrease to 15- to 19-year in 2050 and to 11- to 17-year in 2100.

5.4.3 Basic Concept of Mitigation Measures against Climate Change

Thus, the global warming in climate change would have intensive impacts on flood control measures to be taken in the future. The process of global warming, however, still contains considerable uncertainty in scientific fields. Therefore, the mitigation measures shall be formulated with careful deliberation on decrease of secured safety level in temporal process and scientific progress in climate change. The basic concept of mitigation measures against hydrological effects in climate change could be as summarized below. The concept of a future program is illustrated in **Figure R 5.14.**

(1) After Implementation of Urgent Flood Control Measures

After implementation of urgent flood control measures, the secured safety level would decrease gradually in line with global warming. In this period, the following measures shall be taken until the effects of climate change will be clarified in a scientific manner, and the flood mitigation and management master plan shall be revised through incorporating the effects of climate change.

- Establishment and strengthening of meteo-hydrological monitoring system;
- Strengthening of early warning dissemination system through PABC flood forecasting system;
- Establishment and improvement of flood preparedness and emergency response plan in each local level - city, municipality and barangay; and
- Strengthening of land use plan or control in due consideration of flooding situation and future flood mitigation measures.

(2) Formulation of Future Master Plan of Flood Risk Management

The future flood mitigation and management plan shall be formulated on the basis of predicted effects of future climate change.

CHAPTER 6 SUMMARY OF FEASIBILITY STUDY

6.1 General

6.1.1 Selection of Optimum Flood Mitigation Plan

As stated in Section 5.3, three river basins; namely, Cagayan, Ilog-Hilabangan and Tagoloan, have been selected for the F/S conducted in this preparatory study.

The alternative structural flood mitigation plans and the potential nonstructural flood mitigation measures for each river basin have been examined in Chapters 7 and 8 in Part-II. Socio-economic considerations on the structural flood mitigation plans were further made in Chapter 9 of each report as Part-II. In addition, Chapter 10 delineates the measures for climate change adaptation in progress. Based on the results of those examinations, the optimum flood mitigation plans for the three targeted areas as candidate sub-projects of the Sector Loan Project are as summarized below.

6.1.2 Core Areas to be Protected by Structural Measures in the Sector Loan Project

Flood control projects as sub-projects of the Sector Loan Project on Disaster Risk Management aim to alleviate flood damage in "core areas" where cities or municipalities play the role as center of economic, political and administrative activities in the basin or the development potential is higher than that of circumjacent areas. This relates to the high and prompt onset of flood control effectiveness and benefits.

6.2 Cagayan River Basin

6.2.1 Targeted Areas (Core Areas)

The candidate flood control structural measures proposed in the 2002 F/S were planned to be implemented in four (4) phases aiming at flood damage mitigation in four (4) areas in the Lower Cagayan River; namely, Phase 1: River mouth to Magapit; Phase 2: Magapit to Amulung; Phase 3: Amulung to Tuguegarao; and Phase 4: Tuguegarao to Cabagan. Among them, Phase 4 aiming at the protection of Tuguegarao City should be considered as a sub-project in the Sector Loan for Disaster Risk Management taking into consideration the density of population, recognition of regional importance that safety level of the political and economic center in the region enhances against river flood. In this connection, the core areas to be protected firstly for Cagayan River Basin refer to Tuguegarao City and its suburbs.

6.2.2 Proposed Structural Flood Mitigation Plan

(1) Summary of Structural Schemes Implemented with Sector Loan

In the 2002 F/S, four (4) major flood control works were proposed for the Lower Cagayan River Flood Control Project; namely; 1) bank protection works; 2) dike including maintenance roads and tree zones; 3) cut-off channel; and 4) related river structures such as culverts and sluices. The structural flood control measures were planned to be implemented in four (4) phases starting from the year 2002 up to the target year 2020, from the river mouth toward upstream.

In this connection, Tuguegarao and its suburban area, which is Phase IV in the said 2002 F/S, are proposed as the core areas to be protected with flood control works in the Sector Loan Project, because Tuguegarao City, as the provincial capital, and the suburban

municipality of Enrile are essential to the development of regional economy in Cagayan Province.

However, the implementation of structural measures against a 25-year return period flood is not applicable for funding under the Sector Loan because the construction cost of the project is estimated to exceed 6 billion pesos. Although the project will be effective and the urgency was recognized, it is not realistic to allocate such a huge fund from the Sector Loan.

Therefore, erosion prevention measures for the most critical erosion areas; namely, Alibago, Enrile and Cataggaman, are selected as the viable structural measures for the sub-project in the Cagayan River Basin. (See attached **Figure 6.1)**.

The main features and estimated costs of the erosion prevention works are as summarized below:

Table R 6.1 Summary of Project Components Proposed for the Sector Loan Sub-Project in Cagayan River Basin

Contents of Project	Quantity	Purpose of Project
Revetment at Alibago Area	L=900m	Erosion and Scouring Control
Revetment at Enrile Area	L=800m	Erosion and Scouring Control
Revetment at Cataggaman Area	L=1,400m	Erosion and Scouring Control

Table R 6.2 Summary of Project Cost Proposed for the Sector Loan Sub-Project in Cagayan River Basin

Major Items	Cost Items	Estimated Costs (Million Pesos)	Remarks
Cost Applicable for Loan	Construction Base	1,871	Construction Term: 2012-2015
	D/D & S/V	299	
	Contingencies	528	
Sub-Total (1)		2,698	
Cost Inapplicable for Loan	Compensation	20	Houses and Lots
	Administration	95	DPWH and LGUs
	Contingencies	26	
	VAT & Tax	324	
Sub-Total (2)		465	
Total		3,163	
O&M		5.31	
EIRR		18.64%	

The economic evaluation above shows the implementation viability of the project in terms of the NEDA requirement.

(2) Concerns in Project Implementation

The concerns in project implementation are as follows:

(a) Natural and Social Environmental Impact Evaluation

The erosion mitigation structural measure (revetment) proposed in this Study would require the relocation of several families, and DENR had recommended the preparation of a relocation action plan (RAP) even though the number of

resettlement is quite small. In view thereof, the RAP has to be formulated and implemented in accordance with "The Land Acquisition, Resettlement and Indigenous Peoples Policy of the Department of Public Works and Highways (DPWH)."

To execute the RAP, "Census Survey-cum-Structure Tagging (C/T)" shall be performed to identify the PAPs and to prevent illegal settlers from encroaching in the project site. Preparation of the RAP for Cagayan together with the other two candidate river basins (Ilog-Hilabangan and Tagoloan) will require seven (7) months, at least, prior to project implementation.

(b) Erosion and Scouring Issues in Progress

Erosion and scouring by floodwater has been going on at the proposed three (3) critical erosion sites even during the study period. However, it may take two (2) years before the project is commenced assuming that the L/A is concluded, and during these two years the erosion and scouring is expected to further aggravate. In this connection, the related agencies, DPWH and LGUs, are required to monitor the progress of erosion and scouring activities.

6.2.3 Proposed Nonstructural Measures

Based on the measures proposed in the 2002 F/S and the current status and activities in the Cagayan River Basin described in Chapter 8, the following community-based nonstructural measures are proposed in parallel with the structural measures:

- Identification of Necessary Preparedness Plan and FEWS;
- Establishment of Hazard Map and Preparedness Plan; and
- Revision/Modification of Land Use/Development Plan.

In connection with the execution of the proposed measures mentioned above, proposed is a Technical Assistance Activity to support and enhance the capacity of related agencies, such as DPWH, OCD, PAGASA and the LGUs concerned, in parallel with and as one sphere of implementation of the Sector Loan Project.

6.2.4 Climate Change Adaptation

Tuguegarao City and the suburban area are located at the midstream (Sta. 120K from the river mouth) of the Cagayan River. The flood mitigation plan formulated in the 1987 M/P was proposed as a part of the Integrated Water Resources Development Plan in which the proposed sectors involved the construction of dam, watershed management, establishment of flood forecasting and warning system, irrigation development and the erosion control proposed in the Sector Loan, including flood control.

The integrated scheme did not consider the adverse effects of climate change. Therefore, a more elaborate study on how the increment of design flood discharge will be absorbed is required based on detailed researches on every sector.

According to the results of the impact study on the climate change, flood discharge would increase by 10 to 20% in 2050 and by 14 to 29% in 2100.

Under circumstances aforementioned, the following nonstructural measures shall be applied for climate change adaptation for the time being:

- Enlightenment Activities to Stakeholders regarding the Impact of Climate Change
- Strengthening of Flood Forecasting and Warning System

6.2.5 Possibility of Inclusion as Sub-Project in First Batch

Through the feasibility study, it has been identified that the sub-project for Cagayan River Basin is technically feasible, financially affordable, economically viable and environmentally acceptable. Thus, it can be said that the sub-project for Cagayan River Basin is qualified to be included in the first batch sub-projects of the sector loan project.

6.3 Ilog-Hilabangan River

6.3.1 Targeted Areas (Core Areas)

Flood Control Projects as sub-projects of the Sector Loan Project on Disaster Risk Management aim to mitigate flood damage and alleviate other flooding problems in selected "core areas" in this major basin. From this standpoint, the core area refers to Kabankalan City, which is playing the role as one of the key cities contributing to provincial economic development of Negros Occidental (together with the City of Bacolod, the provincial capital), and the Municipality of Ilog, which was the first Spanish settler's land in the Negros Island, as shown in the 1991 M/P Report.

6.3.2 Proposed Structural Flood Mitigation Plan

(1) Summary of Structural Schemes Implemented with Sector Loan

The project scale selected for the 1991 M/P was 100-year return period in consideration of the other major rivers in the Philippines and the magnitude of the recorded maximum flood in the basin. Eventually, flood control works against a 25-year return period flood was proposed for completion in the first phase.

Based on the 1991 M/P, the proposed plan against a 25-year return period flood as the first phase is adopted for the Sector Loan Project to mitigate the core areas where properties are concentrated and where the built-up area is located. In this regard, the city proper of Kabankalan and the area of the sugarcane mill along the Ilog-Hilabangan River are selected as core areas in the Ilog-Hilabangan River Basin.

The flood protection works may cause adverse influence to the downstream in a manner of increase of flood discharge flowing down from the protected area resulting in the rise of flood water level. To minimize such adverse influence, dredging of the lower reaches of the river channel is recommended so that the protection measures against floodwater will not worsen the flooding condition in the non-protected areas.

The main features and estimated costs are shown in the attached **Figure 6.2** and summarized below:

Table R 6.3 Summary of Project Components Proposed for the Sector Loan Sub-Project in Ilog-Hilabangan River Basin

Contents of Project	Quantity	Purpose of Project
Construction of Dikes along Kabankalan City Proper Area	L=6,100m	To protect the area against a 25-year return period flood
	L=1,000m	To protect the area against a 25-year return period flood
Construction of Dike along Sugarcane Mill Area	L=2,750m	To protect the area against a 25-year return period flood
Dredging Work in Lower Stretch	V=1.7 million m^3	To mitigate the impact of dike construction

Table R 6.4 Summary of Project Cost Proposed for the Sector Loan Sub-Project in Ilog-Hilabangan River Basin

Major Item	Cost Item	Estimated Cost (Million Pesos)	Remarks
Cost Applicable for Loan	Construction Base	1,611	Construction Term: 2012-2014
	D/D & S/V	258	
	Contingencies	475	
Sub-Total (1)		2,344	
Cost Not Applicable for Loan	Compensation	16	Houses and Lots
	Administration	81	DPWH and LGUs
	Contingencies	22	
	VAT & Tax	281	
Sub-Total (2)		400	
Total		2,744	
O&M		5.69	
EIRR		15.65 %	

The economic evaluation shown above indicates the implementation viability of the sub-project in terms of the NEDA requirement.

(2) Concerns in Project Implementation

The concerns in project implementation are as follows:

(a) Natural and Social Environmental Impact Evaluation

The dike construction along the Kabankalan Core Area as the structural measure proposed in the Study would require the house relocation of more than 50 families. To achieve such a large-scale resettlement activity, DENR had required the preparation of a relocation action plan (RAP). In addition, the project with such large-scale resettlement activity may require a full EIA study in accordance with the JICA Guideline for Environmental and Social Consideration (2004). In view thereof, the RAP has to be formulated and implemented in accordance with "The Land Acquisition, Resettlement and Indigenous Peoples Policy of the Department of Public Works and Highways (DPWH)."

To execute the RAP, "Census Survey-cum-Structure Tagging (C/T)" shall be performed to identify the PAPs, and illegal settlers shall be prevented from

encroaching in the project site. Preparation of the RAP for Ilog-Hilabangan including the other two candidate river basins (Cagayan and Tagoloan) will require six (6) months, at least, prior to project implementation.

(b) Consideration for Ilog Municipality

During the initial stage of the Study, the proposed plan included the ring dike encompassing the built-up area around the municipal hall of Ilog Municipality. However, in the final public consultation meeting conducted by the sub-contractor of the environmental study, the construction of ring dike for the Municipality of Ilog was not acceptable because the ring dike would generate the difference between "protected" and "unprotected" areas in one community where the residents are keen to maintain that the communities are equal with each other.

In this connection, the structural measure will contribute a slight shortening of flood inundation time to Ilog residents due to the dredging work in the lower channel. Hence, further careful consideration shall be taken for the residents of Ilog through the provision of nonstructural measures.

(c) Disposal Site for Surplus Soil

In the project, approximately 1 million m^3 of surplus soil derived from the excavation and dredging works have to be disposed. According to Kabankalan City as well as the Municipality of Ilog, these surplus soils are welcome to develop a vacant space for urbanization. In this connection, the timing of the expected land development with the project's implementation shall be based on the project's implementation program.

6.3.3 Proposed Nonstructural Measures

Based on the current status and activities in the Ilog-Hilabangan River Basin, the following community-based nonstructural measures are proposed in parallel with the structural measures:

- Establishment of Flood Early Warning System utilizing the Basin Flood Forecasting System.
- Preparation of Flood Hazard Map with the participation of residents, including dry run and map exercises in flood vulnerable areas.

In connection with the execution of the proposed measures mentioned above, proposed is a Technical Assistance Program to support and enhance the capacity of related agencies, such as DPWH, OCD and PAGASA, in parallel with and as one sphere of implementation of the Sector Loan.

In addition, it is essential for basin-wide flood mitigation effect to undertake full-scale river improvement works in accordance with the 1991 M/P. To achieve such a full-scale river improvement works, LGUs shall first of all secure the proper river course to implement the widening of river channel. Therefore, the CLUP (comprehensive land use plan) shall delineate the designed dike alignment in the future land use map as the river area.

As described in Part-II B of the report in detail, the provinces of Negros Oriental and Negros Occidental agreed, on June 26, 2008, to form the Negros Island IWRM Council, which will serve as the apex and policy advisory body for integrated water resources planning and management within the Ilog-Hilabangan River Basin thereby contributing towards the realization of Millennium Development Goal No. 7, Environmental Sustainability, and the following targets: Integration of principles of sustainable development into country policies and programs; reversal of loss of environmental resources, and reduction by half of the proportion of people without

sustainable access to safe drinking water. It is expected that these activities will be sustained to create an appropriate basin condition.

6.3.4 Climate Change Adaptation

The flood control framework proposed in the 1991 M/P did not consider the adverse effects of climate change. Basically, the raising of the proposed flood control dike was conceived. However, the raising of dike increases the flood damage potential in case of breach of dike. As for the sugarcane field which expands on the left bank (opposite side of city proper of Kabankalan), it shall remain for the time being without any development. Therefore, the construction of a retarding basin that the peak discharge of Ilog-Hilabangan River can decline to release the excess water into the basin is proposed for climate change adaptation.

In addition to the structural measures explained above, the following nonstructural measures shall be applied to climate change adaptation:

- Enlightenment Activities to Stakeholders regarding the Impact of Climate Change; and
- Strengthening of Flood Forecasting and Warning System.

6.3.5 Possibility of Inclusion in First Batch Sub-Projects

Through the feasibility study, it has been identified that the sub-project in Ilog-Hilbangan River Basin is technically feasible, financially affordable and economically viable. However, from the environmental point of view, the sub-project needs a relatively large number of house relocation, which is classified into "Category A" under the JICA Guideline for Environmental and Social Consideration of (2004) and requires a full EIA study, which will affect the implementation schedule of the proposed sub-projects in the other river basins because the full EIA study will take a long time to undertake. Therefore, through a series of discussions among DPWH, NEDA and JICA, it has been concluded that the sub-project in Ilog-Hilabangan River Basin will not be included for implementation under the sector loan, but should look for other financing sources.

6.4 Tagoloan River Basin

6.4.1 Targeted Areas (Core Areas)

As stated in Chapters 4 and 5, flood control projects as sub-projects of the Sector Loan Project on Disaster Risk Management aim to alleviate flood damage in selected "core areas" in major river basins. The policy resulted from the expectation of prompt implementation of the works without delay, hastening the onset of flood control project benefits. From this standpoint, core areas refer to the Municipality of Tagolaon, which is playing the role as one of the key industrial and built-up areas contributing to the economic development of the Province of Misamis Oriental. In fact, the targeted areas are located in the Misamis Oriental Industrial Belt Zone developed and/or to be developed by the PHIVIDEC.

6.4.2 Proposed Structural Flood Mitigation Plan

(1) Summary of Structural Scheme Implemented with Sector Loan

The M/P for Tagoloan River Basin has been formulated as one of the results of the River Dredging Project II [Nationwide Flood Control Plan and River Dredging Program in 1982 (1982 M/P) by OECF (the former name of JBIC which eventually merged with JICA)]. In the 1982 M/P, the plan has to be divided into two (2) phases: the Basic Plan to protect the area against a 50-year return period flood as the framework plan; and the First Phase Plan aiming to control the probable discharge of a 25-year return period.

Based on the above recommendation in the 1982 M/P, the first phase plan proposed against a 25-year return period flood is adopted for the Sector Loan Project in this Preparatory Study to mitigate flood damage in core areas where industrialization and housing built-up areas are presently located. In this regard, the Municipality of Tagoloan along the Tagoloan River is also selected as the core area of the Sector Loan Sub-Project in the Tagoloan River Basin.

Due to industrialization and urbanization of the Municipality of Tagoloan, the DPWH constructed concrete-surfaced flood protection dikes on both sides of the Tagoloan River during 1994-2002. However, construction of the dike system was stopped halfway due to financial constraint, although the main objective of dike construction was not only to prevent inundation but also to protect the adjoining land from scouring and bank erosion.

Therefore, the main flood mitigation work in the Sector Loan Sub-Project is to complete and improve the discontinued dike system and minimize the vulnerability to flood damage. With a complete structural flood protection system, it is expected that the core area will further be urbanized and industrialized. Based on the result of the flood simulation analysis, the extension of the dike on the right bank to the downstream will mitigate flood damage in the projected industrial zone in the near future, so that the extension is proposed together with the construction of dike on the right bank to prevent floodwaters from intruding to the built-up area in the upstream stretch.

In addition, dredging and excavation works in the towhead area located in the river course are proposed to sustain the design flood water level below the existing flood protection dike and the bottom of girder of the Tagoloan Bridge with sufficient freeboard.

The main features and estimated cost of the Tagolaon River Improvement Works are as shown in the attached **Figure 6.3** and summarized below:

Table R 6.5 Summary of Sector Loan Sub-Project Components for the Proposed Tagoloan River Improvement Works

Contents of Project	Quantity	Purpose of Project
Extension of Dike along Right Bank at Downstream Section	L=2,000m	To protect area against 25-year return period flood
Construction of Dike along Right Bank at Upstream Section	L= 650m	To protect area against 25-year return period flood
Dredging Work in Towhead Area	A=8.8 has	To sustain water level below existing dike system

Table R 6.6 Summary of Sector Loan Sub-Project Project Cost for the Proposed Tagoloan River Improvement Works

Major Items	Cost Items	Estimated Cost (Million Pesos)	Remarks
Cost Applicable for Loan	Construction Base	439	Construction Term: 2012-2014
	D/D & S/V	70	
	Contingencies	129	
Sub-Total (1)		638	
Cost Not Applicable for Loan	Compensation	31	Houses and Lots
	Administration	24	DPWH and LGUs
	Contingencies	11	
	VAT & Tax	77	
Sub-Total (2)		143	
Total		781	
O&M		2.60	
EIRR		19.48%	

The economic evaluation shown above indicates the implementation viability of the project in terms of the NEDA requirement.

(2) Concerns in Project Implementation

The concerns in project implementation are as follows:

(a) Natural and Social Environmental Impact Evaluation

Most of the houses located in the project site have already been relocated by PHIVIDEC. Therefore, the flood mitigation structural measure (dike and excavation) proposed in the Study will require the house relocation of only a few families.

However, DENR had recommended the preparation of a relocation action plan (RAP) even though the number of resettlement is quite small. In view thereof, the RAP has to be formulated and implemented in accordance with "The Land Acquisition, Resettlement and Indigenous Peoples Policy of the Department of Public Works and Highways (DPWH)."

To execute the RAP, "Census Survey-cum-Structure Tagging (C/T)" shall be performed to identify the PAPs and to prevent illegal settlers from encroaching in the project site. Preparation of the RAP for Tagoloan, together with the other two candidate river basins (Cagayan and Ilog-Hilabangan) will require six (6) months, at least, prior to project implementation.

(b) Land Acquisition

The alignment of the proposed flood prevention dike is shifted to the land side to secure the river flow area for smooth flow and sustain the design floodwater level below the existing dike crown with sufficient freeboard. Therefore, the river area proposed in the Study has widened compared to the river area presumed by PHIVIDEC.

This difference between the PHIVIDEC presumed area and the area proposed by the Study accounts for 20 hectares. Originally, this area was designated as

government land. Therefore, the ownership of the land shall be dealt with prior to project implementation, including the MOA.

(c) Low-Lying Area on Left Bank of Estuary

The low-lying area extending across the estuary on the left bank shall be maintained as it is from the following reasons:

- Floodwater does not expand widely even without the construction of dike in the low-lying area.
- Low lying area is located in flood risk area where floodwaters have overflowed in every flood.
- Since mangrove coasts have expanded in this low-lying area, it is desirable to preserve this area without modification.

Under the circumstances mentioned above, the low-lying area shall be preserved by Tagoloan Municipality in association with PHIVIDEC.

6.4.3 Proposed Nonstructural Measures

Similar to the results of the F/S for Cagayan and Ilog-Hilabangan River, the following community-based nonstructural measures are proposed in parallel with the structural measures:

- Establishment of Flood Early Warning System utilizing the Basin Flood Forecasting System.
- Preparation of Flood Hazard Map with the participation of residents, including dry run and map exercises in flood vulnerable areas.

In connection with the execution of the proposed measures mentioned above, proposed is a Technical Assistance Program to support and enhance the capacity of related agencies, such as DPWH, OCD and PAGASA, in parallel with and as one sphere of implementation of the Sector Loan.

In addition, it is essential to maintain a proper river area in the estuary area including upstream stretches and coastal area for future widening/excavation of river channel, extension of the flood dike and control of rising of tidal level, respectively. To achieve such a full-scale river improvement works, the LGUs shall first of all secure the proper river course to implement the widening of river channel. In this connection, the CLUP (comprehensive land use plan) shall delineate the river area together with the designed dike alignment and low-lying area located in the estuary and shoreline in the future land use map as the river or control areas.

6.4.4 Climate Change Adaptation

The Tagoloan River in the target area has a wide river width between the existing dike on both sides. Therefore, the excavation works in such a broad river area, such as the towhead area and the low-lying area to be preserved, might be applied to climate change adaptation.

However, it takes time and costly for climate change adaptation to apply the structural measures. In this regard, the following nonstructural measures shall be applied to climate change adaptation for the time being:

- Land Use Control and Designation of Flood Risk Area mainstreaming Disaster Risk Management
- Enlightenment Activities to Stakeholders regarding the Impact of Climate Change.
- Strengthening of Flood Forecasting and Warning System.

6.4.5 Possibility of Inclusion in First Batch Sub-Projects

Through the feasibility study, it has been identified that the sub-project in Tagoloan River Basin is technically feasible, financially affordable, economically viable and environmentally acceptable. Thus, it can be said that the sub-project in Tagoloan River Basin is qualified to be included in the first batch of sub-projects in the sector loan.

6.5 Support and Capacity Enhancement of Related Agency Activities

As proposed in the Main Report (Part I), the Sector Loan Project aims at not only flood damage mitigation in target core areas but also at strengthening and enhancing the capacity of the related agencies such as DPWH, LGUs concerned, OCD and PAGASA. In this regard, it is proposed that the following T/As regarding support for nonstructural activities and contribution to the betterment of O&M activities shall be executed in parallel with the implementation of the sub-projects.

(1) Assistance on Setup of Nonstructural Measures

(2) Advice on Collection System Arrangement for the O&M Budget and Capacity Development for Drainage Improvement

The T/As mentioned above would contribute to the strengthening of capacity for DRM of the Planning Service and FCSEC of DPWH, as well as OCD and PAGASA, and the enhancement of LGUs' activities regarding the DRM.

6.6 Implementation Plan of the Sector Loan Project

It is proposed that the construction works of the two (2) sub-projects described above shall be implemented as the First Batch of Sector Loan Sub-Projects. The estimated construction term is three (3) years during 2014-2016, as shown below.

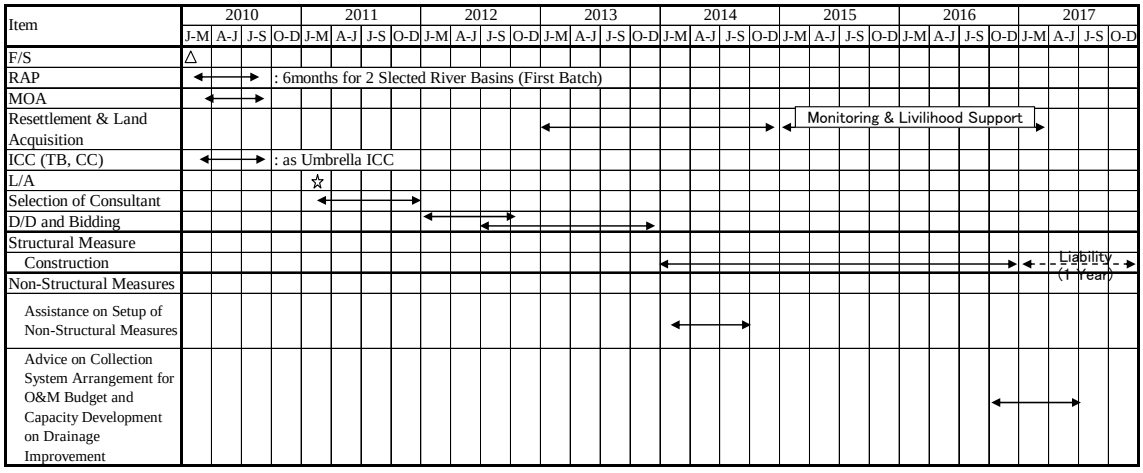


Figure R 6.1 Implementation Program of the Two (2) First Batch Sub-Projects of the Sector Loan Project

CHAPTER 7 CONCLUSION AND RECOMMENDATION

7.1 Conclusion

(1) Framework of Sector Loan

The Philippines is one of the countries most severely damaged by natural disasters in the East-Asia Region. Among the natural disasters, those caused by typhoon occupy most of the portion reaching 92.5% of the total damage. To cope with the situation, the Philippine Government has been making serious efforts, as emphasized in the Medium-Term Philippine Development Plans.

However, there were several issues pointed out for flood disaster projects implemented under the previous individual loan approach, which has not always successfully achieved the project targets. In due consideration of these issues, a new approach has been examined in a manner of sector loan in the Preparatory Study.

In the new approach, three tools are proposed to be introduced for the improvement of the previous issues and the contents carefully examined; namely, (1) Introduction of sector loan with cooperative agreement; (2) Introduction of DRF (Disaster Rehabilitation Fund); and (3) Arrangement of technical assistance programs (T/A).

It is concluded that the new sector loan approach is essential to initiate improvement of the previous issues and these tools are effective to achieve the target.

(2) Arrangement of Sub-Projects including F/S for the Three Selected Basins

In parallel with the study on the framework of the new sector loan approach, the arrangement of sub-projects was also conducted in this Preparatory Study in a manner of preparation of candidate river basins for flood control (arrangement of the long and short lists and the selection of objective river basins for feasibility study in this study). Then, the following three objective river basins were selected to examine the sub-projects' feasibility as flood control project, targeting the protection of core areas [Cagayan River (Tuguegarao and Enrile); Ilog-Hilabangan River (Kabankalan and Ilog); and Tagoloan River (Tagoloan)].

It is concluded that the long and short lists of flood control projects are adequate and the flood control sub-projects in two river basins (Cagayan and Tagoloan) are in principle technically feasible, economically viable and acceptable from the environmental point of view. However, the flood control sub-project in Ilog-Hilabangan River Basin, which would require the house relocation of more than 50 families, needs a full EIA to meet the JICA Guideline for Environment and Social Consideration. If the sub-project in Ilog-Hilabangan River Basin is included in the first batch, the implementation of sub-projects in the other two river basins will be seriously affected. Therefore, through a series of discussions among DPWH, NEDA and JICA, it was concluded that the sub-project in Ilog-Hilabangan River Basin will not be included in the sector loan, but should look for other financing sources for its implementation.

7.2 Recommendation

(1) Framework of the Sector Loan

1. In this study, the framework of the Sector Loan was examined putting more emphasis on the tools used for the improvement of issues pointed out for the previous individual loan approach as mentioned above. In the course of the study, it was considered by DPWH to set up the organization to manage the sector loan, as well as the ICD which will handle part of the soft for operation of the sector loan. In this context, it is recommended that such an organization should be set up by DPWH as early as possible, at least, by the time the L/A is concluded.

2. It is recommended that the said organization should initiate the works necessary to arrange the loan application such as approval of ICC, preparation of necessary documents for the EIA Certificate, and preparation of documents for the loan agreement (L/A) in accordance with the expected schedule (refer to Figure 5.2).

3. In this study, the items for cooperative agreement together with the timing of the realization have been proposed as part of the tools. In this connection, the items of the cooperative agreement should be finalized through discussions among the related agencies such as DPWH and JICA before appraisal mission in principle, and then the agencies concerned should realize the items by the timing required.

4. For introduction of the DRF as one of the tools, improvement of the current management system of BOM on the QRF (Quick Response Fund) and the funds from the GAA (General Appropriations Act) is proposed for the restoration works of damaged river structures with the involvement of other offices (PS and FCSEC). It is also recommended that the elaboration and finalization of the management system for the DRF should be completed before the L/A is concluded, based on the system proposed in this study.

5. To assist in project implementation under the new sector loan approach, it is also proposed to introduce technical assistance programs (T/A) consisting of the five (5) items mentioned before. For smooth implementation of the sub-projects, the introduction of T/A seems to be indispensable and the action to request for T/A should also be initiated as early as possible, especially for the items which require early introduction such as the setup of mechanism for management of DRF and the introduction of nonstructural measures.

(2) Arrangement of Sub-Projects including F/S of the Three Selected Basins

1. In this study, preparation of the short and long lists and selection of the objective river basins for F/S were conducted in the course of arrangement of sub-projects. It is expected that two river basins (Cagayan and Tagoloan) are included in the first batch of sub-projects implemented under the sector loan. In this connection, finalization of the objective river basins to be included in the first batch is recommended to accelerate the necessary procedures for sector loan application.

2. For these two river basins, there are still several works remaining for the loan application, especially, the ICC approval including RDC resolution, receipt of ECC, MOA execution and so on. In this connection, it is recommended that prompt and serious action should be taken for the completion of remaining works.

3. Among the works remaining as mentioned above the receipt of an ECC is one of the significant processes to promote the project, because the sub-projects could not proceed without the ECC. In this Study, only the materials for IEE were arranged, and additional study, which has to be undertaken by the proponent agencies, will be required. Therefore, it is strongly recommended that prompt action should be taken by DPWH toward the receipt of ECC.

4. As for the sub-project in Ilog-Hilabangan River Basin, it was excluded from the first batch of the sector loan project, since it would require a full EIA study in accordance with the JICA Guideline for Environmental and Social Consideration (2004) due to the relatively large number of house relocation of more than 50 families. Since the full EIA study for the sub-project in Ilog-Hilabangan would take some time to complete, the implementation of sub-projects in the other two river basins will be seriously affected. However, it is recommended that the flood control project in the Ilog-Hilabangan River Basin should be considered with the promotion of thorough arrangements for other financing sources or schemes, since the feasibility of the project, as well as urgency, has been identified in the Study from the technical, economical and financial points of view.

TABLES

Table 1.1 List of Water Resources Regions

Code	Name	Major River Basin	No. of Principal Rivers
WRR I	Ilocos Region	Abra River	14
WRR II	Cagayan Valley	Cagayan River	39
WRR III	Central Luzon	Pampanga and Agno Rivers	24
WRR IV	Southern Tagalog	Pasig-Laguna de Bay Rivers	97
WRR V	Bicol Region	Bicol River	30
WRR VI	Western Visayas	Panay, Jalaur and Ilog-Hilabangan Rivers	37
WRR VII	Central Visayas	-	19
WRR VIII	Eastern Visayas	-	34
WRR IX	Southwestern Mindanao	-	34
WRR X	Northern Mindanao	Agusan, Cagayan de Oro and Tagoloan Rivers	29
WRR XI	Southeastern Mindanao	Davao, Tagum-Libuganon, Buayan Rivers	35
WRR XII	Southern Mindanao	Agus and Mindanao Rivers	30

Source: "Principal River Basin of the Philippines" published by NWRC in October 1976

Table 1.2 Eighteen Major River Basins

Code No.	Rank	River Basin	Water Resources Region	Catchment Area (km²)
02001	1	Cagayan	Region II	25,469
12342	2	Mindanao	Region XI and XII	23,169
10315	3	Agusan	Region XIII	10,921
03059	4	Pampanga	Region III	9,759
03070	5	Agno	Region III	5,952
01036	6	Abra	Region I	5,125
04076	7	Pasig-Laguna Bay	NCR and Region IVA	4,678
05114	8	Bicol	Region V	3,771
02028	9	Abulug	Region II	3,372
11303	10	Tagum-Libuganon	Region XI	3,064
06235	11	Ilog-Hilabangan	Region VI and VII	1,945
06197	12	Panay	Region VI	1,843
10331	13	Tagoloan	Region X	1,704
12336	14	Agus	Region XII and ARMM	1,645
11307	15	Davao	Region XI	1,623
10332	16	Cagayan	Region X	1,521
06205	17	Jalaur	Region VI	1,503
11364	18	Buayan-Malungun	Region XI	1,434

Source: "Principal River Basins of the Philippines" published by NWRC in October 1976

Table 1.3 Definition of Major River Basin according to Various Agencies/Studies

No.	Rive Name	Major River Basin by NWRB and DPWH	13 Major River by DPWH *2	20 Major River Basins by RBCO-DENR *3	Catchment Area (km2)	Region located
1	Cagayan	*	*	*	25,469	II
2	Mindanao	*	*	*	23,169	XI and XII
3	Agusan	*	*	*	10,921	XIII
4	Pampanga	*	*	*	9,759	III
5	Agno	*	*	*	5,952	III
6	Abra	*		*	5,125	I
7	Pasig-Laguna De Bay*1	*	*	*	4,678	NCR and IV-A
8	Bicol	*	*	*	3,771	V
9	Abulug	*		*	3,372	II
10	Tigum-Libuganon	*		*	3,064	XI
11	Ilog-Hilabangan	*	*	*	1,945	VI and VII
12	Panay	*	*	*	1,843	VI
13	Tagoloan	*	*	*	1,704	X
14	Agus	*		*	1,645	XII and ARMM
15	Davao	*		*	1,623	XI
16	Cagayan De Oro	*		*	1,521	X
17	Jalaur	*	*	*	1,503	VI
18	Buayan-Malungun	*		*	1,434	XI
	Laoag		*		1,353	I
	Amnay-Patric		*	*	993	VI-B
	Iloilo (Jaro: Tigum-Aganan)			*	505	VI

Note: *1: DPWH named Pasig-Marikina River Basin.
*2: Rivers in the Philippines (March 1997), Nationwide Flood Control & River Dredging Program (1982) (>990km^2)
*3: Master Plan for Water Resources Management of the Philippines (1998)

Table 1.4 Major River Basins and Principal River Basins according to Water Resources Regions

No.	Name of Water Resources Regions	Name of Major River Basins (Catchment Area:km^2)	No. of Principal River Basins
1	Ilocos	Abra (5,125)	14
2	Cagayan Valley	Cagayan (25,649), Abulug (3,372)	38
3	Central Luzon	Pampanga (9,759), Agno (5,952)	24
4	Southern Tagalog	Pasig-Laguna Bay (4,678), Amnay-Patric (466)*	97
5	Bicol	Bicol (3,771)	30
6	Western Visayas	Ilog-Hilabangan (1,945), Panay(1,843), Jalaur (1,503), Iloilo (272)*	37
7	Central Visayas	-	19
8	Eastern Visayas	-	34
9	Southwestern Mindanao	-	34
10	Northern Mindanao	Agusan (10,921), Tagoloan (1,704), Cagayan de Oro (1,521)	29
11	Southeastern Mindanao	Tagum-Libuganon (3,064), Davao (1,623), Buayan-Malungan (1,434)	35
12	Southern Mindanao	Mindanao (23,169), Agus (1,645)	30
		計	421

Note : Source: Principal River Basins of the Philippines
by National Water Resources Committee (1976,10)

Table 2.1 Recorded Annual Flood Damages, Philippines, 1980-2005

Year	Population Affected		Causalities			House Damaged		Damage Value* (mil. Peso)
	Families	Persons	Dead	Missing	Injured	Totally	Partially	
1980	248,164	1,666,498	36	4	55	16,510	51,101	1,472
1981	250,325	1,472,417	484	264	1,922	44,994	159,251	1,273
1982	266,476	1,569,017	337	223	347	84,027	97,485	1,754
1983	140,604	747,155	126	168	28	29,892	85,072	523
1984	741,510	4,048,805	1,979	4,426	732	310,646	313,391	416
1985	318,106	1,643,142	211	300	17	8,204	211,151	3
1986	287,240	1,524,301	171	43	155	3,162	14,595	1,838
1987	464,162	2,591,914	1,020	213	1,455	180,550	344,416	8,763
1988	1,173,994	6,081,572	429	195	468	134,344	585,732	8,675
1989	501,682	2,582,822	382	89	1,088	56,473	184,584	4,494
1990	1,265,652	6,661,474	676	262	1,392	223,535	636,742	11,713
1991	150,894	759,335	5,201	4,278	357	15,458	83,664	74
1992	418,964	2,097,693	145	95	51	3,472	8,342	7,359
1993	1,523,250	8,202,118	814	214	1,637	166,004	456,773	25,038
1994	670,078	3,306,783	266	54	260	58,869	226,291	3,401
1995	1,710,619	8,567,666	1,255	669	3,027	294,654	720,502	57,781
1996	260,581	1,254,989	124	49	97	2,690	17,557	10,109
1997	777,997	3,954,175	199	28	66	13,225	53,980	4,842
1998	1,590,905	7,197,953	498	116	873	137,020	406,438	17,823
1999	270,424	1,281,194	56	3	25	144	687	1,555
2000	1,426,965	6,852,826	338	59	370	24,573	195,536	7,217
2001	756,938	3,629,295	431	134	418	14,899	54,422	6,924
2002	538,600	3,546,469	169	33	71	2,980	15,947	829
2003	702,223	3,362,991	139	28	182	12,306	51,579	4,567
2004**	-	-	1,046	437	836	-	-	7,679
2005**	-	-	62	36	51	-	-	2,487
Total	16,456,353	84,602,604	16,594	12,420	15,980	1,838,631	4,975,238	198,609

**) Total damages in infrastructure, agriculture and private properties.*

***) Source: DSWD for Casualties.*

-) Not available here.

Table 2.2 Destructive Tropical Disturbance and Corresponding Casualties, Philippines

Tropical Disturbance	Date of Occurrence	Casualties		
		Dead	Missing	Injured
T Ruping	Nov 10-14, 1990	508	246	
TS Uring	Nov 2-6, 1991	5,101	1,256	292
TD Ditang	July 17-21, 1992	36	77	
T Kadiang	Sep 30-Oct 7, 1993	126	26	37
T Monang	Dec 3-4, 1993	273	90	607
T Puring	Dec 24-29, 1993	187	52	280
TS Mameng	Sep 27 - Oct 1, 1995	116	126	49
TS Pepang	Oct 26 -30, 1995	265	67	323
T Rosing	Oct 31 - Nov 3, 1995	936	316	4,152
T Emang & TS Gading	Sept 16-21, 1998	108	20	
Loleng	Oct 15-23, 1998	303	29	751
Reming	Oct 26-Nov 1, 2000	114	10	
T Feria	July 2-6, 2001	188	44	241
T Nanang	Nov 6-10, 2001	236	88	169
Hambalos, Inday	June 28-July 14, 2002	85	4	45
T Harurut	July 19-21, 2003	64	2	154
T Igme	June 25-July 2, 2004	57	20	39
T Unding	Nov 14-21, 2004	56	79	25
TD Winnie	Nov 28-30, 2004	821	417	400

T: Typhoon, TS: Tropical Storm, TD: Tropical Depression

Source: Office of Civil Defense

Table 2.3 Proposed Project (DPWH Medium-Term Public Investment Program)

Fund	Name of River Basin	JBIC loan applied	Budget Allocation	Implementation schedule	Ranking	Remarks (Present Status)
Foreign Assisted Project	Mt Pinatubo (Phase III)	27th	2006	2008-2010	-	
	Cagayan	27th	2006	2009-2011	39	
	Panay (1st Stage)	27th	2008	2009-2014	17	
	Bicol	-	2006	2008-2012	21	
	Agno & allied (Phase-III)	-	2008	2009-	27	
	VOM (Meycauayan)	-	2008	2009-2013	6	
	Mayon volcano	-	2008	2009-	7	
	Lower Cotabato	-	2008	2009-2011	11	
	Davao urban drainage	-	2008	2009-2010	14	
	Tagaloan	-	2008	2009-2010	40	
	Upper Agusan	-	2008	2008-2011	33	
	Tagum-Libuganon	-	2008	2009-2011	45	
	Agus	-	2008	2009-2011	48	
	Buayan-Malungun	-	2008	2009-2011	44	
	Tarlac	-	2008	2009-2013	27	
	Iloilo (Phase-II)	-	2008	2009-2014	-	
	Ilog-Hilabangan	-	2008	2009-2010	28	
	East-Mangahan	-	2009	2009-2014	2	
Local Fund Project	Kinanliman*	-	2008		25	Implementation is on-going
	Yawa	-	2008		6	Updating of M/P and F/S is requested
	Agos*	-	2008		33	Detailed design is requested
	Dinalupihan-Hermosa-Lubao*	-	2008		-	Not included in 56 river basins

*: Not listed in the DPWH Medium-term Program

Table 2.4 Function and Mandates of Agencies related to Disaster Risk Management

Organaization	Function and Mandate regarding to Disaster Risk Management	Remarks
Policy-Making/Coordination Body		
NEDA	to undertake policy-making/coordinating for the entire socio-economic development in the country	
NWRB	to Formulate and coordinate policies, programs and standards relating to Water Sector; to manage and regulate all water-related activities; and to regulate and monitor water utilities	
NDCC RDCC PDCC, C/MDCC・BDCC	to take the role for nationwide disaster coordination works to take the role for regional-wide disaster coordination works to take the role for local governmental-wide disaster coordination works	
RBCO	to rationalize and prioritize the various existing river basin projects and reforestation in watersheds to develop a National M/P for Flood Control by Integrating the various existing projects and plan as needed, to develop and implement M/P on Integrated River Basin Management and Developments	
River Development Authority	to preserve, protect and develop all rivers, riversystems and waterways in each river basin (under deliberation in the Congress)	
National Government Agency		
DPWH	to develop the major and/or large-scale infrastructures for flood mitigation	
NIA-NA	to develop the major and/or large-scale infrastructures for flood mitigation in/around irrigated areas	
PAGASA-DOST	to issue warning and alert of flood based on reserching and mmonitoring meteological observation to prepare flood and storm surge hazard map under READY Project by UNDP (27 areas)	
PHIVOLCS-DOST	to reserch, monitor and predict volcano eruption, seismic activities and tsunami phenomena to prepare seismic, volcano and tsunami hazard map under READY Project by UNDP	
OCD-DND	to Coordinate the activities and functions of the various agencies to implement the policies set by the NDCC relative to disaster management, and Provide the secretariat services to the NDCC, to Prepare and disseminate disaster control manuals and other publications related to measures on disaster prevention, control and mitigation, and to Advise the Chairman of NDCC on matters concerning disaster management	
MGB-DENR	to prepare Hazard Map on Landslide based on reserching geological analysis	
EMB-DENR	to issue ECC on Flood Mitigation Project to be implemented	
FMB-DENR	to preserve forest and environmental conditions in upstream reach as watershed management	
BLGD-DILG	to oversee the organization of disaster coordinating councils and establish operation centers of all LGUs, to train members of LDCCs for capacity strengthening regarding disaster risk management	
EOHO-DOH		
NHRC-UPERDFI		
PMB-OCBG-DSWD	to relieve assistance and social services to the victims which will immediately restore them to rehabilitation and a life of normalcy in the extension of emergency to support and assist project affected families	
Local Government Unit	to conduct all flood mitigation project and activities in their jurisdiction, to establish related committee and organization	

Table 2.5 Powers, Duties, and Functions of Councils of LGUs

Barangay	Municipality	Province
Provide for the construction and maintenance of barangay facilities and other public works projects chargeable to the general fund of the barangay or such other funds actually available for the purpose.	- Provide for the esTablishment, maintenance, protection, and conservation of communal forests and watersheds, tree parks, greenbelts, mangroves, and other similar forest development projects. - Authorize the esTablishment, maintenance and operation of ferries, wharves, and other structures, and marine and seashore or offshore activities intended to accelerate productivity. - Subject to existing laws, provide for the esTablishment, operation, maintenance, and repair of an efficient waterworks system to supply water for the inhabitants; regulate the construction, maintenance, repair and use of hydrants, pumps, cisterns and reservoirs; protect the purity and quantity of the water supply of the municipality and, for this purpose, extend the coverage of appropriate ordinances over all territory within the drainage area of said water supply and within one hundred (100) meters of the reservoir, conduit, canal, aqueduct, pumping station, or watershed used in connection with the water service; and regulate the consumption, use or wastage of water.	Subject to applicable laws, facilitate or provide for the esTablishment and maintenance of a waterworks system or district waterworks for supplying water to inhabitants of component cities and municipalities.

Table 2.6 GOJ Grant Aid Projects (1971-2004)

Year	Agency	Project	Amount (million Yen)	Status
1972	PAGASA	Flood Forecasting and Warning System in Pampanga River Basin	80	Completed
1977	UP	Strengthening of National Hydraulic Research Center	60	Completed
1980	PAGASA	Rehabilitation of Flood Forecasting and Warning System in Pampanga River Basin	21	Completed
1989	DPWH	Retrieval of Flood Prone Areas in Metro Manila	1,231	Completed
1991	DPWH	Equipment for Mt. Pinatubo Hazard Urgent Mitigation	1,455	Completed
1992	DPWH	Retrieval of Flood Prone Areas in Metro Manila (II)	1,254	Completed
1997-2001	DPWH	Flood Mitigation in Oemoc City (I) & (II)	3,255	Completed
2000	DPWH	Rehabilitation of Flood Control Operation and Warning System in Metro Manila	1,048	Completed
2002	DPWH	Construction of Hydraulic Laboratory Building	794	Completed
Total		9 Projects	9,198	

Source: "Water & Floods", DPWH, March 2004

Table 2.7 JICA Studies (1971-2008)

Year	Agency	Project	Status
1976-1978	DPWH	Planning Report on the Pasig-Potrero River Flood Control and Sabo Project	Completed
1976-1977	PAGASA	Survey for the Flood Forecasting System Project	Completed
1978-1981	DPWH	Master Plan for Mayon Volcano Sabo and Flood Control Project	Completed
1979-1982	DPWH	Pampanga Delta Development Project	Completed
1982-1983	DPWH	Re-study of Mayon Volcano Sabo and Flood Control Project	Completed
1983-1986	DPWH	Panay River Basinwide Flood Control Study	Completed
1987-1990	DPWH	Study on Flood Control and Drainage Project in Metro Manila	Completed
1988-1991	DPWH	Study of Agno River Basin Flood Control Project	Completed
1989-1991	DPWH	Study on Ilog-Hilabangan River Basin Flood Control Project	Completed
1992-1995	DPWH	The Study on Flood Control and Mudflow Control for Sacobia-Bamban/ Abacan River Basin Draining from Mt. Pinatubo	Completed
1996-1997	DPWH	The Study on Sabo and Flood Control in the Laoag River Basin	Completed
2000	DPWH	The Study on Comprehensive Disaster Prevention Around Mayon Volcano	Completed
2000	DPWH	The Study on Existing Drainage Laterals in Metro Manila (LDSP)	Completed
2000	DPWH	The Feasibility Study on Lower Cagayan River Flood Control Project	Completed
2002-2003	DPWH	The Study in Sabo and Flood Control for Western River Basins of Mount Pinatubo	Completed
2003	DPWH	Basic Study on Disaster Prevention & Reconstruction Project for Camiguin Island, Mindanao (LDSP)	Completed
2003	DPWH	Study on Drainage Improvement in Core Area of Metropolitan Manila	Completed
2006-2008	DPWH	The Study on the Nationwide Flood Risk Assessment and the Flood Mitigation Plan for the Selected Areas	Completed*
2007-2008	DPWH Cavite P	The Study on Comprehensive Flood Mitigation for Cavite Lowland Area	Completed* (Draft)
Total		19 Studies	

Source: "Water & Floods", DPWH, March 2004.and Others

** : Added by the Preparatory Study Team*

Table 2.8 OECF/JBIC Projects (1971-2004)

L/A Date	Agency	Project	L/A Amount (million Yen)	Status
03/23/1973	PAGASA	Flood Forecasting and Warning System in Pampanga River Basin	3,028	Completed
08/01/1974	DPWH	Flood Control Dredging Project in the Pampanga, Bicol & CoTabato River Basins	3,187	Completed
09/09/1975	DPWH	Pasig River Flood Control Project	5,112	Completed
01/04/1978	PAGASA	The Flood Forecasting Systems Project	1,774	Completed
11/09/1978	DPWH	River Dredging Project (II)	2,429	Completed
05/31/1982	DPWH	Lower Agusan Development Project (ES)	330	Completed
05/31/1982	PAGASA	Flood Forecasting and Warning System for Dam Operation Project	3,600	Completed
09/09/1983	DPWH	Nationwide Flood Control Dredging Project (Telemetering)	1,140	Completed
05/07/1984	DPWH	Metro Manila Drainage System Rehabilitation Project	3,012	Completed
05/30/1986	DPWH	Pampanga Delta Development Project (ES)	705	Completed
05/30/1986	PAGASA	Flood Forecasting and Warning System for Dam Operation Project (II)	3,988	Completed
01/27/1988	DPWH	Metro Manila Flood Control Project (II)	10,818	Completed
01/27/1988	DPWH	Small Water Impounding Management Project	3,193	Completed
01/27/1988	DPWH	Lower Agusan Development Project, Stage I, Phase I	3,372	Completed
02/09/1990	DPWH	Pampanga Delta Development Project, Flood Control Component (I)	8,637	Completed
02/09/1990	DPWH	North Laguna Lakeshore Urgent Flood Control & Drainage Project (ES)	454	Completed
08/30/1995	DPWH	Agno and Allied Rivers Urgent Rehabilitation Project	8,312	Completed
03/29/1996	DPWH	Mt. Pinatubo Hazard Urgent Mitigation Project	6,911	Completed
03/18/1997	DPWH	The Metro Manila Flood Control Project West of Mangahan Floodway	9,411	Completed
03/18/1997	DPWH	Lower Agusan Development Project (Flood Control Component - Phase II)	7,979	Completed
09/10/1998	DPWH	Agno River Flood Control Project (II-A)	6,734	Completed
12/28/1999	DPWH	Pasig-Marikina River Channel Improvement Project (ES)		Completed
12/28/1999	DPWH	Mt. Pinatubo Hazard Urgent Mitigation Project (II)	9,013	Completed
04/07/2000	DPWH	KAMANAVA Flood Control and Drainage System Improvement Project	8,929	On-Going
05/30/2001	DPWH	Laoag River Basin Flood Control and Sabo Project	6,309	On-Going
05/30/2001	DPWH	Agno River Flood Control Project (Phase II-B)	2,789	On-Going
03/28/2002	DPWH	Iloilo Flood Control Project (Stage I)	6,790	On-Going
02/27/2007	DPWH	Pasig-Marikina Phase II (Pasig River Improvemen)	8,529	On-Going*
Total		28 Projects	137,504	

Source: "Water & Floods", DPWH, March 2004.and Added by the Preparatory Study Team

** : Added by the Preparatory Study Team*

Table 3.1 Work Item Matrix to apply Sector Loan

Items	Major Agencies involved	Stage M/P Stage →	F/S Stage →	Before D/D →	D/D Stage →	Pre-Construction Stage →	Implementation Stage →	Operation and Maintenance
Contents of Works	**DPWH, LGUs & Stakeholders**	Study on general framework Clarification of target for M/P Collection and Arrangement of basic data Arragement of several alternative countermeasures Arrangement of Implemantation Schedule Selection of urgent project for F/S	Data Collection and Field Survey Basic Analysis Stakeholder Meeting Social and Environmental Study Basic Design Features Alternative Studies Selection of Optimum Plan (ROW and O&M) Preliminary Design Economic Evaluation Project Evaluation Clarification of content of project including O&M	Application for ICC approval Preparation of EIA Evaluation of ROW and O&M Arrangement of MOA Loan Application	Review of F/S Detailed Field Survey Detailed Design Preparation of Tender Doc. Preparation of Land Acquisition Confirmation of ECC	Review of D/D Tendering ICP(Information Campaign) Preparation of RAP(Resettlement Action Plan)	Supervision Land Acquisition Environmental Monitoring	Turnover of Facilities to LGU Assistance for O&M for LGU Restoration work for emergency Cases Training of Staff for O&M Environmental monitoring
Basic Conditions to be Confirmed	**DPWH**	Confirmation of Strategy for M/S Arrangement of necessary data Coordination with Regional and Disctrit offices Coordination among stakeholders	Confirmation of Strategy for F/S Preparation of PD and necessary arrangement for EIA certificate	Preparation of Preliminary Resettlement Action Plan (RAP) ICC approval EIA certificate Signing of MOA (general agreement)	Parcellary Survey, Census/tagging Survey Preparation of RAP Arrangement of budget Preparation of project office Procurement of consultant and necessary equipment Approval of Detailed Design	Execution of RAP Arrangement of budget ICP(Information Campaign)	Execution of RAP Arrangement of budget Signing of MOA specified detailed items Environmental Monitoring (establishment of task force)	Arrangement of budget Necessary action of O&M Monitoring of consequence of MOA Environmental monitoring
	LGUs	Announcement of Intention for M/P	Anouncement of Intention for F/S Introduction of non-structural measures if necessary Preparation of land utilization plan Initiation of necessary action for project implementation	Operation of non-structural Measures Arrangement of local budget for O&M Signing of MOA (general agreement) Arrangement of ordinance for land use control if necessary	Assistance for formulation of RAP Explanation of schedule for project Operation and Improvement of non-structural measures Monitoring of life of affected people Initiation of land use control if necessary	Operation and Improvement of non-structural measures Execution of RAP	Execution of RAP arrangement of budget Signing of MOA specified detailed items Environmental Monitoring (establishment of task force)	Necessary action of O&M Preparation of activity report for O&M Monitoring of consequence of MOA Environmental Monitoring
	Stakeholders (Beneficiaries)	Understanding of the project Intention to cooperate and coordinate Clarification of role of stakeholders Intention to shoulder the responsibility	Understanding of the project Intention to cooperate and coordinate Clarification of role of stakeholders Intention to shoulder the responsibility (participation of disaster prevention activities)	Understanding of the project Intention to cooperate and coordinate Clarification of role of stakeholders Intention to shoulder the responsibility (participation of disaster prevention activities)	Understanding of the project Intention to cooperate and coordinate Clarification of role of stakeholders Intention to shoulder the (participation of disaster prevention activities)	Understanding of the project Implementation of ICP Intention to cooperate and coordinate Clarification of role of stakeholders Intention to shoulder the (participation of disaster prevention activities)	Cooperation of project implementation Participation of disaster prevention activities (especially operation of non-structural measures)	Cooperation of O&M activities Participation of disaster prevention activities (especially operation of non-structural measures)
	Stakeholders (Affected People)	Understanding of the project Intention to cooperate and coordinate Acceptance for the requirement for project Implementation Basic condition to cooperate the project	Understanding of the project Intention to cooperate and coordinate Acceptance for the requirement for project Implementation Basic condition to cooperate the project	Understanding of the project Intention to cooperate and coordinate Acceptance for the requirement for project Implementation Basic condition to cooperate the project	Understanding of the project Intention to cooperate and coordinate Acceptance for the requirement for project Implementation Basic condition to cooperate the project	Understanding of the project Intention to cooperate and coordinate Acceptance for the requirement for project Implementation Basic condition to cooperate the project	Migration to the other site Report of life after migration	Report of life after migration
	NEDA	**Confirmation of strategy for regional development and sector, and Implementation Agency of the loan**	**Exchange of views for F/S**	**Evaluation of project for ICC approval**				
	DENR	**Confirmation of EIA system**	**Evaluation based on PD (Project Digest)**	**Issuance of ECC**				
	Other agencies concerned							
	ADB/WB	Confirmation of strategy for funding and institutional reform Exchange of Information of Issued related to funding	Exchange of views as funding agency	Exchange of views as funding agency	Exchange of views as funding agency	Exchange of views as funding agency	Exchange of views as funding agency	Exchange of views as funding agency
Critical Condition		Understanding and agreement for promotion of project among stakeholders Confirmation of NEDA policy	Understanding and agreement for promotion of project among stakeholders	RDC approval ICC approval Issuance of ECC Signing of MOA	Confirmation of budgetary allocation Confirmation of execution of RAP Report of budget allocation Monitoring of Progress of RAP	Confirmation of budgetary allocation Confirmation of progress of institutional reform Confirmation of execution of RAP	Confirmation of budgetary allocation Confirmation of execution of RAP	Confirmation of budgetary allocation Activities for O&M
Confirmation of Achievement		Agreement of Stakeholder Meeting	Agreement of Stakeholder Meeting	Agreement of Stakeholder Meeting Confirmation of above document		Report of budget allocation Monitoring of Progress of RAP	Monitoring of Progress of RAP	Activities for O&M Monitoring of RAP activities
Related necessary arrangement				☆ L/A signing	☆ Disbursement of Loan ▶			

Table 3.2 DPWH Resettlement Policy Compensation Matrix

Type of Loss	Application	Entitled Person	Compensation / Entitlements
LAND (Classified as Agricultural, Residential, Commercial or Institutional)	More than 20% of the total landholding lost or where less than 20% lost but the remaining landholding becomes economically unviable	PAP with TCT or Tax Declaration (Tax Declaration can be legalized to full title)	PAPs will be entitled to: + Cash compensation for loss of land at 100% replacement cost at the informed request of PAPs + If feasible, land for land will provided in terms of a new parcel of equivalent productivity, at a location acceptable to PAPs + Holders of free or homestead patents and CLOAs under CA 141 (Public Land Act) will be compensated for land improvements only. + Holders of Certificate of Land Ownership Award (CLOA) granted under the Comprehensive Agrarian Reform Act shall be compensated for the land at zonal value. + Cash compensation for damaged crops at market value at the time of taking. + Rehabilitation assistance in the form of skills training equivalent to the amount of P15, 0000.00 per family, if the present means of livelihood is no longer viable and the PAP will have to engage in a new income-earning activity.
		PAP without TCT	+ Cash compensation for damaged crops at market value at the time of taking. + Agricultural lessor are entitled to disturbance compensation equvalent to five times the average of the gross harvest for the past 3 years but not less than PhP15, 000.00.
	Less than 20% of the total landholding lost or where less than 20% lost or where the remaning landholding still viable for continued use	PAP with TCT or Tax Declaraation (Tax Declaration can be legalized to full title)	PAP will be entitled to: + Cash compensation for lost of land at 100% replacement cost at the informed request of PAFs + Holders of free or homestead patents and CLOAs under CA 141. (Public Lands Act) shall be compensated on land improvements only. + Holders of Certificate of Land Ownership Award (CLOA) granted under the Comprehensive Agrarian Reform Act shall be compensated for the land at zonal value. + Cash compensation for damaged crops at market value at the time of taking.
		PAP without TCT	+ Cash compensation for damage crops at market value at the time of taking. + Agricultural lessor are entitled to disturbance compensation equvalent to five times the average of the gross harvest for the past 3 years but not less than PhP15, 000.00.
STRUCTURES (Clasiified as Residential, Commercial or Industrial)	More than 20% of the total landholding lost or where less than 20% lost but the remaining structures no longer function as intended or no longer viable for continued use	PAP with TCT or Tax Decalaration (Tax Declaration can be legalized to full title)	PAP will be entitled to: + Cash compensation for entire structure at 100% replacement cost. + Rental subsidy for the time between the submission of complete documents and the release of payment on land.
		PAP without TCT	PAP will be entitled to: + Cash compensation for entire structure at 100% replacement cost + Rental subsidy for the time between the submissionof complete documents and the release of payment on land.
	Less than 20% of the total land holding lost where the remaning structure is still viable for continued use	PAP with TCT or Tax Declaraation (Tax Declaration can be legalized into full title)	+ Compensation for affected portion of the structure.
		PAP without TCT	+ Compensation for affected portion of the structure.
IMPROVE-MENTS	Severely or marginally affected	PAP with or without TCT, tax declaration, etc.	PAP will be entitled to: + Cash compensation for the affected improvements at replacement cost.
CROPS, TREES, PERENNIALS			PAP will be entitled to: + Cash compensation for crops, tress, and perennials at current market value as prescribed by the concerned LGUs and DENR

Table 3.3 (1/2) Standard Indicators in Resettlement Monitoring and Evaluation

Aspect	Contents	Verifiable Indicators	Methodology
Budget and Time Frame	• Social preparation among PAPs and host communities: IEC, consultation, community organization • Social survey, tagging and inventory of affected assets • Land acquisition • Compensation and entitlement • Inter-agency arrangements commitments • Resettlement site development works and facilities • Shelter development • Restoration of social infrastructure and services • Livelihood and income-restoration	• Budget allocation and disbursements • Manning and deployment schedules • Organization and activity of IRTAF • Progress and status of imple-mentation of RAP activities throughout project cycle • Milestones against physical/financial targets and timeline of activities	• Process documentation • Review of progress reports • Key informant interview • Post-site development inspection • Review of MOA stipulations and delivery of agency commitments
Delivery of entitlement to PAPs	• ROW acquisition • Policy guidelines and compensation policy • Eligibility criteria • Appraisal of affected properties and assets • Payment of compensation and entitlement • Resettlement options including self-relocation • Delivery of non-monetary entitlement	• Type and amount of monetary entitlements intended and actual provided • Applicability of criteria in qualifying for entitlements • Applicability of methodology for determining fair market value of properties and assets • Payment made against inventory of assets actually affected • No. of structures demolished or cleared against census tagging (C/T) master list • No. of PAPs transferred to resettlement site • No. of self-relocating PAPs • Delivery of disturbance allowances, transfer assistance, transportation, etc. • Assistance during demolition, hauling, transport and re-establishment of dwellings and other structures • Time allowed for harvesting crops • Observance of humane conduct of demolition activities and movement of PAPs • Condition of resettlement site and facilities according to standards • No. of PAPs inhabiting resettlement site against Master list • Delivery to PAPs of tenurial documents (land tittles or conditional deeds of sale) • Appropriateness of schemes and terms of payment for land and/or shelter development	• Process documentation of ROW acquisition • Process documentation of appraisal of properties and improvements • Review of implementation of LARRIP Policy Guidelines on ROW Acquisition • Review of RAP • Key informant interviews among PAPs due for entitlements • Inspection of cleared areas and resettlement site • Post-relocation survey • Review of project reports on program/activity progress and status • Review of financial and relevant records on amortization, equity and delivery of legal ownership documents

Table 3.3 (2/2) Standard Indicators in Resettlement Monitoring and Evaluation

Benefits to PAPs and host communities	• Benefits derived from compensation and entitlement • Condition and adequacy of resettlement site development • Condition and adequacy of shelter development • Effectiveness and adequacy of livelihood and income restoration program • Effectiveness and adequacy of social rehabilitation and re-integration program • Benefits to extremely vulnerable groups • Benefits accruing to host communities	• Status and progress against • target delivery of livelihood development options • Status and progress against target delivery of social rehabilitation programs • Types and number of PAPs benefited by income restoration programs (training, technical assistance, credit and micro-lending and livelihood generation schemes) • Quality of improvement in housing units • Improvements in occupation and livelihood pattern of PAPs • Improvement in production and resource use pattern of PAPs • Income and expenditure pattern of PAPs • Cost of living and additional cost incurred by PAPs • Adequacy of incomes compared to cost of living • Social and cultural conditions / presence of social safety nets • Improvement in socio-economic condition of extremely vulnerable groups • Community members availing of resettlement site facilities and services • Socio-economic condition of receiving community • Assistance received by host LGU	• Post-relocation asseessment of benefits and impact • Socio-economic survey among PAPs and host community • Key informant interviews • Post-RAP implementation evaluation • Process documentation
Consultation, Grievance and special Issues	• Information dissemination • Reiterative consultation • Institutional mechanism and grievance redress procedures •	• Report on IEC activities • Status report on project Grievance and Arbitration Measures under IRTAF or other avenues • No. of PAPs conforming receipt of entitlements (as timely and adequate) • No. of PAPs benefited by grievance redress measures availed of	• Process documentation • Key informant interview
		•	

Table3.4 Selected Eight (8) River Project to Clarify the Problems in SAPI(1999) Study

No.	Title of Project
1	Lower Agsan Development Project, Flood Control Component (I) (II)
2	Pampanga Delta Development Project, Flood Control Component (I)
3	Agno River Flood Control Project (I), (II)
4	Metro Manila Flood Control Project- West of Mangahan Floodway
5	Metro Manila Flood Control Project (II)
6	Iloilo Flood Control Project (I)
7	The Pinatubo Hazard Urgent Mitigation Project (I), (I
8	Pasig-Marikina River Channel Improvement Project (

Table 3.5 Adverse Effectiveness due to the Delay of the Project Implementation

Adverse Effetiveness
(1) Out-of date plan and design: In case, The delay might induce the revision of plan and design. This is an effect of the delay of projec implementaiton as well as a couse of the delay;
(2) Increse of social instability;
(3) Increase of political instability;
(4) Vanishing/delay of project benefit; and
(5) Ultimately the loss or less benefit of investment.

Table 3.6 (1/2) Issues of Concern in SAPI (1999) Study-1 (*1)

Issue		Specific Cause and Description			Countermeasure taken by Agencies concerned as of Year 1999
		Category	Cause	Description (There is such a case that....)	
A	Delay in Design and Construction Stages	Design Stage	Quality	Design change is invitable needed in the construction stage due to shortage of the budget in design stage.	None
			Untidy storing of	Re-investigation is to be required in design since the data used in the previous study are not available.	None
			Approval Process	Design period is to be shortened due to the delay of approval process.	None
		Construction Stage	***Low Capability***	***Low Capability of the Contractor, in particular, the local contractor's capabilities are insufficient due to insufficient manpower and finacial capacity, lack of equipment and experiences on large-scale river projects***	None
			Slow Approval Process	***The complicated and redundant government approval procedure causes the delay of project implementation*** ***Main Issures are;*** ***• approval procedure for As-Staked Plan and variation orders,*** ***• coordination with the related agencies, and*** ***• unclear responsibility***	For the solution of these situation, DPWH issued a Department Order (.D.O.62) to simplify the procedures. However, the effectiveness could not be clarified yet. Furthermore, a new Exective Order was issued which requires contracts involving more than 50 million pesos in contract amount shall be approved by the President Office. This again brings about the delay of the project implementation.
		Budgetary Issue	shortage of local budget	It's a fundamental problem. In principle, the project component which can be implemented by local resources, should be implemented accordingly. However, it is not implemented because of shortage of local budget.	To cope with such problem, the OECF provided the financial assistance to cover the shortage of local currency portion.
					The Phillippine Government has givin the higher priority of local budget appropriation to foreign assisted projects.
B	Diffuculty in resettlement of people residing along the River	Budgetary Issue	shortage of local budget	-	
		Slow Approval Process	***Scale***	***Many informal settlers living along the river***	
			Land ownership	***Unlear land ownership*** ***Insufficient land title regislation system***	
			Negotiation	***Time consuming compensation process***	
C	***Opposition by community and/or NGO***	Lack of Accountability (*3)	Design Stage	***i) Insufficient awareness of the community on the project*** ***ii) Insufficient public information drive, and*** ***iii) Other unknown factors due to cultural and political condition***	
			Construction Stage		
			Budget Shortfall		

Note: *1 : The causes as "Core Problem" in the SAPI Study (99) are highlighted by ***Italic and Bold Letters*** .
*2 : In the SAPI Study (99), the opposition campaign in Lower Agsan and Pampanga Project was specified.
*3 : Supplemental information described in this Preparatory Study added in the table above by Blue-Colored Letters.

Table 3.6 (2/2) Issues of Concern in SAPI (1999) Study-2 (*1)

Issue		Specific Cause and Description			Countermeasure taken by Agencies concerned as of Year 1999
		Category	Item	Description	
D	Legal System	Law/Act/Code	Water Act (Water Code)	There is Water Code of the Philippines, but no River Code. It would cause insuffiecient situation in the followings: 1) definition of river area and its use, 2) unclear definition of river classification 3) NWRB's tasks and responsibility	NWRB is a responsible agency/board for water resources management including authority of water allocation and endowment of water right. However, the capacity of NWRB may be subject to question in view of tis thin staffing and limited experiences.
		Department Organization	WRAP-Bill	The PTFWRDM (President Task Force on Water Resources Development and Mangement) had a plan to creat a Water Resources Authority of the Philippines (so called WRAP-Bill) under the Office of the President. This is a water resources oriented authority with less consideration to flood control and river	
		Definition of River	Major River (Basin)	NWRB defined 18 major rivers in the Philippines (more than 1,400km2 of river basin area). This river classification is not clear in its objective.	It would be necessary to review the river classification according to the administrative boundary, scale of economic activity in river basin and its influence to the national economic development, among others.
E	Organization	Organization	Multiple Agencies concerned	There are various agencies relating to the river management, such as DPWH, NWRB, Water User's agencies, etc. Their authority and responsibility are not always clear.	
			Function and Mandate of DPWH	The organization of DPWH seems to be a staff system. All the decision making for large-scale project like foreign assisted projects shall be done by the Secretary. The PMO-MFCP has no authorioty for implementation of large-scale foreign assisted project.	PMO-MFCP has authorization to undertake construction works at less than 5million pesos.
			DPWH PMO-MFCP	As of 1999, PMO-MFCP staff is very limited as only 3 permanent staffs or 16 engineers among 30 staffs in actual basis.	PMO-MFCP was lean on workforce to supervise foreign assisted projects and GOP funded Projects (27 projects in total)
			NWRB	NWRB's tasks are unclear as an independent agency/board	In 1999, NWRB is said to be an Attached Agency to DPWH administratively
			River Management System	There is no unified agency responsible for comprehensive river basin management.	The agencies, the water user's agencies, are undertaking their respective tasks independently.

Table 3.7 Conceivable Scenarios to Cope with the Problem in SAPI(1999) Study

No.	Measures	Activities	Description	Current Situation as of 2009
1	Institutional Capacity Building			
1-1	Preparation of Laws and Regulations	Establishing comprehensive water resources and river basin management system	Water resources management bureau is established under the DPWH	All manner of DOs, EOs and related Laws have been isuued and prepared, however, the situations surrounding river administration have been confused.
			Establishing New department thru legislation.	
		Revision of IRR of the Water Code	Clear definition of Major River Basins	NWRB:18、DPWH:18~20、RBCO-DENR:20
			Clarification of Management by National Government/LGUs	New IRR of Water Code was promulgated by NWRB. However, there are still unspecific issues
			Jurisdiction of Major River Basin for Improvement	
			Jurisdiction of Principal/other river basins by LGUs	Stipulated in the Local Government Code 91. (Uncoformity with Sector Loan Project) It is necessary to propose unification of the definition in the Sector Loan Project.
			Clear Definition of river area and its use	New IRR of Water Code specify unclear situation.
		Informal Settlers resettlement program, Land Acquisition Program	Comprehensive informal settler resettlement program	Undertaken by LGU directly concerned with support from NHA.
			Responsible Agency is NHA and LGUs. DPWH shall participate actively.	
			Establishing land registration system and standardization of compensation	Not revised yet. It is necessary for revise to invove all of related agencies in long term with careful consideration.
1-2	Reorganization of DPWH	Enstablishning good governance system of DPWH regaring River Management	the current phase-wise organization system is to be transformed into a sector-wise organization.	Still phase-wise organization. It is necessary to give much thought to reform organization.
			Enhancement of BOD and BOC, Creation of River Bureau	Not yet reformed. It is supposed that the enhancement retrogress against rationalization.
			Enhancement of PMO-MFCP	
1-3	Human Resource Development	Human resource development for appropriate implementaion of the projects in River Sector	Provision of incentives to the officials (The more comprehensive study should be done.)	Not yet executed.
			Training Program for PMO Staffs, to wit: 1) Training on PIC and community participation 2) Training on project management for the staff to become the "Engineer" in future.	The manners of on-the-Job training are still in the individual project.
			OJT by means of "Force Account System" (to be discussed further)	implementing a pilot project in FCSEC as of 2009.
			Establishment of Flood Control and Sabo Engineering Center (FCSEC) for engineering capability of the DPWH staff.	FCSEC Project will terminate in June 2010. Ideal form of FCSEC in the future should be discussed in this Study.
2	Action Plans			
2-1	Short Term Action Plan	Measure to solve/minimize a series of these problems	Preparation of standard criteria on land acquisition and compensation	Issuance of LARRIPP(amemded in 2007) by DPWH
			Preparation of standard criteria and procedure for the relocation of informal-settlers	Issuance of LARRIPP(amemded in 2007) by DPWH
			Preparation of standard criteria on land acquisition and compensation	Issuance of Infrastructure Right-of-Way Procedural Manual (April 2003
			Preparation of the check list on actions to be taken prior to requesting foreign assistant	This Preparatory Study will propose conditionality to proceed with the Project.
			Strengthening BOD/BOC and other related organizations	Not yet reformed.
			Strengthening PMO System	It is supposed that the enhancement retrogress against rationalization.
			Improvement of TOR for consulting services	Issuance of Government Procurement reform Act(2003) (This law doesn't apply for foreign funded project due to some inconsistency with policy.)
			Humain resources development in possible extent	The manners of on-the-Job training are still in the individual project.
			Settlement of the critical works in the on-going project.	Refer to evaluation reports.
		Other recommendable measures	Prerequisite to confirm the requirement of the L/A	This Preparatory Study will propose conditionality to proceed with the Project.
			Appropriate amd timely use of contingency for emergency use	It still takes time for approval.
			Consultant participation on land acquisition, public information drive	Some projects include such activities (Iloilo Project and etc.)
2-2	Long Term Action Plan	Long term action plan to be implemented by National Governmen	Establishement of comprehensive river basin management system	It is still not clarified in spite of stipulaitons in some laws (Water Code and etc.).
			Re-organization of DPWH	Rationalization and reform of DPWH is on-going.
			Strengthening Flood Control Management	This Preparatory Study will propose conditionality to proceed with the Project.
			Human resources development	The activities are on-going with initiated by FCSEC.
3	Recommendation and Acknowledgment	Immediate Implementation of the Short-term Action Plans	Those works can be undertaken by the DPWH alone.	Refer to comments mentioned above.
			Establishment of Task Force for earlier achivement	No task force
		Execution of Long term action plan	The preparatory works for long-term action plans should be carried out during the implementaion of the short-term action plans	No Action Plan
		In-House Consultant	It is recommended to employ in-house consultant aside from the project consultant to assist management and to conduct trasfer of technology.	JICA expert and FCSEC Project play a role as in-house consultant but not including project management technology.

Table 3.8 Duties of 19 Line Agencies – National Disaster Coordination Council (NDCC)

Departments and Agencies	Works in charge
Department of Public Works and Highways (DPWH)	Rehabilitation of public facilities, provision of equipment for rescue/relief activity.
Department of Agriculture (DA)	Estimation of the damage to agriculture and fishery industries, and technical support for the farmer victims.
Department of Education (DepEd)	Support for public relations for disaster mitigation. Providing schools fo
Department of Health (DOH)	Medical and hygiene works. Guiding the disaster mitigation organization in a hospital.
Department of Labor and Employment (DOLE)	Providing urgent employment for the victims. Guiding the disaster mitigation organization in factories
Department of Interior and Local Government (DILG)	Supervising each level of DCC, and training the DCC in local authorities.
Department of National Defense (DND)	Securing communication, supporting urgent rehabilitation, rescue/relief activities.
Department of Social Welfare and Development (DSWD)	Training the DCC in cooperation with OCD and DILG. Organizing rescue and relief activity.
Department of Tourism (DOT)	Guiding organization of disaster mitigation in hotels and restaurants
Department of Trade and Industry (DTI)	Control of prices, and securing commodities during an emergency.
Department of Transportation and Communications (DOTC)	Administration of transportation and communication, and rehabilitation of facilities of transportation and communications
Department of Science and Technology (DOST)	Flood forecasting, typhoon warning system (PAGASA). Monitoring volcanic and earthquake activities (PHIVOLCS)
National Economic and Development Authority (NEDA	Evaluation of impact on social economic plan due to occurrence of disaster.
National Housing Authority	Securing homes during emergency
Philippine Information Agency	Public relations relating to disaster mitigation
Philippine National Red Cross (PNRC)	Enforcement of disaster mitigation drills, and supporting DCC's drills.
Department of Budget Coordination Committee (DBM)	Administration of necessary budget for disaster mitigation activities.
Department of Finance (DOF)	Enforcement of roles of disaster mitigation fund in local authorities
Department of Environment and Natural Resources (DENR)	Re-afforestation in frequent flooding areas.

Table 3.9 The Issues of Projects implemented by Japanese ODA pointed out in the Study on Program Formulation in Disaster Mitigation Sector (2004)

Issues		Explanation
Classification	Description	
Flood control and sabo projects	Accumulation of technical know-how	Technology transfer to the counterpart was included in the TOR of the project implementation. However, because the incentive given to the staff in the agency concerned is quite low, the effect has not been realized sufficiently.
	Delay of construction due to land acquisition	The most serious problem. Some definitive improvements are required.
	Securing budget for O & M	Due to insufficiency of maintenance, the functions, which were planned and designed, are often not
Project for flood forecasting and warning system	Accuracy of forecast informa	The forecast information is qualitative ones presently and more quantitative ones are required.
	Over-aging of instruments	Almost all instruments have aged and have heavily deteriorated. Renewal of those is required.
	Shortage of budget in O & M	PAGASA is promoting transmission of meteorological information externally and cost-recovery plan aiming at independent commercial feasibility. However, it stands still insufficient level.
Overall institutional arrange	Organizational set-up	In order to realize efficient implementation of projects, organizational strengthening of DPWH is required.
	Water Code	As the minimum means, the river administrator shall be clearly defined and all rivers in the nation shall be demarcated. The responsible organization system is required to be rearranged.
	Budget allocation	The budget for maintenance is small and maintenance activities after project are not sufficiently conducted. Review for budget allocation become necessary.
	Securing staff	As for the sustainable project implementation, the PMO's organization shall be reformed and appropriate number of staff shall be relocated. Especially, the permanent staff for river administration shall be trained.

Table 3.10 Direction in Long-Term Cooperation (Flood and Debris Disaster Mitigation Sector) Proposed in the Study on Program Formulation in Disaster Mitigation Sector

Category	Priority Issues	Direction in Long-term Cooperation
Reducing hazard magnitude (Structural Measures)	Implementation of new projects	Support to promote the priority projects, which are selected in the Flood Control Master Plan and plan of sabo works, should be continued. In addition, support for review of the Flood Control Master Plan every a decade, which is formulated in "Mid-term Direction", setting target, updating of basin properties, evaluation of executed projects and review of priority of projects should be also continued.
Reducing vulnerability (Non-Structural Measures)	Installation of new FFWS	Taking account the organization for operation and maintenance, support for installation of new FFWS should be conducted.
	Construction of database	In order to continuously maintained and updated the database system, constructed in the "Mid-term Direction", by the Philippine side, support should be extended.
	Preparation of hazard maps	Based on the experiences in the "Mid-term Direction", support to prepare further effective hazard maps should be continued in aspect of disaster mitigation.
	Strengthening of community disaster mitigation	By means of the hazard maps prepared in the "Mid-term Direction", support for updating the Disaster Management Plans and Evacuation Plan should be conducted.
	Promotion of education and campaign	Support for improvement of activities conducted in the "Mid-term Direction", introduction of new technology, applying to other regions, etc. should be continued.
	Strengthening of flood plain management	Support should be continued in new project implementation, and accumulation of knowledge and human resources development should be promoted.
	Resettlement	Based on the achievement and evaluation of the effects in this field though the "Mid-term Direction", effective support should be continued.
Institutional strengthening (Supporting Measures)	Institutional reformation	As for the "Mid-term Direction", re-organization of DPWH-2 (reform of PMO) is recommended. However, the Long-term Direction of cooperation should be looked for to support establishing the Department of Water Resources to strengthen entire administration of water resources.
	Enhancement of research and development capability	Based on the achievement of activities in the "Mid-term Direction", support to assist further self-reliant and sustainable activities of research and development should be continued.
	Enhancement of comprehensive and integrated countermeasures	Major support activities should be shifted from preparation of guidelines and re-organization for institutional reform in the "Mid-term Direction" to applying in actual flood control and sabo projects. Support for planning and operation by the Philippine side should be conducted in connection with activities for institutional reformation.
	Accumulation of knowledge and construction of information sharing system	Based on the evaluation of the activities in the "Mid-term Direction", support for propagation and coordination to relate agencies should be further continued.
	Preparation of technical standards and guidelines	The area of activities should be extended to the regional and district offices, and support for improvement of the contents should be conducted.

Table 3.11 The Past Issues in Disaster Management Sector and Proposed Approach to the Solution

Lessons Learned	Approach	Best Practices	
		Japan	ODA by Japan Government
1. River Improvement Projects by Assistance for Whole River Basin requiring a Long Term	[Selection, Concentration and Integration] • Making a point of control works for Repeated Floods/Volcanos Disasters		
	• **Formulation of Sustainable Institution and Policy toward Self-Sustainability**	Budget of Flood Control	Establishment of [Department of Water Induced Disaster Prevention] in NEP (T/C + Grant Projects)
	• Integration Approach		
	• Efficient and Prompt production of the Effect, From Flood Control by Contineous Dike to Core Area Protection by basin-wide and planar Approaches.	Traditional Methods (Shingen-tei Dike, Ring Dike), Comprehensive Flood Mitigation Project	The Technical Cooperation Project on Riverbank Protection Works in Laos (T/C Study + Project)
	• Climate Change Adaptation: Stressing Control Works in Coastal Site		
2. Low Contribution to the Poverty Issue	Project Purpose directly including poverty program	Oota River Improvement Project Flood Control Project for Core Areas	the Colombo Environmental Improvement Project in Sri Lanka (Yen Loan+JOCV)
3. Limited Activities for the Support to Communities	[Community-based Capacity Development, Superior Information Service] • Community-based Disaster Prevention and Management	Establishment of Community-based Flood Fighting Team	Mt. Merapi and Mt. Semeru Volcanic Disaster Countermeasures Project in Indonesia (Yen Loan + T/C Projects) the project for Construction of Multipurpose Cyclone Shelters (Grant Project +JOCV) The Caribbean Disaster Management Project (T/C Project)
	• Improvement in the Quality of Disaster Prevention Information for Communities	Easy-to-understand Flood Information National Water Information	Flood Forecasting and Warning System in Morrocco (T/C Study)
4. Limited Participation of Communities and LGUs to Project Implementation	[Participation to Every Stage in Program Cycle] • Broad and Early Consensus-building fron	Establishment of River Basin Committee	
	• Formulation of Cooperatition Framework in Project Implementation	Assignment of Gate Operators	Iloilo Flood Control Project (Yen Loan)
	•Appropriate Operation and Maintenance for River Structures	Development of Organization, Institution and Budget	Ormoc Flood Mitigation Project (Grant Project)
5. Limited Coordination Activities with Other Sectors	[Coordination with Multi-Sector] • Point of View of Community Renovatio	Project for Improving River Environment	
	• Watershed Management	Forest at the head of the river River Basin Fund	Forestation Program in Agno and Laoag River Basins in coordination with Flood Control Projects
	• Environment	Community-based Voluteer Group	

Table 3.12 Summary of Issues on Project Implementation, Legal System and Organization

Category	SAPI in 1999		Program Formulation in 2004		Project Formulation in 2008	
	Issue	Cause	Issues	Cause	Issues	Cause
Project Implementation	Delay in Design and Construction Stages	Lack of Available Data, Low capability of contractor, Slow approval process, Shortage of budget	Accumulation of Technical Know-how is not successful	Incentive given to the staff is quite low.	Formulation of flood control plan one by one for each river basin	No overall database on flood and sediment disasters
	Difficulty in resettlement of people residing along the river	Shortage of budget, Slow approval process	Delay of construction	problems of land acquisition and resettlement.	Capability for basic analysis is not build up	No recognition of significance of basic survey
	Opposition by community and/or NGO	Lack of accountability	Insufficient O&M	insufficient budget allocation for O&M	Problem of land acquisition	No delineation of river areas
					O&M is not enough	No code to clarify the share of the responsibility
					High dependence on foreign assisted fund	No recognition of significance of flood control projects
Legal System	Insufficient legal system	Only water code is available but no river code	Definition of river administrator is not clarified	In water code, it is not defined	No clarification of river administration	no code to designate river administration
	Creation of new authority for water resources management	PTFWRDM is a water resources oriented authority with less consideration to flood control				
	Insufficient Definition of River	Definition of 18 major river basin is not clear in this objective				
Organization	Multiple Agencies concerned	Authority and responsibility of various water related agencies are not always clear	Ineffective implementation of water related projects	Existence of various water related agencies	Insufficient number of engineers and staff in both central and local offices of DPWH	
	Function of Mandate of DPWH	PMO-MFCP has no authority fro implementation of large-scale foreign assisted project.	No sustainable project implementation	Insufficient number of staff of PMO-MFCP	No incentive for promotion of river engineers	Features of PMO (organized for each project unit)
	DPWH PMO-MFCP	Staff is very limited.			Coordination between DPWH and the other stakeholders is not enough	
	NWRB	NWRB's tasks are unclear as an independent agency/board				
	River Management System	There is no unified agency responsible for comprehensive river basin management				

Table 3.13 Causes of Significant Issues on Flood Control Projects in the Past

No.	Name of Project	Term	Causes of the Core Problem pointed out		
			SAPI (1999)	Project Report by Consultants	Interview on Key Informants
Loan	Lower Agsan Development Project Flood Control Component (I)	97-04	Revised Construction Term:60M Contractor's Poor Capability ・Insufficient project staff ・Insufficient financial capacity ・Insufficient construction equipment and shortage of workers ・Insufficient experiences Difficulty of Land Acquisition and Compensation ・No definite ownership record ・Insufficient LGUs ability		same as SAPI Report
Loan	Pampanga Delta Development Project, Flood Control Component (I)	90-01	Difficulty of Land Acquisition and Compensation ・Much delay of Negotiation ・Much delay of fund release Opposition of community ・No community consent in plan ・Political disturbance Cost Overrrun (about30%) ・Many variation orders ・Frequent suspension orders Salinity Intrusion		same as SAPI Report
Loan	Agno River Flood Control Project (I)	95-03	Insufficient capabilities of contractor Delay of ROW ・Much delay of fund release Typhoon damages in 1998 Change of Design ・Insufficient geotechnical investigation ・etc		Operation procedures of flood gate
	Agno River Flood Control Project (IIA)	98-	Some environmental effect to Poponto area	Suspended ROW accquisition Project Cost Overrun	
	Agno River Flood Control Project (IIB)	01-			
Loan	Metro Manila Flood Control West of Mangahan Floodway	97-09			Modification of Dike Alignment ・due to sub-division and informal ssettelers (Low quality of Parcellary Survey) Opposition of NGO Slow process of LGUs' responsibiity
Loan	Metro Manila Flood Control Project (II)	94-98	Problems on ROW Acquisition Design change Non-availability of imported materials Delay in securing DENR permit Truck ban Non-availability of dumping sites		Transfer of O&M to MMDA Refusing of Granted Project
Loan	Iloilo Flood Control Project (I) & (II)	02-	Land acquisition problem Informal settlers resettlement Opposition by community		Delay of Land acquisition due to cost increasing cleared by design change. Suspended bidding process (1year)
Loan	Pinatubo Hazard Urgent Mitigation Projects (I) and (II)	97-06	Approval of C/O by Secretary Delay of approval process		
Loan	Pinatubo Hazard Urgent Mitigation Projects (III)	08-	D/D Stage as of now	D/D Stage as of now	D/D Stage as of now
Loan	Kamanava Area Drainage Improvement Project	02-		Expiration of Loan by 92% Remaining works by GOP fund Delay of ROW Acquisition Obstacles of works by fisherman boats and ships	BOQ by GOP Fund is bigger than quantities in remaining works by JBIC Funded works.
Loan	Laoag Flood and Sabo Control Project	01-		Typhoon Damage	
Loan	Pasig-Marikina River Channel Improvement Project (I) and (II)	00-02 09-			7years between completion of D/D and commencement of the works
Grant	Ormoc Flood Control Project	98-99 99-01 06-07			Opposition against ROW acquisition Additional grant-aid Project due to typhoon damage

Table 3.14 KEY FOR SUCCESS AND THE REASON

1 Phase 1: Recognizing and Identifying
1.1 Recognition and identification of problems and needs
1.1.1 Risk Assessment
Identify and prioritize the areas at risk of flooding and the extent of that risk in the basin
– Implementing shortsighted local measures without evaluating the risks for the entire basin may result in vulnerable areas or areas in most need being overlooked.
1.2 Public awareness, accountability and capacity building
1.2.1 Capacity building
Conduct regular training and make use of local experience and technologies
– River administrators and flood managers must understand the danger of flooding and take appropriate measures in order to prepare. Lack of an appropriate response will lead to an increase in flood damage.
1.2.2 Technology development
Develop technology that fully reflects local conditions
– Adapting technology from other basins or countries without adequate consideration f the local situation will not lead to effective technological development nor effective application of the technology.
.2 Phase 2: Conceptualizing
2.1 Assessment and conceptualization
2.1.1 Stakeholder participation
Understand in advance the roles and responsibilities of stakeholders in the basin
– Involvement of stakeholders without clearly defined responsibilities or positioning in the basin may result in a failure to achieve consensus
2.1.2 Coordination
Ensure effective coordination and cooperation of interests among stakeholders
– Smooth implementation of a project is difficult to achieve without clearly defining the responsibilities of stakeholders, coordinating their interests and reaching consensus
2.2 Draft planning
2.2.1 Planning
Develop a plan for balanced flood management in the entire basin
– Planning based on one-sided and locally-focused perspectives could lead to adverse effects, wasteful investment, or re-planning
3 Phase 3: Coordination and Detail Planning
3.1 Building coordination mechanisms and coordination
2.1.1 Stakeholder participation
Understand in advance the roles and responsibilities of stakeholders in the basin
2.1.2 Coordination
Ensure effective coordination and cooperation of interests among stakeholders
2.2.1 Planning
Develop a plan for balanced flood management in the entire basin
3.2 Preliminary agreement and finalizing the plan
3.2.1 Maximized benefit
Implement measures that maximize the benefits of the basin as a whole
– Infrastructure development necessitates significant investment both in terms of cost and time. Moreover, the infrastructure will be utilized over a long period. Attempts should be made to maximize the basin-wide benefits of such infrastructure development and minimize the negative
3.2.2 Regulation of activities
Prevent actions/activities that cause negative consequences with regards to flood management in coordination with basin stakeholders
7- If development activities in the basin are independently conducted with no consideration for their impact on flood risks, the flood safety level may not improve at the rate that flood managers anticipate.
3.2.3 Raising awareness
Take steps to ensure residents understand the existing risks in the river/basin
3.2.4 Information sharing
Inform residents of risks as soon as possible at the time of flooding
– Alerting residents at immediate risk is the first priority in order to minimize casualties and reduce flood damage
3.2.5 Crisis management
Prepare a framework/system that can execute crisis management in a basin
– If flood protection measures are insufficient and unexpected events occur, the lack of a quick and effective flood emergency response could result in serious flood damage.
4 Phase 4: Implementing, monitoring and evaluating
4.1 Implementation, monitoring and evaluation
3.2.1 Maximized benefit
Implement measures that maximize the benefits of the basin as a whole
3.2.2 Regulation of activities
Prevent actions/activities that cause negative consequences with regards to flood management in coordination with basin stakeholders
3.2.3 Raising awareness
Take steps to ensure residents understand the existing risks in the river/basin
3.2.4 Information sharing
Inform residents of risks as soon as possible at the time of flooding
3.2.5 Crisis management
Prepare a framework/system that can execute crisis management in a basin
5 Important aspects of the IWRM Process: Policies/National Strategies, Legislative Frameworks and Financing
5.1 Policies/National Strategy, Legislative Framework and Financing
5.1.1 National strategy
Position flood management within the national strategy
– Decision makers, the media and the public show great concern about floods and natural disasters immediately following a flood disaster. However, such awareness gradually fades, Flood-related political measures are often postponed or not implemented because their impacts are not obvious in the short-term, thus lowing their priority on the political agenda.
5.1.2 Legislation
Specify in legislation that flood management is the responsibility of national government, municipalities and residents and clarify their respective roles.
– Floods have the potential to inflict damage on anyone residing in the river basin. Everyone must be involved in flood mitigation in one way or another in the form of self-help, mutual-help or public support. However, individuals or organizations acting independently in an uncoordinated manner will result in delays in decision-making, duplication of measures and amplification of negative impacts to others.
5.1.3 Financing
Continue stable investment for flood management with a long-term perspective.
– Impacts realized by short-term investment for flood management are often limited, while the desired effect may not be easy to bring about.

Table 3.15 Development of Ormoc City in which Flood Control has successfully been completec

Year	Population		City Income					Value of Land	
	Person	Gross Rate	Total	City	National (IRA)	Growth Rate (City)	Growth Rate (Total)	Residential	Commercial / Industrial
1990	129,456	2.12	34,893,649.05	14,178,181.05	20,715,468.00				
1991	132,200	2.12	70,169,396.09	32,161,574.09	38,007,822.00	2.27	2.01		
1992	135,003	2.12	95,089,101.98	17,178,685.98	77,910,416.00	0.53	1.36		
1993	137,865	2.12	156,459,091.18	27,995,869.70	128,463,221.48	1.63	1.65		
1994	140,878	2.12	201,625,965.00	21,497,900.00	180,128,065.00	0.77	1.29		
1995	144,003	2.02	224,422,546.00	28,729,300.00	195,693,246.00	1.34	1.11	1,000	2,430
1996	146,912	2.02	242,321,071.38	35,777,246.38	206,543,825.00	1.25	1.08	1,000	2,430
1997	149,880	2.02	386,880,323.12	154,315,622.48	232,564,700.64	4.31	1.60	1,000	2,430
1998	152,908	2.02	316,018,718.21	67,550,602.21	248,468,116.00	0.44	0.82	1,000	2,430
1999	155,996	2.02	416,840,588.48	154,315,622.48	262,524,966.00	2.28	1.32	1,000	2,430
2000	154,297	1.49	388,795,969.27	72,888,594.27	315,907,375.00	0.47	0.93	1,000	2,430
2001	156,599	1.49	359,243,978.20	77,128,952.20	282,115,026.00	1.06	0.92	1,000	2,430
2002	158,933	1.49	353,802,004.58	54,029,557.58	299,772,447.00	0.70	0.98	2,200	4,950
2003	161,302	1.49	409,355,521.49	88,147,914.49	321,207,607.00	1.63	1.16	2,200	4,950
2004	163,705	1.49	409,500,215.20	96,056,230.20	313,443,985.00	1.09	1.00	2,200	4,950
2005	166,144	1.49	441,834,444.74	108,271,711.74	333,562,733.00	1.13	1.08	2,200	4,950
2006	168,620	1.49	695,909,151.49	328,730,886.49	367,178,265.00	3.04	1.58	2,200	4,950
2007	177,524	1.95	570,204,234.33	157,982,495.33	412,221,739.00	0.48	0.82	2,200	4,950
2008	180,989	1.95	555,076,920.00	150,000,003.00	405,076,917.00	0.95	0.97	2,200	4,950
2009	184,521	1.95	590,284,192.00	179,610,000.00	410,674,192.00	1.20	1.06	2,200	4,950

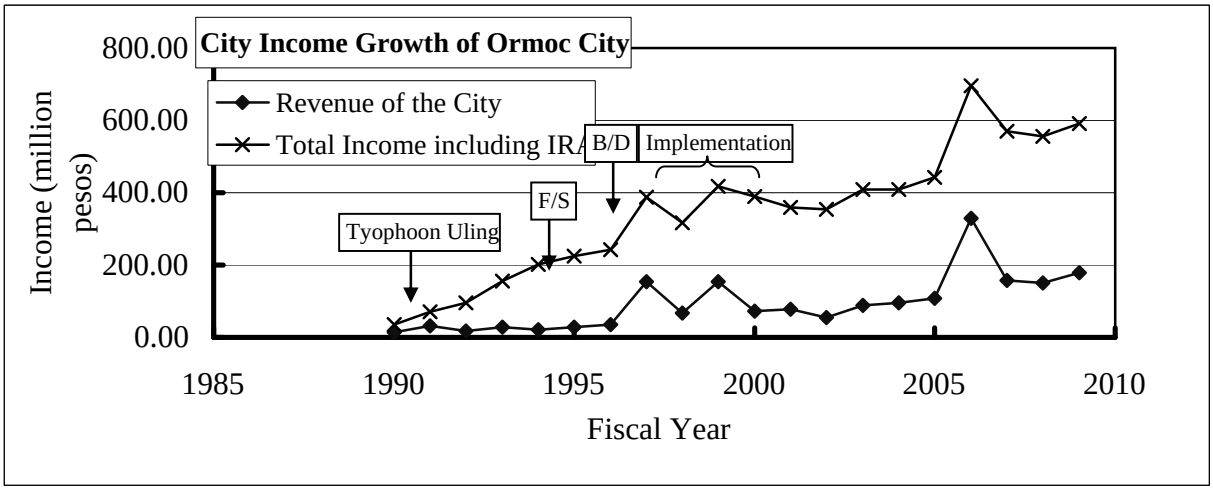


Table 4.1 Improvement of Issues by New Approach

Item	Contents	Direction to Improve	Contents of Improvement	Improvement with long term strategy	Action to take immediately	Tools for Improvement		
						Cooperative Agreement (Effort by DPWH and LGUs)	Emergency Response Fund	Technical Assistance
Core Issue	Poor Achievement of Project Target	Full Achievement of Project Target	Improvement of Direct, Secondary and Fundamental Causes	Improvement of Direct, Secondary and Fundamental Causes	Improvement of Direct, Secondary and Fundamental Causes	○	○	○
Major Direct Cause	Delay of Implementation	Implementation on Time	Improvement of Secondary and Fundamental Causes	Improvement of Secondary and Fundamental Causes	Improvement of Secondary and Fundamental Causes	○	○	○
	Delay of ROW	Punctual ROW acquisition Procedure						
	Mal-function of structures/facilities	Enough function of structures/facilities						
	Poor O&M	Sufficient O&M						
Secondary Cause	Insufficient Institutional Capacity & Organizational Capacity	Sufficient Institutional Capacity & Organizational Capacity	Development of Ability for engineers related to river administration	Capacity building of DPWH and LGUs to be able to handle the river administration independently	Operation of non-structural measures by LGU	○		○
					Strengthening of DPWH (PS & FCSEC) for flood control	○	○	○
			Up-skill of coordination/Regulating among stakeholders		Strengthening of current system for management of ERF	○	○	○
					Promotion of ICP by LGUs	○		○
	Insufficient Legal Arrangement	Sufficient Legal Arrangement	Clarification of role of water related agencies, clarification of river administration	Introduction of river law to clarify the role and river administration	Study of river laws applied in the other countries	○		○
	Poor or Delay of Financial Arrangement	Enough and on Time Financial Arrangement	Assurance/Establishment of Appropriate Budget	Realization of assuranceof appropriate budget	Study on necessary budget for realization of adequate disaster risk management	○		○
			Assurance/Establishment of Financing Source	Realization of assurance of finance	Study on possible financing Source	○		○
			Setting up/promotion of financial source for O&M	Realization of assurance of financing Source for O&M	Study on possible financing Source for O&M	○		○
Fundamental Cause	Lack of Recognition of Necessity of Flood Control Projects and Poor Governance	Enough Recognition of Necessity of Flood Control Projects and Poor Governance	Promotion of activity for recognition of necessity for flood control and strengthening of Governance	Promotion of activity for recognition of necessity for flood control and strengthening of Governance	Promotion of activity for recognition of necessity for flood control and strengthening of Governance	○		○

Table 4.2 CY2008 Budget Proposal For the Repair/Maintenance of Flood Control and Drainage Structures and Related Facilities Regional Breakdown

Region	Total Inventory (A) Length/Unit L.M./Unit		Portion Needing Repair (B) L.M./Unit		Allocation (C) (Mil. Pesos)
CAR	376,429	LM	19,338	LM	36
		Unit		Unit	
I	1,045,651	LM	48,158	LM	102
	24	Unit	24	Unit	
II	427,627	LM	17,462	LM	40
	3	Unit	3	Unit	
III	2,038,071	LM	90,796	LM	218
	38	Unit	38	Unit	
IV-A	1,300,425	LM	62,418	LM	116
	1	Unit	1	Unit	
IV-B	917,474	LM	40,231	LM	90
	-	Unit	-	Unit	
V	319,809	LM	39,732	LM	91
	45	Unit	45	Unit	
VI	319,809	LM	15,709	LM	35
	4	Unit	4	Unit	
VII	947,550	LM	39,663	LM	86
	15	Unit	15	Unit	
VIII	573,319	LM	26,712	LM	58
	3	Unit	3	Unit	
IX	343,081	LM	16,362	LM	32
	1	Unit	1	Unit	
X	322,874	LM	16,796	LM	33
	7	Unit	7	Unit	
XI	594,388	LM	26,267	LM	57
	18	Unit	18	Unit	
XII	167,312	LM	6,776	LM	161
	5	Unit	5	Unit	
XIII	198,868	LM	9,017	LM	21
	3	Unit	3	Unit	
Central Office (NCR)	-		-		17
Nationwide	-		-		50
Total	10,499,597	LM	475,437	LM	1,099
	167	Units	167	Units	

Source: BOM-DPWH

Table 4.3 Summary of Estimated Costs of Damaged to Flood Control and Drainage Structures

CY	Name of Typhoon	Date	Damaged Cost River & Drainage (million Pesos)	Damaged Cost Bridge (million Pesos)	Total (million Pesos)	Remarks
2004	Unding		178.345	16.150		
	Violeta		0.000	5.470		
	Winnie		12.200	36.270		
	Yoyong		75.234	133.999		
CY2004 Total			**265.779**	**191.889**	**457.668**	
2005	Heavy Rain		0.000	0.000		
	Labuyo		0.000	3.170		
CY2005 Total			**0.000**	**3.170**	**3.170**	
2006	Agaton	(Jan.24-27)	60.000	0.000		
	Heavy	(Feb.7-20)	15.300	19.500		
	Caloy	(May.11-15)	96.255	63.650		
	Surge	(May.17)	33.500	0.000		
	Domeng	(Jun.24-27)	0.120	0.650		
	Florita	(Jul.11-14)	3.160	5.600		
	Glenda	(Jul.21-25)	0.250	0.000		
	Henry	(Jul.31-Aug.01)	0.000	0.000		
	Heavy	(Aug.01-10)	11.000	16.500		
	Milenyo	(Sep.26-29)	213.460	124.000		*3
	Neneng	(Oct.1-3)	0.000	0.030		
	Paeng	(Oct.30-31)	0.000	17.355		
	Quinie	(Nov.)	0.000	11.622		
	Reming	(Nov.28-Dec.03)	0.000	11.550		
		(Dec.07-11)	0.000	0.000		
CY2006 Total			**433.045**	**270.457**	**703.502**	
2007	Heavy Rain	Dec 20, '06	163.312	55.708		
	Ineng		0.100	4.000		
	Juaning		10.000			
	Kabayan	Nov.6, 07	78.200	0.500		
	Lando		90.350			
	Mina		14.110	0.510		
CY2007 Total			**356.072**	**60.718**	**416.790**	
2008	Cosme	May 17-18	16.234	151.129		*1
	Frank	June 21-22	191.562	917.442		
	Auring		38.500	0.000		*2
CY2008 Total			**246.296**	**1,068.571**	**1,314.867**	
Grand Total			***1,301.192***	***1,594.805***	***2,895.997***	
5 years (2004~2008) Average			***260.238***	***318.961***	***579.199***	

Note: *1: Damaged Cost of Bridge includes damaged cost in Road.
*2: Damaged Cost of Bridge has not been indicated in Damage Report.
*3: Damaged Cost of Bridge has included the LGU Property in Region IV-A

Original Source: BOM, DPWH
Edited by : JICA Study Team

Table 4.4 Budget of the BOM_DPWH and NCF Released to DPWH for Flood Control

Calendar Year	QRF (mil. Pesos)	Status	GAA (Flood Control) (mil Pesos)	Remarks	Released NCF flood control to DPWH
2002	75	released	98	released	-
2003	75	released	98	released	-
2004	65	released	98	released	5
2005	65	released	98	released	68.32
2006	65	released	98	released	64.85
2007	15	released	510	released	60.50
2008	21	released	1,099	Not Released	74.00
(2009)	80	released	1,200	Not Released	-
Average	58		167		55

QRF Allocation (CY-2002-CY-2008) mona-(hp)

- : No Data

*1: NCF has not been managed by BOM.
(Directly released to Regional Office from Central Office of DPWH)

Original Source: BOM-DPWH and OCD
Edited by JICA Study Team

For Reference
Total Budget of NCF under DPWH (BOM)

2004	32.65
2005	177.97
2006	209.50
2007	84.00
2008	1,349.87

Table 4.5 Required Total Amount of Disaster Response Fund

Item	Amount (mil. Pesos)		Remarks
	for Past Damage	Annual Damage	
Required Budget for Accumulated Amount to repair Damaged Portions	-1,100		from Table 4.2
Annual Average Damage Cost on River Structures		-260 /year	from Table 4.3
Annual Average Released Budget from QRF and NCF		110 /year	from Table 4.4
Annual Average Released Budget for Past Damaged Structure from GAA	167 /year		from Table 4.4
Annual Insufficient Budget for Damages by Annual Typhoons		-150 /year	

Conceived Term of DRF Operation		8 years	Remarks
Allocation of the Budget for DRF from Loan Amount	1st ~4th years	100%	600
	5th year	80%	120
	6th year	80%	120
	7th year	80%	120
	8 year	60%	90
Conceived Total Amount of DRF	PhP1,050Mil.	Approx. 4 years x 150mil.P/year 3 years x 150mil.P/year x 80% 1 year x 150mil.P/year x 60% =PhP 1,050→Say 1,050	
	¥2,100Mil.		

Table 4.6 Present Flood Risk Management System and Proposed Systems of DPWH

Main Item to be done	Before Disaster	Disaster			Post-Disaster	Implementing Sections
		Warning	During	Immediate		
Activities on the Formulation of Disaster Preparedness Plans and	■					
Collection of Information	☆					RDRMT DDRMT
Obtaining of Geo Hazard Map	☆					
Securement of good linkage	☆					
Conduct of Trainings/Drills	☆					
Procurement of adequate/appropriate Equipment and Facilities	☆					
Preparation and Allocation of adequate funding	☆					
Preparation of Manual on Damage Assessment and Estimate by ICD	☆					ICD
Monitoring and Evaluation of Rehabilitation Work by QRF & DRF	☆					ICD BOM/CDRMT
Inspection & Maintenance Activities (by DataBase/Record Rep.)	■					DDRMT (BOM/ICD)
Activities on Receipt of Warning for Disaster		■				
Preparation for Personnel in All Levels		☆				DRMT (in All Level)
Preparation for communication linkage among all levels		☆				
Set-up of post-disaster procedures		☆				
Inspection of facilities and equipment		☆				
Identification and Inspection of Evacuation or Feeding Centers		☆				
Activities during Disaster (Relief and Rehabilitation)			■			
All Operation Center under 24-h operation			☆			DRMT (in All Level)
Actual Operations			☆			
Up-to-date Report (every 6 hours)			☆			
Activities during Post-Disaster Operation				■	■	
Opening of Road affected by landslide				☆		RDRMT DDRMT
Clearing of Roads				☆		
Cleaning of Ditches, Removal of Debris				☆		
Repair of All Paved and Unpaved Road Surfaces				☆		
Assessment of the Estimated Damage or Destruction				☆		
Submission of Final Damage Report				☆		
Implementation of Immediate Restoration or Rehabilitation Works					Implementation ■	Regional Office District Office
Review of Damage Report and Site Inspection by ICD				☆	alignment	ICD
Verification of Adoptation to DRF				☆		ICD/BOM
Detailed Design & Cost Estimate					☆	ICD through T/A
Release of Funds for DRF					☆	PMO
Implementation of Works under DRF by Change Order of Original Contract under Sector Loan Projects					Change Order, etc ■ Implementation ■	PMO shall manage with Sector Loan Project

Source : Disaster Risk Management Manual as of January 2009 of DPWH
and Edited by JICA Preparatory Study Team (July 2009)

Table 4.7 Concept of Disaster Response Fund

Item	National Calamity Fund (NCF)	Quick Response Fund (QRF)	Disaster Rehabilitation Fund (DRF)
Amount	CY2008: 4,283,956,230 CY2007: 933,330,764 CY2006: 1,173,834,752 CY2005: 700,000,000 CY2004: 700,000,000 (Source:OCD)	QRF: 25% of Total NCF at Budget Alloc. Actual Allocation 2008:16%, 2007:40%, 2006:29% DPWH: 20% of Total QRF at Budget Alloc. 5% of Total NCF at Budget Alloc.	Approx. US$ 20million (as concievable idea: finalized subject to clear vision in the Study)
First Criteria	For urgent and emergency relief operations, health services, settlement and rehabilitation of the affected populations, as well as the emergency repair and rehabilition of vital public infrastractures and lifelines damaged by calamities occuring within the budget year, such as hospitals and health facilities, schools, major roads and bridges, and farm-to-market, among others.	those involving immediate rehabilitation of collapsed bridges, cut road sections, **breached seawalls and dikes** and unroofed or totally destroyed public buildings to quickly restore mobility and ensure the safety of the affected areas.	Seriously, heavily damaged following structures constructed by DPWH, natural hazrds, and critical natural conditions causing floodings but not supported by netiher NCF nor QRF: 1. Flood Control Structures;RECONSTRUCTION Dike, Revetments, Sabo Dam, Floodway and the appurtenants regarding flood control 2. Heavily and Huge Sedimentation (more than 1.0m deposit): DREDGING
Second Criteria	For repair, rehabilitation and reconstruction of other damaged public infrastructures/facilities which are not emergency in nature but are necessary for disaster mitigation.	those involving ordinary repair works such as patching, resurfacing or washed-out roads and repair of heavily damaged but usable public building and **slightly destroyed flood control projects.**	Slightly damaged following structures constructed by DPWH, natural hazrds, and critical natural conditions causing floodings: 1. Flood Control Structures; REPAIR or MAINTENANCE the Same as "First Priority" 2. Huge Sedimentation (more than 0.5m deposit); DREDGING 3. Damaged Bottle-Neck Portion; WIDENING & RECONSTRUCTION (incl. Bridge) (less than 50% of average flow area at upper or lower sections) *1
Third Criteria	For pre-disaster activities outside the regular budgets of line agencies and proposed capital expenditures for pre-disaster operations.	those involving minor repair work and/or improvement to prevent further deterioration such as repair of road section and slightly	None

Note : *1: Design and improvement measures shall be evaluated and directed to Ros/DEO by ICB. (Refer to Flood Risk Mangement System.)

Table 4.8 Work Breakdown Structure for T/A(Strengthening of DPWH Capacity)

Type of Cooperation	Technical Assistance Project			Assumed Implementation Year
Name of Cooperation	1. Strengthening of DPWH Capacity			
Outcome / Output		Activities	Input	
0. Implementation Structure of Project		0.1 ICD Team is organized for Capacity Development on DRM *	Expert A: River Engineering: 3.0M/M for Establishment of Organization	2010-
		0.2 Functions/responsibilities of FCSEC-DPWH are maintained. Permanency of FCSEC is proposed and Requested. *		
		0.3 P/S and FCSEC-DPWF actively take initiatives on Flood Control and DRM.		
		0.4 Action Plans for T/A and Strengthening of DPWH Capacity are prepared. *		
		0.5 Responsible Person(s) and budget in charge of Flood Control are allocated in each Regional Office and DEO. *		
		0.6 Sector Loan Project on Disaster Risk Management is commenced.		
1. Staffs of P/S and FCSEC-DPWH can improve their capacity to formulate M/Ps and conduct F/S on flood control and disaster risk management, as well as coach/supervise the staffs of LGUs and other agencies concerned on the formulation and conduct of M/Ps and F/S on flood control.	1.1 Manuals on River Planning and Design are replete with supplemetal information to support flood control	1.1.1 Provision of concrete examples in Manuals. (e.g. Planning Sample of major rivers, principal rivers and drainage channels)	Expert A: River Engineering: 6.0M/M Expert B: Climate Change: 6.0M/M for Establishment of Manual; 12.0M/M for Seminar and Workshop	2011-2013
		1.1.2 Provision of New Chapter on Planning of Core Area Proctection and Concrete Examples		
		1.1.3 Preparation/Holding of Seminar/Workshop for Personnel of ROs and DEOs		
	1.2 Manual on Climate Change Consideration is prepared.	1.2.1 Provision of New Chapter on Climate Change Adaptation in the Manual of River Planning and Design		
		1.2.2 Provision of Manual of Countermeasures for Sea Level Rising In/Around Shorelines and Coastal Zones. (To supplement the present Manual)		
		1.2.3 Preparation/Holding of Seminar/Workshop for personnel of ROs and DEOs		
	1.3 Significance of Flood Control is recognized.	1.3.1 Preparation of Manual of Economic Analysis for Flood Protection/River Improvement Works		
		1.3.2 Preparation/Holding of Seminar/Workshop for Personnel of DPWH		
	1.4 River Section (Flood Control Section) in each Regional Office and DEO is established. **D			2013
2. The key personnel of DPWH will further absorb knowledge and technology on River Improvement and Flood Control techniques to efficiently supervise personnel of ROs/DEOs/LGUs in river planning and design.	2.1 Drawings of River Structures prepared by FCSEC-DPWH become considerably increased and standardized.	2.1.1 In coordination with DPWH bureaus concerned, Typical and Standard Drawings are enhanced.	Expert A: River Structures 12.0M/M: Drawings & Reference 12.0M/M: Revision of Manual, Seminar and W/S	2013-2014
		2.1.2 River structures to be added in the Drawings are analyzed and their standard structural drawings are provided in the Drawings.		
		2.1.3 River Structural Drawings are approved by DPWH.		
		2.1.4 Preparation/Holding of Seminar/Workshop for Personnel of DPWH		
	2.2 Lessons learned from good and bad examples accumulate and reference books for Drawings are prepared resulting in the further improvement of Manuals.	2.2.1 River structural drawings are collected from PMO, ROs and DEOs.		
		2.2.2 Cases of failure/success on river structure designs are collected.		
		2.2.3 The causes of failures are analyzed and elaborated.		
		2.2.4 Aforemened Analysis and Study are summarized and Reference BookS/Drawings are prepared.		
		2.2.5 Revised Manuals/Regulations for reference are prepared.		
		2.2.6 Preparation/Holding of Seminar/Workshop for Personnel of DPWH		
3. Basic Hydrological Data are collected nationwide to accumulate sufficient data for the Flood Control Plan.	3.1 Collecting System for basic hydrological data is established.	3.1.1 Confirmation/recognition of existing hydrological data collection system	Expert A: Hydrology 6.0M/M	2013-2014
		3.1.2 Proposition and assurance of new hydrological collecting system		
	3.2 DPWH staffs recognize the importance of hydorological data.	3.2.1 Enlightenment activities on meaning of Hydrological Data to personnel concerned		
		3.2.2 Approach on Methods of generating funds for Hydrological Data Collection System		
Basic Conditions to assure national land development are established because the flood control planning and project implementing capability of DPWH is enhanced. <Counterparts: DPWH (P/S, FCSEC, BOD and BRS) and ICD Team with OCD and PAGASA>			Experts A & B: 54.0M/M in total	2010-2014

Note : * : Cooperative Agreement for the Commencement of D/D for the First Batch (the Commencement of Sector Loan)
**D : Cooperative Agreement for the Commencement of D/D for the Second Batch.

Table 4.9 Work Breakdown Structure for T/A(Setup of Mechanism of Utilization of Disaster Rehabilitation Fund (DRF))

Type of Cooperation	Technical Assistance Project			Assumed Implementation Year
Name of Cooperation	2. Setup of Mechanism of Utilization of Disaster Rehabilitation Fund (DRF)			
Outcome / Output		Activities	Input	
0. Implementation Structure of Project		0.1 Sector Loan Project on Disaster Risk Management is started.	No Input (Basic Conditionality)	2010-
		0.2 Functions/responsibilities of FCSEC-DPWH are maintained.		
		0.3 P/S and FCSEC actively take initiatives on Flood Control and DRM		
1. Operation System of DRF is established.	1.1 Operating Rules are established	1.1.1 Reconfirmation of Operation Criteria for Targeted Structures/Calamities	* Expert A: River Planning River Sructure 12.0M/M	2010-2011
		1.1.2 Confirmation of Availability of Special Account *		
		1.1.3 Reconfirmation of Operation Rules and Systems		
		1.1.4 Determination of Definitive Operation Rules and Systems		
		1.1.5 Establishment of Manual of Operating System and Rules		
	1.2 Basic Conditions of operating rules/systems are formulated in DPWH. (Issuance of Draft IRR for DRF Operation)	1.2.1 Support on Setup of DRF Operation Team/Task Force		
		1.2.2 Study on revising/improving Manual of O&M Activities prepared by FCSEC-DPWH		
		1.2.3 Study on Evaluation System of depreciation, appraisal values and damaged amount estimation methods for river structures		
		1.2.4 Study on modification of River Structure Database System		
		1.2.5 Preparation/Holding of Explanation Seminar and W/S for Operation Team		
2. Operation System of DRF is understood and recognized in DPWH	2.1 OperatingSystem for DRF are conveyed from key staffs to staffs of DPWH	2.1.1 Establishment of Explanation and Manual of Operation System of DRF	Expert A: River Planning River Sructures 6.0M/M x Batch	2011-2016
		2.1.2 Support and Assistance Activities for Explanation of Operation System to Staffs of ROs DEOs		
	2.2 Necessary and required materials for the operation of DRF are prepared by each RO and DEO	2.2.1 Support in Preparing River Structure Database for DEOs		
		2.2.2 Confirmation of Database submitted by DEOs **I (More than 50% of DEOs) ***I (100% of DEOs achieved)		
		2.2.3 Recording/Revising System for Database and Explanation to DEOs		
3. The DRF Sytem is operated and the Funds are sanely utilized for damaged river structures.	3.1 Databases are utilized for damaged reports.	3.1.1 Check and Verification of Damage Report	Expert A: River Planning River Structures 48.0M/M (Tentative)	2013-15
		3.1.2 Utilization of Database for Application for DRF ***D		
		3.1.3 Support/Assistance in preparing Damage Report through OJT		
	3.2 Design and Plan of Rehabilitation/Retrofit works are properly prepared.	3.2.1 Support/Assistance in Investigation/Evaluation/ Rehabilitation Plan Activities		
		3.2.2 Support/Assistance in Cost Estimation for Rehabilitation Works		
		3.2.3 Record of Rehabilitation Works in coordination with Operation Team		
	Implementation works are undertaken in the Sector Loan Project.			
4. Through the DRF operation activities, accumulated knowledge on river structures can be utilized in river designing and planning.	4.1 Manual of Design of River Structures is improved.	4.1.1 Review of Design Guidelines and Procedures on the Design of River Structures taking into consideration the causes of damage	The same M/M as Item No. 3	2013-2015
		4.1.2 Propounding Revision of Manual and Guidelines		
	4.2 Drawings of Typical River Structures are enriched.	4.2.1 Preparation of Reference Book for Drawings incl. actual damage practice		
		4.2.2 Propunding Revision of Drawings and Adding Remarks in the Drawings		
		4.2.3 Revision of Drawings and Adding Remarks in the Drawings **D		
	4.3 Operation of DRF is continued.	4.3.1 Preparation of Revised IRR for Operation of DRF **D		2013
		4.3.2 Securement of Budget for DRF for Continuation ***I		2015
DPWH prepares the budget for rehabilitation and reconstruction of damaged river structures after completion of operation of DRF. <Counterparts: DPWH (P/S, FCSEC, BOM)>			Expert A: River Planning/Sructure 66.0M/M (tentative)	2010-2016

Note : * : Cooperative Agreement for the Commencement of D/D for the First Batch (the Commencement of Sector Loan)
**D : Cooperative Agreement for the Commencement of D/D for the Second Batch.
***D : Cooperative Agreement for the Commencement of D/D for the Third Batch.
**I : Cooperative Agreement for the Commencement of Implementation of the Second Batch
***I : Cooperative Agreement for the Commencement of Implementation of the Third Batch

Table 4.10 Work Breakdown Structure for T/A (Assistance on Setup of Non-Structural Measures)

Type of Cooperation	Technical Assistance Project			Assumed Implementation Year
Name of Cooperation	3. Assistance on Setup of Non-Structural Measures			
Outcome / Output		Activities	Input	
0. Implementation Structure of Project		0.1 River Basins to be protected in the Sector Loan Project are selected. 0.2 Conditionalities (C/A) of Project Implementation are confirmed. * 0.3 Sector Loan Project on Disaster Risk Management is started. 0.4 P/S and FCSEC actively take the initiative on Flood Control and DRM.	No Input (Basic Conditionality) (by Actual Project)	2010-2011
1. Manual on the Non-structural Measures are prepared for all river basins as genral standard type.		1.1 Draft Manual on Non-Structural Measures including methods, role and manners for establishement are preppared. **D 1.2 As needed, the manual is revised.	Expert A: Flood Control 3.0M/M	2013 2014-2018
2. Essential Non-Structural Programs for Selected River Basins are formulated.	2.1 Programs and Methods for Support Assistance are formulated.	2.1.1 Flood Management Committee is established in each Sub-project.* **D ***D	-	2010-2013
		2.1.2 Features and Figures of Flooding Type/Runoff System are confirmed. 2.1.3 Program fitting-in with targeted river basin is established. 2.1.4 Importance of Non-Structural Measures is disseminated.	Expert A: Flood Control 1.0M/M x Batch	2014-2016
3. Early Warning System is established and operated.	3.1 Rainfall and Water Level monitoring systems are established.	3.1.1 Locations of monitoring rainfall and water levels are fixed. 3.1.2 Methods to evaluate/monitor rainfall/water levels are studied/determined.	Simple Water Gauge: 1LS Simple Rainfall Gauge: 1LS	2014-2016
	3.2 Alert Systems are formulated.	3.2.1 Appropriate Alert/Warning/Evacuation systems are determined. 3.2.2 Action plans at water levels and rainfall amounts for warning are formulated. 3.2.3 Announcement and Dissemination to Targeted Residents.	Expert A: Flood Control 2.0M/M x Batch	
4. Flood Hazard Maps are prepared and Evacuation System are established.	4.1 Flood Hazard Maps on the Municipal Level are prepared.	4.1.1 Collection of Data and Basic Information 4.1.2 Preparation and Publication of Flood Hazard Map	Expert A: Flood Control 1.5M/M x Batch	2014-2016
	4.2 In areas vulnerable to flood, particular flood hazard maps are prepared.	4.2.1 Selection of Target Barangays 4.2.2 Checking of Evacuation Center 4.2.3 Preparation of Flood Hazard Map (Draft)		
		4.2.4 Preparation of Map Exercise 4.2.5 Map Exercise in Target Barangays	**I ***I	
	4.3 In areas vulnerable to flood, evacuation drills are executed. Targeted residents are provided with hazard map.	4.3.1 Field Reconnaissance 4.3.2 Preparation of Seminar and Drill 4.3.3 Seminar and Evacuation Drill in Target Barangays 4.3.4 Modification of Hazard Map	Expert A: Flood Control 1.5M/M x Batch	2014-2016
	4.4 In targeted areas, revising methods for maps, evacuation centers are formulated thru drills.	4.4.1 Preparation of Flood Prevention Manual 4.4.2 Trainer's Training on Flood Hazard Map		
5. Mainstreaming DRM in urban planning is accelerated.	5.1 CLUP (Draft) is prepared based on Inundation Map.	5.1.1 Implementation Support for Land Use Control and Confirmation of Flood Risk Area 5.1.2 Preparation of Revised CLUP including Land Use Control Policy	Expert A: Flood Control 2.0M/M x Batch	2014-2016
	5.2 Disaster Management Plan(Draft) is prepared based on Activities.	5.2.1 Confirmation of Warning System, Hazard Map and Evacuation System and Revision and Improvement of Manual ***D 5.2.2 Preparation of Draft Disaster Management Plan with policies/responsibilities		
6. River beautification movements/activities are activated.	6.1 Basic systems for activities are established.	6.1.1 Training Program (Module) Development 6.1.2 Trainers' Training	Expert A: Flood Control 2.0M/M x Batch	2014-2016
	6.2 River beautification programs are activated.	6.2.1 Conduct of Community Workshop 6.2.2 Support on Tree Planting/Trash-Picking in communities		
Flood damage and human suffering are alleviated due to activation of Non-Structural Mitigation Activities against flood. (Counterparts: FCSEC-DPWH, OCD, PAGASA and LGUs concerned)			System Equipmentx Batch Expert A: Flood Control etc. 3M/M + 10M/M x Batch	2013-2016

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***D : Cooperative Agreement for the Commencement of D/D for the Third Batch.
**I : Cooperative Agreement for the Commencement of Implementation of the Second Batch
***I : Cooperative Agreement for the Commencement of Implementation of the Third Batch

Table 4.11 Work Breakdown Structure for T/A (Advice on Legal System Arrangement for River Administration)

Type of Cooperation	Technical Assistance Project			Assumed Implementation Year
Name of Cooperation	4. Advice on Legal System Arrangement for River Administration			
Outcome / Output		Activities	Input	
0. Implementation Structure of Project		0.1 ICD Team is organized for Capacity Development on DRM *	Expert A: River Engineering: 3.0M/M for Establishment of Organization	2010-
		0.2 P/S and FCSEC-DPWH actively take initiatives on Flood Control and DRM.		
		0.3 Guideline for River Basin Governance and Flood Control Project is prepared. *		
		0.4 Sample MOA for Flood Control Project and O&M is prepared and issued. *		
		0.5 Sector Loan Project on Disaster Risk Management is commenced.		
1. The necessity of an Integrated and Cooperative Structural System of River Administration is recognized.	1.1 Issues on the Current System of River Aministration are recognized.	1.1.1 Clarification of present organization and roles of agencies concerned in River Administration	Expert A: For Long Term Expert, the activities or tasks in DPWH as mentioned in the left columns are mandated. (Term: 5-8 years)	2010-2011
		1.1.2 Clarification of Issues on Present System and Organization		
	1.2 Directionality of ideal river administration is oriented and shared with stakeholders.	1.2.1 Study on Directionality for resolution of issues		2012-2013
		1.2.2 Hearings and Discussions with Agencies concerned		
		1.2.3 Prepariation/Holding of Seminar/Workshop with Agencies concerned **D		
2. The necessity of establishment of an ideal legal system of river administration is recognized.	2.1 Issues on legal system of river administration are clarified.	2.1.1 Collection and Clarification of River Laws in different countries.		2010-2011
		2.1.2 Clarification of Issues on Water Resources Management in terms of River Administration in the Philippines.		
		2.1.3 Clarification of Issues on Legal System in the Philippines		
	2.2 Legal System necessary for River Administration and the contents are clarified.	2.2.1 Propounding New Legal System for River Administration		2014-2015
		2.2.2 Discussion of New Legal System and the Multi-Agency Consensus-Building		
		2.2.3 Preparation/Holding of Seminar/Workshop with Agencies concerned		
		2.2.4 Proposed Draft of New River Act or Revision of Water Act ***D		2014
3. Flood control and river planning capacity is enhanced with the strengthening of DPWH Capacity through Sector Loan	3.1 Related Activities (T/As) in parallel with Sector Loan Project are supervised and directed.	3.1.1 Advide/Supervision/Guidance on T/A: "Assistance on Setup of Non-Structural Measures"		2012-2018
		3.1.1 Advice/Supervision/Guidance on T/A: "Strengthening of DPWH Capacity"		
		3.1.1 Advice/Supervision/Guidance on T/A: "Setup of Mechanism for Utilization of ERF"		
		3.1.1 Advice/Supervision/Guidance on T/A: "Assistance onr Setup of Non-Structural Measures"		
	3.2 The Effectiveness of Flood Control Project is recognized.	3.2.1 Research on the Generation of Effect of Flood Control Project		
4. The necessity of earlier implementation of climate change adaptation is recognized in the Philippines.	4.1 The latest information and countermeasures regarding climate change on global magnitude are clarified.	4.1.1 Collection and Clarification of Methods of Climate Change Adaptation in different countries		2012-2018
		4.1.2 Collection and Confirmation of Latest Researches on Climate Change in different countries		
		4.1.3 Preparation/Holding of Seminar/Workshop for Related Engineers		
	4.2 The necessity of earlier implementation of climate change adaptation is recognized.	4.2.1 Collection and Analysis of Climate Change Phenomena in the Philippines		
		4.2.2 Study on Climate Change Adaptation in the Phillipines		
		2.3.2 Preparation/Holding of Climate Change Adaptation Seminar/Workshop		
5. The recognition of importance of implementing Flood Conrol pojects is shared with stakeholders.	5.1 Enhancement of recognition of importance of Flood Control Works to personnel of DPWH through the Activities and Seminars mentioned above			2010-2018
	5.2 Sample MOA for more appropriate implementation of Flood Control Project is revised. ***D			
	5.3 Enhancement of recognition of importance of Flood Control Works to agencies concerned through Seminars			
Capacity for River Administration in the Philippines is developed. <Counterparts: DPWH (P/S, FCSEC), DENR (RBCO/NWRB), OCD, NEDA>			Expert A: 5-8 years	Consecutive Execution

Note : * : Cooperative Agreement for the Commencement of D/D for the First Batch (the Commencement of Sector Loan)
**D : Cooperative Agreement for the Commencement of D/D for the Second Batch.
***D : Cooperative Agreement for the Commencement of D/D for the Third Batch.

Table 4.12 Work Breakdown Structure for T/A (Advice on Collection System Arrangement for O&M Budget and Capacity Development on Drainage Improvement)

Type of Cooperation		Technical Assistance Project		Assumed Implementation Year
Name of Cooperation		5. Advice on Collection System Arrangement for O&M Budget and Capacity Development on Drainage Improvement		
Outcome / Output		Activities	Input	
0. Implementation Structure of Project		0.1 P/S and FCSEC-DPWH actively take initiatives on Flood Control and Disaster Risk Mangement.	No Input (Basic Conditionality)	2010-
1. Collection Systems for New O&M Budget accommodating each LGU are proposed.	1.1 Current status of budget allocation and expenditures for flood control by LGUs are confirmed.	1.1.1 Confirmation of Financial Condition of each targeted LGU 1.1.2 Confirmation of Budget Allocation of each targeted LGU 1.1.3 Confirmation of Fiscal Expenditures for Flood Control by LGUs nationwide based on sampling survey	Expert A: Economist Legal Specialist 3.0M/M x Batch	2016-2018
	1.2 Benefit from the Flood Control relished by LGUs are evaluated.	1.2.1 Confirmation and Research on the Benefit of Flood Control 1.2.2 Clarification of relation between total benefit of Flood Control projects and benefit of each LGU	Expert A: Economist Legal Specialist 3.0M/M x Batch	2016-2018
	1.3 New collection systems of budget for O&M activities are proposed.	1.3.1 Study on possible fund resources for LGUs after flood control projects 1.3.2 Discussion with targeted LGUs regarding fund resources for New Charges 1.3.3 Discussion on fund resources for New Charges by LGUs with Jurisprudence 1.3.3 Preparation of New Ordinance for new budget collection system 1.3.4 Preparation/Holding of Seminar/Workshop with Agencies concerned		
2. Manual on the Creation of New Budget from Possible Resources for O&M Activities due to effects brought by Flood Control Projects or particular features borne by LGUs are established and disseminated.	2.1 Manual on Assurance of Budget for O&M Activities is prepared.	2.1.1 Clarification of New Budget Resources considered, prepared and proposed by each LGU. 2.1.2 Preparation of Manual on Obtaining Budget for O&M after Flood Control Project	Expert A: Economist Legal Specialist 3.0M/M x Batch	2016-2018
	2.2 Enacted/Proposed Collection Systems for O&M activities are disseminated nationwide.	2.2.1 Preparation/Holding of Seminar/Workshop with national agencies concerned 2.2.2 Preparation/Holding of Seminar/Workshop with LGUs concerned		
3. Targeted LGUs conclude MOA for O&M, totally know the Manual and properly undertake O&M activities.	3.1 O&M Manual is totally known by LGUs.	3.1.1 Guide and Introduction of O&M Manual to LGUs 3.1.2 Support/Assistance in Preparing Database of River Structures	Expert B: River Maintenance River/Drainage Plan 2.0M/M x Batch	2017-2019
	3.2 Appropriate MOA between DPWH and LGUs is concluded for proper O&M.	3.2.1 Study on Cost Estimation Methods of O&M and Frequency for Facilities 3.2.2 Study on Proper Work Demarcation of Budget, Frequency in terms of considered Priority/Order of Importance between DPWH and LGUs. 3.2.3 Support/Assistance in MOA conclusion		
	3.3 Suitable O&M Activities are executed by LGUs.	3.3.1 Revision of O&M Manual to accommodate each LGU 3.3.2 Support/Assistance in OJT for O&M Activities		
4. LGUs' recognition of importance of Flood Control and Drainage Systems are improved.	4.1 LGUs recognize the importance of Flood Control	4.1.1 Introduction of various Flood Control Plans to Targeted LGUs 4.1.2 Lecture on the Benefit and Effect of Flood Control Projects	Expert B: River Maintenance River/Drainage Plan 2.0M/M x Batch	2017-2019
	4.2 LGUs master the manner of Drainage Improvement	4.2.1 Introduction of Drainage Improvement Manners based on the Manual of FCSEC-DPWH 4.2.2 Execution of OJT for Formulation of Drainage Improvement Plan/Design		
Drainage Sytems in the jurisdiction of targeted LGUs are improved and flood damage is decreased, since LGUs prepare the budget for O&M of river/drainage facilities to maintain the flood control function of facilities constructed. <Counterpart: DILG (LGUs) and FCSEC-DPWH>			Expert A: Economist Legal Specialist 9.0M/M x Batch Expert B: River Maintenance River/Drainage Plan 4.0M/M x Batch	2016-2019

Table 4.13 Cooperative Agreements and Confirmatory Period

Keyword	ICC Preparation ~ by L/A	at the Commencement of ….				
		D/D of Second Batch	Construction of First Batch	D/D of Third Batch	Construction of Second Batch	Construction of Third Batch
ICD	Set-up					
	Issuance of D.O.					
T/As	Preparation of PDMs					
Action Plan	Pareparation for Capacity Development of DPWH →			Revision of Action Plan		
Assignment	Clarification of Responsible Persons in charge of Non-Structural Measures in DPWH Head Office					
	Clarification of Responsible Persons for Flood Control in DPWH Local Offices					
Organization	Proposal on Permanency of FCSEC					
	→	Establishment of River Section in each Local Office				
DRF	Mechanism					Securement of Budget for Continuation
	Special Account ⇨					
	Strategy for continuation					
	Issuance of Draft IRR →			Issuance of Revised IRR for Operation of DRF		
Flood Management Committee	Set-up for River Basins in First Batch					
	→	Set-up for River Basins in Second Batch				
			→	Set-up for River Basins in Third Batch		
Guideline	Preparation for Establishment of Project Process ⇨			Revision and Modification of Guideline for Establishment of Project Process		
	Issuance of Department Order					
MOA	Preparation of Sample ⇨			Revision and Modification of Sample MOA		
	Issuance of Department Order					
	Finalization of MOA for Sub-projects in First Batch					
	→	Finalization of MOA for Sub-projects in Second Batch				
			→	Finalization of MOA for Sub-projects in Third Batch		
Manual		Preparation on Climate Change for Flood Control				
			Preparation on Non-structural Measures ⇨			Revision and Improvement
				→	Proper Operation of Non-structural Measures	
					in First Batch →	in Second Batch
Drawing		Revision of Typical Drawings of River Structures				
River Management	⇨	Holding of Seminar on River Administration in the Philippines ⇨		Proposed Draft of New River Act or Revision of Water Act		
Database					More than 50% of DEO ⇨	All DEOs (100%)

Target	Direction to Improvement through introduction of Cooperative Agreement	Major Actions	Agencies Concerned	Contents of Actions	Expected Schedule for Application of Loan and Realization of Major Actions
Enough Capacity of Integrated Flood Management		Strengthening of DPWH Capacity (PS, FCSEC and Local Offices)	PS, FCSEC	1. **ICD** Set up (Clarification of Secretary, Member, role and budget)	
				2. Formulation of **PDM for T/A** (incl. Request of Introduction of Expert)	
				3. Issuance of Department Order for Permanency of ICD	
				4. Formulation of DPWH Strategy **Action Plan** for Strengthening of Capacity for Flood Management including Time Schedule	
				5. Proposal on Permanency of **FCSEC** (Request to DBM)	
				6. Realization of DPWH Strategy and Continuation of Capacity Development	
				7. Confirmation of Activity for Realization of DPWH Strategy *1	
				7.1 Preparation of Manual on Climate Change for Flood Control	
				7.2 Revision of Typical Drawings of River Structures	
				7.3 Revision of Action Plan	
				8. Formulation of Flood Control Project and Implementation by DPWH for the **other river basin** excluding sector loan sub projects.	
			Local Offices	1. Clarification of **Responsible Persons** with the role/responsibility and assurance of budget and staff in Local Office for Flood Control (Regional Offices and DEO)	
				2. Formulation of Strategy **Action Plan** for Strengthening of Capacity for Flood and River Management including Time Schedule	
				3. Realization of strategy	
				4. Confirmation of Activity for Realization of strategy	
				4.1 Establishment of River Section in each Regional Office and DEO	
				4.2.1 Preparation of Database for Flood Control Structures by Each DEO (More than 50% of DEO will have prepared Database.)	
				4.2.2 Preparation of Database for Flood Control Structures by Each DEO (All DEOs (100%) will have prepared Database.)	
		Strengthening of Management System for DRF, QRF and GAA	ICD	1. **ICD** Set up	
				2. Drawing the Concept of Utilization of **DRF**, QRF and GAA, Formulation of **PDM for T/A** (incl. Request of Introduction of Expert)	
				3 Approval of DRF Mechanism by NEDA (Approval of Sector Loan incl. **DRF**)	
				4. Confirmation of Availability of **Special Account**	
				5. Clarification of Strategy for continuation of DRF and Legal Arrangement	
				6. Issuance of Draft IRR for DRF Operation	
				7. Operation, Monitoring, Review, Evaluation and Modification of Mechanism of **DRF**	
				8. Confirmation of Action for continuation of DRF in accordance with the Concept, the Operation Rule and the Strategy	
				8.1 Issuance of Revised IRR for Operation of DRF	
				8.2 Utilization of Database for Application for DRF	
				8.3 Securement of Budget for DRF for Continuation	
				9. **Continuation of DRF** as well as QRF and GAA	
		Development of Non-structural measures (DPWH's Supporting System to LGUs)	DPWH (ICD)	1. Clarification of **Responsible Persons** in DPWH	
				2. Preparation of Strategy for supporting system to LGUs and Formulation of **PDM for T/A** (incl. Request of Introduction of Expert)	
				3. Preparation of Manual and Guideline for introduction of Non-structural Measures	
			DPWH (ICD), LGUs and other agencies	4. Set-up **Flood management committee** including DPWH, LGUs and other agencies for **First Batch, Second Batch and Third Batches**	
				5. Realization of supporting for LGUs for Sub-project of each Batch	
				6. Setup and Commencement of Operation of Non-structural Measures for River Basins in each batch	
				7. Monitoring, Review, Evaluation, Modification of Operation, Manual and guideline as well as strategy	
				8. Revision and Improvement of Manual on Non-structural Measures	
				9. Application of Supporting system for other River Basins and continuation	
		River Basin Governance including Establishment of Project Process (Participatory Planning and Resettlement Planning, ICP, River Basin Forum, involving LGUs and communities in whole project cycle) Coordination with LGUs and other Organizations in a manner of MOA for O&M, River Basin Management, Environment Improvement	DPWH (ICD)	1. Set-up **ICD**	
				2. Formulation of **PDM for T/A** (incl. Request of Introduction of Expert)	
				3. **Guideline** for Establishment of Project Process including River Basin Governance (Participatory Planning and Resettlement Planning, ICP, River Basin Forum involving LGUs and Communities in whole Project Cycle)	
				3.1 **Preparation of Guideline**	
				3.2 **Issuance** of D.O. for **Guideline** for establishment of Project Process	
				4. **Sample MOA** for O&M, River Basin Management and Environmental Improvement (Issuance of Department Order)	
				4.1 **Preparation** of **Sample MOA**	
				4.2 **Issuance** of Department Order of **Sample MOA**	
				4.3 **Issuance** of **Revised** Department Order of **Guideline** and Sample **MOA**	
				5. Holding of Seminar on River Administration in the Philippines	
			DPWH (ICD), LGUs and other agencies	6. Application and Utilization of Guideline and MOA for sub-projects of each Batch by sector loan and for other projects	
				7. Set-up of **Flood Management Committee** for implementation of sub-projects for **First Batch, Second Batch and Third Batches**	
				8. Finalization of **MOA** for Sub-projects for **First Batch, Second Batch and Third Batches**	
				9. Operation/Monitoring/Review/Evaluation of **Guideline** and **Sample MOA**	
				10. Proposed Draft of New River Act or Revision of Water Act to Congress and Senate	

Expected Schedule for Application of Loan and Realization of Major Actions

- Preparation for Application of Loan
  - Commencement of the Consultant Service
  - Selection of Consultants
  - Loan Agreement
  - ICC-CC approval and ICC-Board approval
  - Appraisal Mission
  - ICC-TB approval
  - Submittal of ICC document to NEDA
  - Preparation of Umbrella ICC document
- D/D and Implementation for First Batch
  - Preparation for ICC for Second Batch
    - Selection of objective River Basin for Second Batch
    - Preparation of ICC document
    - Submittal of ICC document to NEDA
    - ICC-TB approval
    - ICC-CC approval and ICC-Board approval
    - Completion of D/D for First Batch
    - JICA concurrence for D/D
    - Completion of D/D for Second Batch
    - Commencement of Construction for First Batch
    - Completion of Construction for First Batch
    - Commencement of Construction for Second Batch
    - Completion of Construction for Second Batch
    - Commencement of Construction for Third Batch
    - Completion of Construction for Third Batch
  - D/D and Implementation for Second Batch
    - Preparation for ICC for Third Batch
      - Selection of objective River Basin for Third Batch
      - Preparation of ICC document
      - Submittal of ICC document to NEDA
      - ICC-TB approval
      - ICC-CC approval and ICC-Board approval
      - Commencement of Construction for Fist Batch
      - Completion of D/D for Second Batch
      - JICA concurrence for D/D
      - Completion of D/D for Third Batch
    - D/D and Imple for Third Batch
      - Commencement of Construction for Second Batch
      - Completion of Construction for Second Batch
      - Commencement of Construction for Third Batch
      - Completion of Construction for First Batch
      - Completion of Construction for Third Batch

Note :
- ◎: Timing for realization of cooperative agreement,
- ◎: Procedural Cooperative Agreement to commence Fisrt Batch
- ◎: Procedural Cooperative Agreement to commence Second Batch
- ◎: Procedural Cooperative Agreement to commence Third Batch
- → : Continuation of Activity

*1: These items are subject to Action Plan to be prepared by DPWH. Items in the table above are tentatively prepared based on proposed contents of T/As (See Tables 3.4 to 3.8.)

Table 4.15 Framework of "Guideline for Establishment of Project Process"

Items	Major Agencies involved	Stage →						
		M/P Stage	**F/S Stage**	**Before D/D**	**D/D Stage**	**Pre-Construction Stage**	**Implementation Stage**	**Operation and Maintenance**
Contents of Works	**DPWH, LGUs & Stakeholders**	Study on general framework Clarification of target for M/P Collection and Arrangement of basic data Arrangement of several alternative countermeasures Arrangement of Implementation Schedule Selection of urgent project for F/S	Data Collection and Field Survey Basic Analysis Stakeholder Meeting Social and Environmental Study Basic Design Features Alternative Studies Selection of Optimum Plan (ROW and O&M) Preliminary Design Economic Evaluation Project Evaluation Clarification of content of project including	Application for ICC approval Preparation of EIA Evaluation of ROW and O&M Arrangement of MOA Loan Application	Review of F/S Detailed Field Survey Detailed Design Preparation of Tender Doc. Preparation of Land Acquisition Confirmation of ECC	Review of D/D Tendering ICP(Information Campaign) Preparation of RAP(Resettlement Action Plan)	Supervision Land Acquisition Environmental Monitoring	Turnover of Facilities to LGU Assistance for O&M for LGU Restoration work for emergency Cases Training of Staff for O&M Environmental monitoring
Basic Conditions to be Confirmed	**DPWH**	Confirmation of Strategy for M/S Arrangement of necessary data Coordination with Regional and District offices Coordination among stakeholders	Confirmation of Strategy for F/S Preparation of PD and necessary arrangement for EIA certificate Preparation of Preliminary Resettlement Action Plan (RAP)	ICC approval EIA certificate Signing of MOA (general agreement)	Parcellary Survey, Census/tagging Survey Preparation of RAP Arrangement of budget Preparation of project office Procurement of consultant and necessary equipment Approval of Detailed Design	Execution of RAP Arrangement of budget ICP (Information Campaign)	Execution of RAP Arrangement of budget Signing of MOA specified detailed items Environmental Monitoring (establishment of task force)	Arrangement of budget Necessary action of O&M Monitoring of consequence of MOA Environmental monitoring
	LGUs	Announcement of Intention for M/P	Announcement of Intention for F/S Introduction of non-structural measures if necessary Preparation of land utilization plan Initiation of necessary action for project implementation	Operation of non-structural Measures Arrangement of local budget for O&M Signing of MOA (general agreement) Arrangement of ordinance for land use control if necessary	Assistance for formulation of RAP Explanation of schedule for project Operation and Improvement of non-structural measures Monitoring of life of affected people Initiation of land use control if necessary	Operation and Improvement of non-structural measures Execution of RAP	Execution of RAP Arrangement of budget Signing of MOA specified detailed items Environmental Monitoring (establishment of task force)	Necessary action of O&M Preparation of activity report for O&M Monitoring of consequence of MOA Environmental Monitoring
	Stakeholders (Beneficiaries)	Understanding of the project Intention to cooperate and coordinate Clarification of role of stakeholders Intention to shoulder the responsibility	Understanding of the project Intention to cooperate and coordinate Clarification of role of stakeholders Intention to shoulder the responsibility (participation of disaster prevention activities)	Understanding of the project Intention to cooperate and coordinate Clarification of role of stakeholders Intention to shoulder the responsibility (participation of disaster prevention activities)	Understanding of the project Intention to cooperate and coordinate Clarification of role of stakeholders Intention to shoulder the responsibility (participation of disaster prevention activities)	Understanding of the project Implementation of ICP Intention to cooperate and coordinate Clarification of role of stakeholders Intention to shoulder the responsibility (participation of disaster prevention activities)	Cooperation of project implementation Participation of disaster prevention activities (especially operation of non-structural measures)	Cooperation of O&M activities Participation of disaster prevention activities (especially operation of non-structural measures)
	Stakeholders (Affected People)	Understanding of the project Intention to cooperate and coordinate Acceptance for the requirement for project Implementation Basic condition to cooperate the project	Understanding of the project Intention to cooperate and coordinate Acceptance for the requirement for project Implementation Basic condition to cooperate the project	Understanding of the project Intention to cooperate and coordinate Acceptance for the requirement for project Implementation Basic condition to cooperate the project	Understanding of the project Intention to cooperate and coordinate Acceptance for the requirement for project Implementation Basic condition to cooperate the project	Understanding of the project Intention to cooperate and coordinate Acceptance for the requirement for project Implementation Basic condition to cooperate the project	Migration to the other site Report of life after migration	Report of life after migration
	NEDA	**Confirmation of strategy for regional development and sector, and Implementation Agency of the loan**	**Exchange of views for F/S**	**Evaluation of project for ICC approval**				
	DENR	**Confirmation of EIA system**	**Evaluation based on PD (Project Digest)**	**Issuance of ECC**				
	Other agencies							
	ADB/WB	Confirmation of strategy for funding and institutional reform Exchange of Information of Issued related to funding	Exchange of views as funding agency	Exchange of views as funding agency	Exchange of views as funding agency	Exchange of views as funding agency	Exchange of views as funding agency	Exchange of views as funding agency
Critical Condition		Understanding and agreement for promotion of project among stakeholders Confirmation of NEDA policy	Understanding and agreement for promotion of project among stakeholders		Confirmation of budgetary allocation	Confirmation of budgetary allocation	Confirmation of budgetary allocation Confirmation of execution of RAP	Confirmation of budgetary allocation
Related Necessary Arrangement by ICD		*** Establishment of Flood Management Committee** *** Conduct of IEE with Stakeholder Meetings (Minimum 3 times)**	*** Conduct of EIA with Stakeholder Meetings (Minimum 3 times)** *** Preparation of Draft MOA** *** Preparation of Preliminary RAP**	*** RDC Approval** *** Issuance of ECC/CNC** *** ICC Approval** *** Signing of MOA**	*** Parcellary Survey, Census/tagging Survey** *** Finalization of RAP** *** Execution of RAP** *** Monitoring of RAP**	*** Execution of RAP** *** Monitoring of RAP**	*** Revising MOA with Detailed O&M Plan** *** Preparation of O&M Manual** *** Execution of RAP** *** Monitoring of RAP**	*** O&M Activities** *** Finalization of RAP** *** Monitoring and Evaluation of RAP with Livelihood Program**

Table 5.1 River Basins in Long List

Fund *1	Prioriti-zation	River name	Region	Basin Area (km^2)	Project Cost (mil. Pesos)	Project Term (year, phase)	L V M *2	Classifi-cation *3
Foreign	1	EAST MANGAHAN	IV-A, NCR	84	3,161	5yrs	L	P(D)
	2	MEYCAUAYAN	III, NCR	154	7,180	5yrs x 2phs	L	O(D)
	3	PANAY/MAMBUSAO	VI	2,311	6,068	5yrs x 2phs	V	M
	4	MINDANAO	XII, ARMM	20,673	15,870	5yrs x 4phs	M	M
	5	NANGALISAN/BAGGAO-PARED(CAGAYAN)	II, CAR	27,743	52,826	5yrs x 4phs	L	M
	6	UPSTREAM of AGNO (include AMBAYAWAN, BANILA)	I	5,722	11,850	5yrs x 3phs	L	P(D)
	7	ILOG-HILABANGAN	VI, VII	2,162	1,638	5yrs	V	M
	8	DAVAO	XI	1,992	1,369	5yrs	M	M
	9	KABILUGAN/VELASCO/BATO LAKE(BICOL)	V	2,999	12,095	5yrs x 4phs	L	M
	10	GUAGUA	III	1,605	31,715	5yrs x 4phs	L	O(D)
	11	CEBU/MANDAWE	VII	241	2,368	5yrs	V	O(D)
	12	UPPER AGUSAN	XI	1,745	2,013	5yrs	M	P(D)
	13	UPPER MARIKINA	NCR, IV-A	515	13,469	5yrs x 4phs	L	P(D)
	14	SAN JUAN	NCR	90	2,260	5yrs	L	P(D)
	15	JALAUR	VI	1,534	3,249	5yrs	V	M
	16	TAGUM-LIBUGANON	XI	2,434	3,517	5yrs	M	M
	17	PATALAN/CAYANGA/ANGALACAN	I, CAR	656	2,318	5yrs	L	P
	18	IMUS	IV-A	112	2,377	5yrs	L	P(D)
	19	TUGANAY	XI	747	2,563	5yrs	M	P(D)
	20	UPSTREAM of PAMPANGA(include RIO CHOCO)	III	8,122	21,856	5yrs x 4phs	L	P(D)
	21	SINOCALAN/MAROSOY(DAGUPAN)	I, CAR	1,023	3,890	5yrs	L	P
	22	TAGO	XIII	1,370	2,169	5yrs	M	P
	23	ABULUG	CAR, II	2,766	2,989	5yrs	L	M
	24	ABRA	I, CAR	4,951	2,984	5yrs	L	M
	25	SIBUGUEY	IX	994	2,493	5yrs	M	P
	26	ANGAT	III	917	9,014	5yrs x 3phs	L	P
Local	1	YAWA/BASUD/QUIRANGAY(LEGAZPI CITY)	V	126	475	5yrs	L	O(D)
	2	KINANLIMAN(REAL-1)	IV-A	10	32	5yrs	L	O
	3	MANDALAGAN(BACOLOD CITY)	VI	187	214	5yrs	V	O
	4	TAGOLOAN	X	1,762	980	5yrs	M	M
	5	AGUS/BUAYAN	ARMM, X	1,898	681	5yrs	M	M
	6	AGOS	IV-A	483	680	5yrs	L	P(D)
	7	SANTA RITA/KALAKLAN(OLONGAPO CITY)	III	102	479	5yrs	L	O(D)
	8	AKLAN	VI	1,010	366	5yrs	V	P
	9	BUAYAN-MALUNGUN	XI, XII	1,400	527	5yrs	M	M
	10	TUMAGA	IX	255	483	5yrs	M	P(D)
	11	MALUPA-DIAN(AGUANG)	III	666	540	5yrs	L	P
	12	DONSOL/MANLATO	V	413	82	5yrs	L	P(D)
	13	GUINABASAN	VII	131	433	5yrs	V	P(D)
	14	DINAGGASAN(CATARMAN-1S)	X	25	117	5yrs	M	O(D)
	15	IPONAN	X	412	357	5yrs	M	P
	16	AMBURAYAN	I, CAR	1,307	676	5yrs	L	P(D)
	17	BALETE	IV-B	132	259	5yrs	L	P
	18	BAGO	VI	868	595	5yrs	V	P
	19	LIPADAS	XI	163	198	5yrs	M	P(D)
	20	TALOMO	XI	279	359	5yrs	M	P(D)
	21	ARINGAY	I, CAR	421	822	5yrs	L	P
	22	BAUANG	CAR, I	510	358	5yrs	L	P
	23	DUNGCAAN(PAGBANGANAN)	VIII	176	89	5yrs	V	P
	24	SILWAY-POPONG-SINAUAL(POLOMOLOK)	XII	577	406	5yrs	M	O
	25	CAGAYAN DE ORO	X	1,365	728	5yrs	M	M
	26	CAGURAY	IV-B	361	794	5yrs	L	P
	27	PAMPLONA	II, CAR	698	280	5yrs	L	P
	28	DAGUITAN-MARABONG	VIII	292	308	5yrs	V	P
	29	LAKE_MAINIT-TUBAY	XIII	473	214	5yrs	M	P
	30	MATALING	ARMM	420	109	5yrs	M	P
Exceptional Rivers								
		Iloilo (Phase Ⅱ)	VI					
		Dinalupihan-Hermosa-Lubao	III					

Note: *1:
Locally-Funded Project: (Project Cost) < 1 bil Pesos
Foreign Assisted Project: (Project Cost) > 1 bil Pesos

*2
L: Luzon
V: Visayas
M: Mindanao

*3:
M: Major River Basin
P: Principal River Basin
O: Other River Basin
(D): Vulnerable Basin to flood damage

Table 5.2 Proposed 18 River Basins in the Short List

Short-Listed River Basins					Status of F/S *2	Estimated Total Project Cost *3 (mil. Peso)	Estimated Loan Cost *3 (mil. Peso)	*Selected* or Assumed Core Areas
Group	Rank *1	Name of River Basin	Catchment Area (km2)	Region				
A	6	Upstream of Agno (Phase III)	5,722	I	Done	1,765	1,500	Villasis, Rosales, Asingan, San Manuel
	18	Imus	112	IV-A	Done	1,983	1,190	Bacoor, Imus, Kawit
	-	Bataan(Dinalupihan)		III	Done	2,476	2,105	Dinalupihan, Hermosa, Lubao
B	1	Yawa (Legazpi City)	126	V	on-going	475	404	Tabaco, Legaspi, Ligao, Malilipot, Santo Domingo, Guinobatan, etc
	6	Agos	483	IV-A	on-going	680	578	General Nakar, Infanta, Real
	8	Aklan	1,010	VI	on-going	366	311	Numancia, Kalibo, Makato, Lezo, Malinao, Banga, Balete, etc
	10	Tumaga	255	IX	on-going	483	411	Zamboanga
	13	Guinabasan	131	VII	on-going	433	368	Danao, Tuburan, Asturias
	15	Iponan	412	X	on-going	357	303	Cagayan De Oro, Illigan, Opol, Baungon, El Salvador, Manticao
	16	Amburayan	1,307	I, CAR	on-going	676	575	Tagundin, Alilen, Sudipen, Bangar, Bakun, Sugpon, etc
	17	Balete	132	IV-B	on-going	259	220	Pinamalayan, Gloria, Sablayan
	19	Lipadas	163	XI	on-going	198	168	Davao
	23	Dungcaan	176	VIII	on-going	89	76	Baybay, Mahaplag, Inopacan, Hindang
	24	Silway	577	XII	on-going	406	345	General Santos, Polomolok, Tupi, Malungon, T'boli
	29	Lake Mainit Tubay	473	XIII	on-going	214	182	Tagana-An, Placer, Tubod, Bacuag, Mainit, etc
C	5	Cagayan (Phase IV)	27,743	II, CAR	Done	3,163	2,698	*Tuguegarao, Enrile*
	7	Ilog-Hilabangan	2,162	VI, VII	Done	2,744	2,344	*Kabankalan, Ilog*
	4	Tagoloan	1,762	X	Done	781	638	*Tagoloan*
Total						17,548	14,415	
Average for One Sub-Projects						975	801	
Average x Assumed Total No. of Sub-Projects (9) x 120%						10,529	8,649	

*1 : The grouping and ranking from "The Nationwide Flood Risk Assessment Study (JICA, 2008)"

*2 : Done; F/S has been conducted. On-going: F/S is on-going by DPWH.

*3 : Group A; F/S has been completed, : Group B; F/S is on-going by DPWH, : Group C; F/S has been conducted under the Sector Loan Preparatory Study.

Table 5.3 Selection of River Basin as Short List from Category A (River Basins in which F/S has been Completed in the Previous Study)

River	Basic Feature of the Project										Environment		Judgement
	Cost				EIRR	NPV	B/C	House Relocation	Land Acquisition	Return Period	IEE Level	EIA Level	
	Based	FC	LC	Total		Mil.							
	Year	Mil. Pesos	Mil. Pesos	Mil. Pesos	%	Pesos		Unit	ha				
Meycauayan(VOM)	2008	3,707	7,158	10,865	16.3	362	1.12	170	63	10	done	done	*Necessity to improve downstream portion
Panay	2005	2,209	2,296	4,505	16.0	203	1.08	498	401	25	done	-	*Requirement of long term construction cost.
Cagayan	2001	8,386	6,995	15,381				2,776	7,469	25	done	done	
Phase I	*2001*	*1,448*	*1,339*	*2,786*	*27.1*	*1,255*	*2.15*	*126*	*468*	*25*			
Phase II	*2001*	*1,445*	*1,383*	*2,828*	*25.4*	*1,673*	*1.88*	*1,122*	*1,968*	*25*			
Phase III	*2001*	*2,337*	*2,083*	*4,420*	*26.8*	*2,565*	*2.06*	*1,528*	*3,115*	*25*			
Phase IV	*2001*	*3,156*	*2,190*	*5,347*	*27.4*	*3,216*	*2.15*	*0*	*1,918*	*25*			*Adopted*
Upstream of Agno	1991	2,083	1,831	3,914	20.6	976	n.i.	920	1,041	10	done	preliminary	
Bayambang-Alcala	*1991*	*1,154*	*994*	*2,148*				*546*	*413*	*10*			
Alcala-San Manuel	*1991*	*929*	*837*	*1,766*				*374*	*628*	*10*			*Adopted*
Upper Marikina	2002	1,215	1,912	3,127	18.3	337	1.28	1,118	80	30	-	-	*Huge No. of house relocation *Necessity to improve downstream portion
San Juan	2002	1,666	4,852	6,518	19.7	1,109	1.46	3,756	25	30	-	-	*Huge No. of house relocation *Necessity to improve downstream portion
Imus	2008	660	1,460	2,120	26.0	924	2.09	35	80	10	done	done	Adopted
Bicol	2003			989	*	*	*	*	*	*	done	done	*The Project has been pledged under WB or Local Fund.
Upper Pampanga	1982			8,800	10.5	*	*	6700	*	20	-	-	*Huge Cost, *Huge No. of house relocation
Bataan (Dinalupihan)	2009			2,476						25			Adopted
Iloilo(Stage II)	2001	1,287	3,003	4,290	20.9	641	3.53	1,529	39	50	done	done	*The core areas in which flood protection level have been over 20-year flood.

Table 5.4 First Screening List (selected through first screening) and Second Screening List (selected through second screening) (Selection of 3 River Basins for F/S in this Study (Category C))

Group	Rank *1	Name of River Basin (First Screening List)	Catchment Area (km2)	Region	Basic Condition for Second Screening									Second Screening				Selection (Second Screening List)
					Overall project (M/P) *5		Expected Project Cost and House Evecuation for the Core Areas							Possibility to be accomodated in the Sector Loan	House Evacuation, Land acquisition	Schedule for F/S study and Availability of Existing Study	Existing Safety Level	
							Estimated Cost (Million Pesos) *5				Area to be targeted	Rough Assumed No. of House Relocation	Rough Assumed Ares (has) of Land Acquisition					
					Price Level	cost	Price Level	cost	cost *4 (2007)	Project Scale								
Foreign Fund	1	East Mangahan	84	IV-A, NCR	2007	8,605	2007	8,605	8,605	10	Cainta, Taytay, Antipolo	more than 500	250	difficult	difficult	F/S available	Less than 10	No
	2	Meycauayan(VOM)	154	III,NCR	2008	10,865	2008	5,000	4,687	10	Valenzera Obando Maycauyan	20	40.3	difficult	Possible	F/S available	Less than 10	No
	3	Panay	2,311	VI	2001	5,160	2005	4,505	4,805	25	Aklan	164	424	difficult	Possible	F/S available	Less than 10	No
	4	Mindanao (Cotabato)	20,673	XII, ARMM	1982	1,645	1982	1,296	9,409	25	Cotabato	n.i.	n.i.	difficult	n.i.	Not Scheduled (M/P available)	Less than 10	No
	5	Cagayan (Phase I)	27,743	II, CAR	2001	15,381	2001	2,786	3,406	25	Apali Camalaniugan Lai-lo	126	468	difficult	difficult	F/S available	Less than 10	No
		Cagayan (Phase II)					2001	2,828	3,461	25	Lasam Gattaran Amulung	1122	1968	difficult	difficult	F/S available	Less than 10	No
		Cagayan (Phase III)					2001	4,420	5,393	25	Iguig Solana	1528	3115	difficult	difficult	F/S available	Less than 10	No
		Cagayan (Phase IV)					2001	5,347	6,455	25	Tuguegarao Enrile	0	1918	difficult	difficult	F/S available	Less than 10	No
		Cagayan (Phase IV(2))					2001	2,160	2,608	25	Tuguegarao Enrile	10	11 *9	Possible (for Core areas)	possible	F/S available	Less than 10	Yes
	6	Upstream of Agno (Phase III)	5,722	I	1991	1,765	1991	1,765	3,481	10	Villasis Rosales Asingan Sta. Maria	374	628	difficult	difficult	F/S available	Less than 10	No
	7	Ilog-Hilabangan	2,162	VI, VII	0	0	*2007*	*2,106*	*2,106*	*25*	Ilog Kabankalan	354	221	Possible (for Core areas)	Possible	Not Scheduled (M/P	Less than 10	Yes
	8	Davao	1,992	XI	*1990*	*1,253*	*2007*	*1,369*	*1,369*	*25*	Davao	1000 up	54	Possible (for Core areas)	difficult	Not Scheduled (M/P available)	Less than 10	No
	9	Bicol	2,999	V	2007	1,369	2003	860	972	n.i.	Libumanan Naga	n.i.	n.i.	Possible (for Core areas)	Possible	W/B study is scheduled	Less than 10	No
	10	Guagua	1,605	III	*2003*	*989*	*2007*	*2,300*	*2,300*	*25*	Angeles	200	30	Possible (for Core areas)	Possible	Not Scheduled (M/P available)	Less than 10	Yes
	18	Cavite	112	IV-A	2007	31,715	2008	2,120	1,983	>2	Bacoor Imus	14	81	Possible (for Core areas)	Possible	F/S available	Less than 10	Yes
	19	Tuganay	747	XI	*2007*	*6,860*	*2007*	*600*	*600*	*25*	Carmen	50	128	Possible (for Core areas)	Possible	Not Scheduled	Less than 10	Yes
	-	Iloilo(Stage II)		VI	2000	4,290	2000	4,290	5,617	n.i.	Iloilo	2500	n.i.	difficult	difficult	F/S available	25 year	No

*1 : The ranking from "The Flood Risk Assessment Study (JICA, 2008)"
*2 : Other finance project are excluded
*3 : Large scale projects, such as diversion channels and projects in Metro Manila are excluded. (reffer to MOD of the project)
*4 : 1.97% is used for Foreign Currency Portion and CPI of NSO is used for Local Currency portion as price escalation (CPI: Consumer's Price Index)
*5 : *Values of Italic Letters* are estimated by the Nationwide Flood Risk Assessment Study.

Table 5.5 Selection of River under Local Fund Group (First Screening List and Second Screening List)

Group	Rank *	Name of River Basin (First Screening List)	Catchment Area (km2)	Region	Basic Condition for Second Screening			Second Screening List
					Maturity of Project		Project never implemented	
					status	yes or no		
Local Fund Group	1	Yawa (Legazpi City)	126	V	C**	yes	yes	○
	2	Kinanliman (Real-1)	10	IV-A	A	yes	no	x
	3	Mandalagan (Bacolod)	187	VI	C	yes	no	x
	4	Tagoloan	1,762	X	B	no	yes	○
	5	Agus/Buayan	1,898	ARMM, X	D	no	yes	○
	6	Agos	483	IV-A	C**	yes	yes	○
	7	Santa Rita/Kalaklan	102	III	C	yes	yes	○
	8	Aklan	1,010	VI	C**	yes	yes	○
	9	Buayan-Malungon	1,400	XI, XII	D	no	yes	○
	10	Tumaga	255	IX	C**	yes	yes	○
	13	Guinabasan	131	VII	C**	yes	yes	○
	15	Iponan	412	X	C**	yes	yes	○
	16	Amburayan	1,307	I, CAR	C**	yes	yes	○
	17	Balete	132	IV-B	C**	yes	yes	○
	19	Lipadas	163	XI	C**	yes	yes	○
	23	Dungcaan	176	VIII	C**	yes	yes	○
	24	Silway	577	XII	C**	yes	yes	○
	25	Cagayan de oro	1,365	X	D	no	yes	x
	29	Lake Mainit Tubay	473	XIII	C**	yes	yes	○
	-	Bataan(Dinalupihan) urgent project		III	A	yes	yes	○
	-	Amany-Patric	993	IV-B	C	yes	yes	○

* : The grouping and ranking from “The Flood Risk Assessment Study (JICA, 2008)”

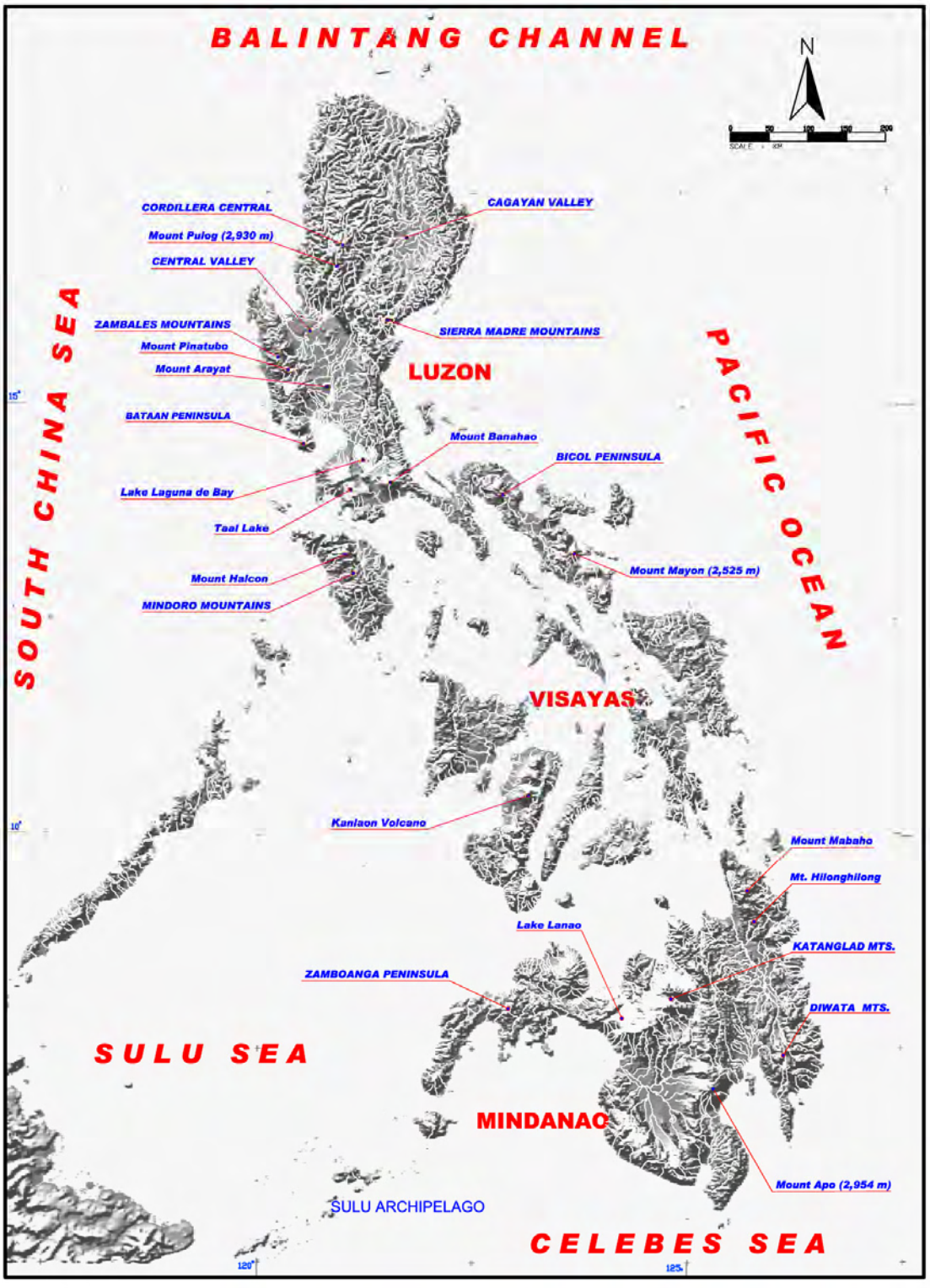
** : F/S will be conducted by DPWH (12 river basins)

A: F/S completed
B: M/P completed
C: F/S to be conducted
D: not scheduled

Table 5.6 23 River Basins passing through First Screening List and Second Screening process
(Selection of 3 River Basins for F/S in this Study (Category C))

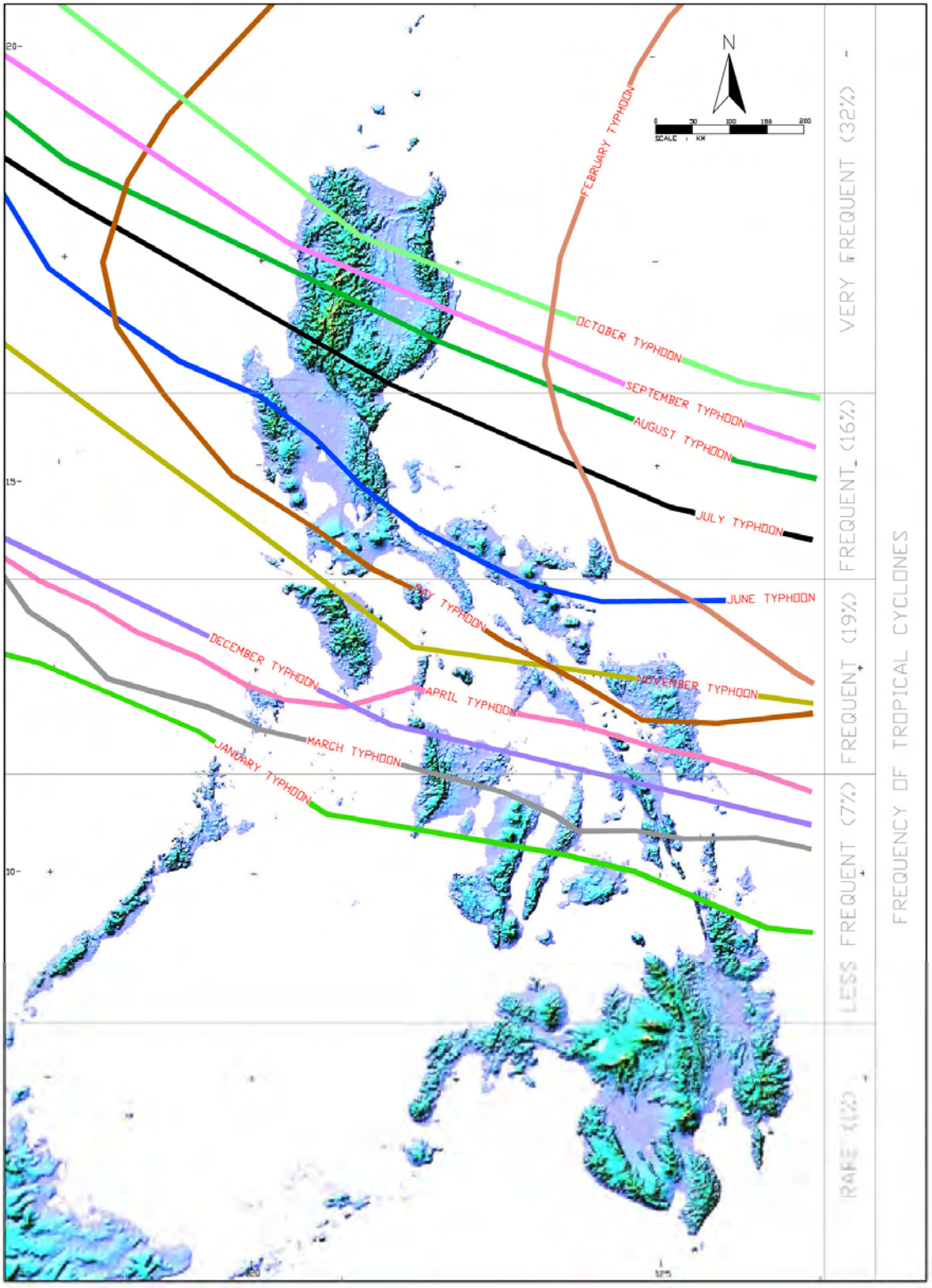
Group	Rank*	Name of River Basin (First Screening List)	Catchment Area (km2)	Region
Foreign Fund Group	5	Cagayan_PhaseIV	27,743	II
	7	Ilog-Hilabangan	2,162	VI
	10	Upstream of Agno (Phase_III)	5,222	I
	18	Cavite (Imus)	112	IV-A
	19	Tuganay	747	XI
Local Fund Group	1	Yawa (Legazpi City)	126	V
	4	Tagoloan	1,762	X
	5	Agus/Buayan	1,898	ARMM, X
	6	Agos	483	IV-A
	7	Santa Rita/Kalaklan	102	III
	8	Aklan	1,010	VI
	9	Buayan-Malungon	1,400	XI, XII
	10	Tumaga	255	IX
	13	Guinabasan	131	VII
	15	Iponan	412	X
	16	Amburayan	1,307	I, CAR
	17	Balete	132	IV-B
	19	Lipadas	163	XI
	23	Dungcaan	176	VIII
	24	Silway	577	XII
	29	Lake Mainit Tubay	473	XIII
	-	Bataan(Dinalupihan) urgent project		III
	-	Amany-Patric	993	IV-B

FIGURES



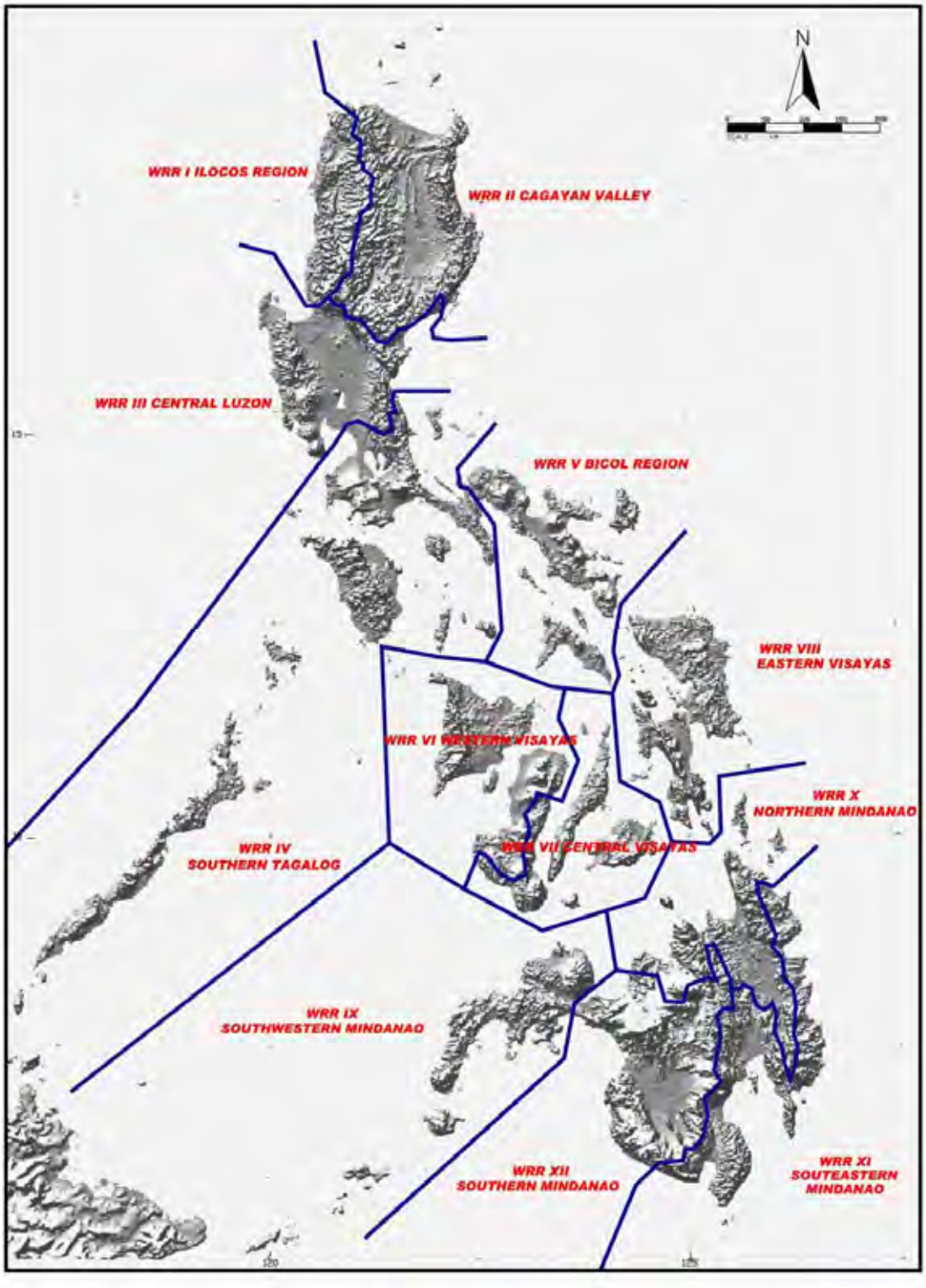
Source: The Study on Flood Control Project Implementation System for Principal Rivers in the Philippines undertaken by JICA, September 2004

THE PREPARATORY STUDY FOR SECTOR LOAN ON DISASTER RISK MANAGEMENT	Figure1.1
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	Topography of the Philippines



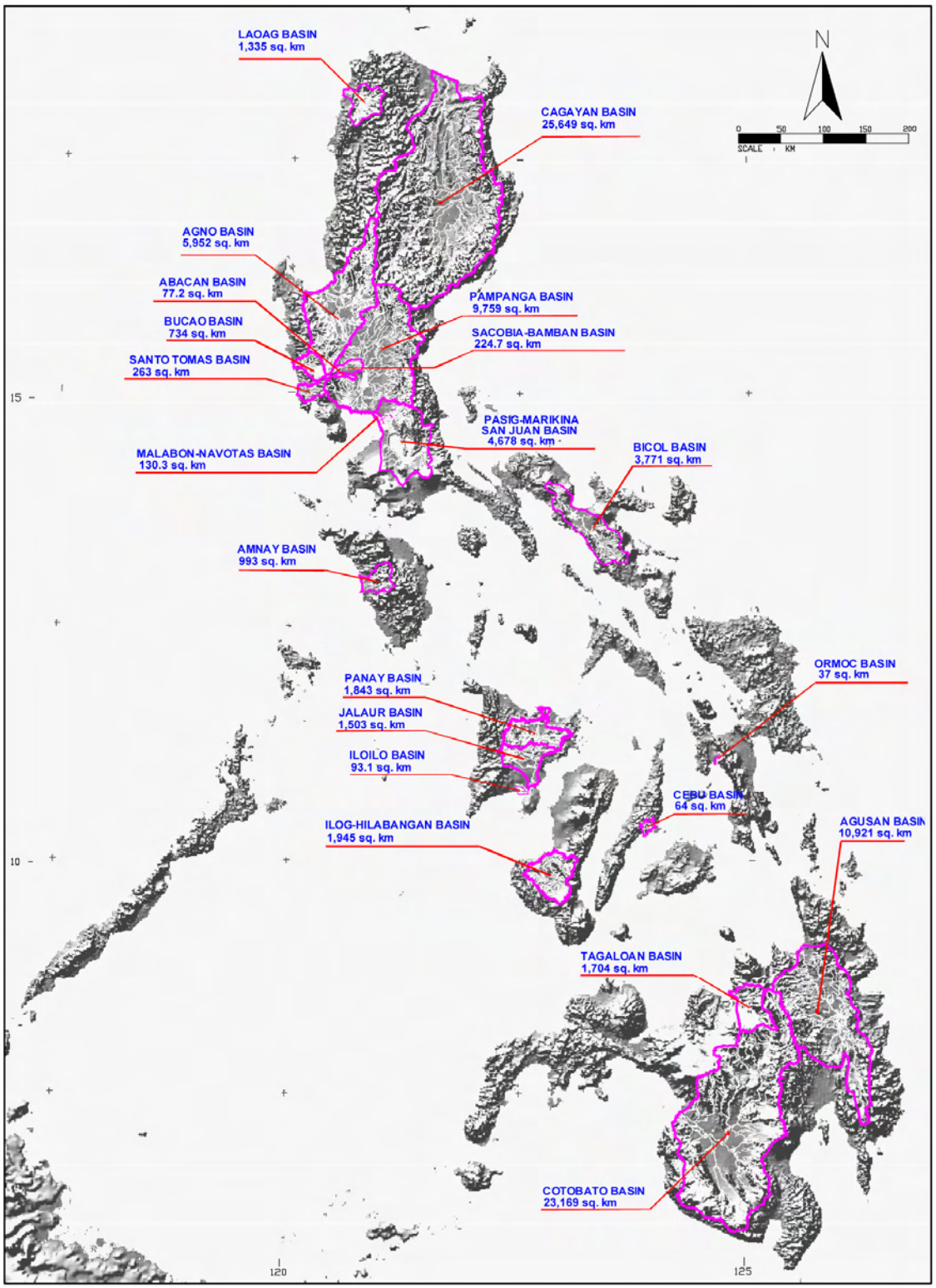
Source: The Study on Flood Control Project Implementation System for Principal Rivers in the Philippines undertaken by JICA, September 2004

THE PREPARATORY STUDY FOR SECTOR LOAN ON DISASTER RISK MANAGEMENT	Figure1.2
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	Typhoon Tracks



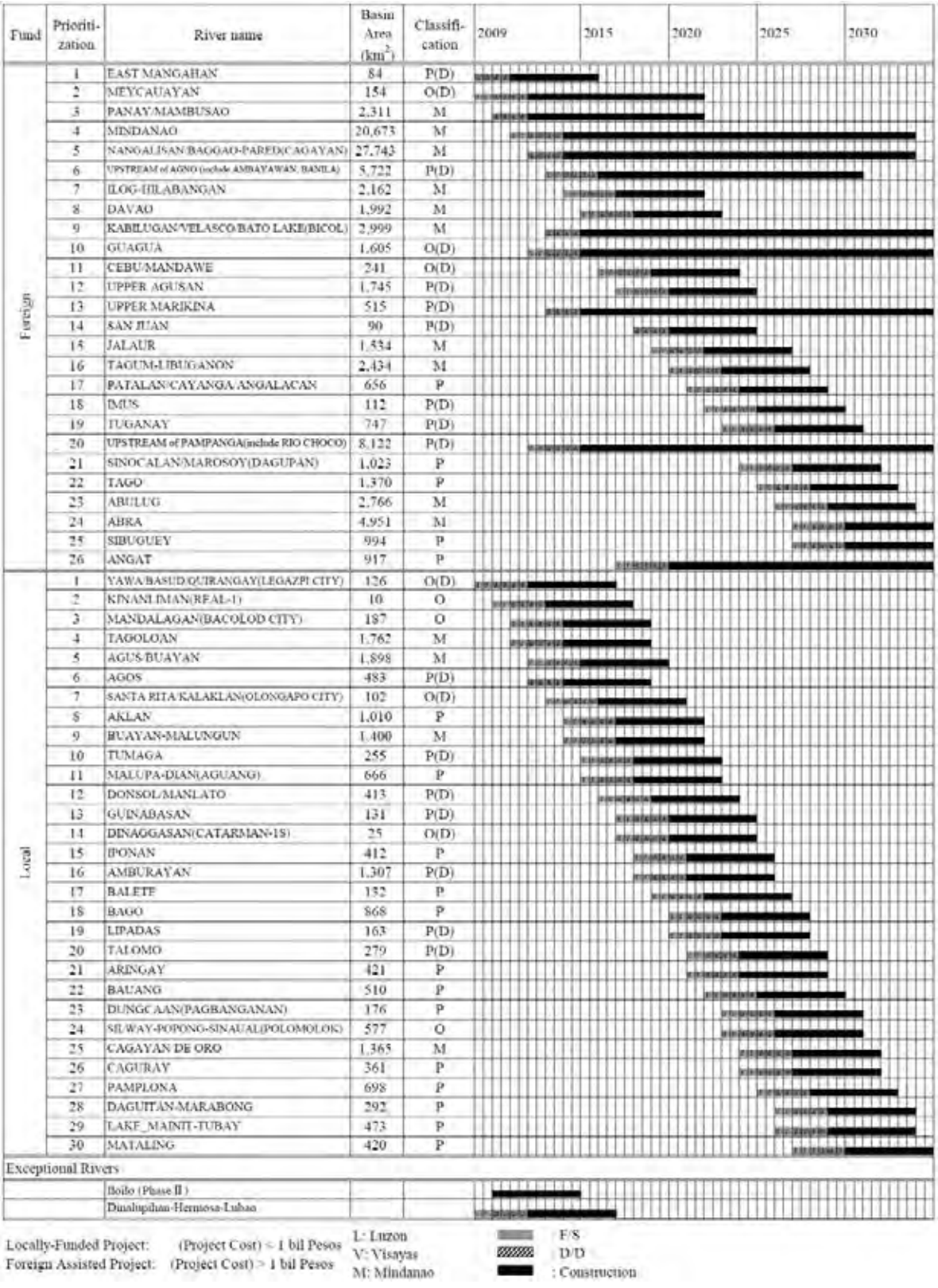
Source: The Study on Flood Control Project Implementation System for Principal Rivers in the Philippines undertaken by JICA, September 2004

THE PREPARATORY STUDY FOR SECTOR LOAN ON DISASTER RISK MANAGEMENT	Figure1.3
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	Boundaries of Water Resources Region



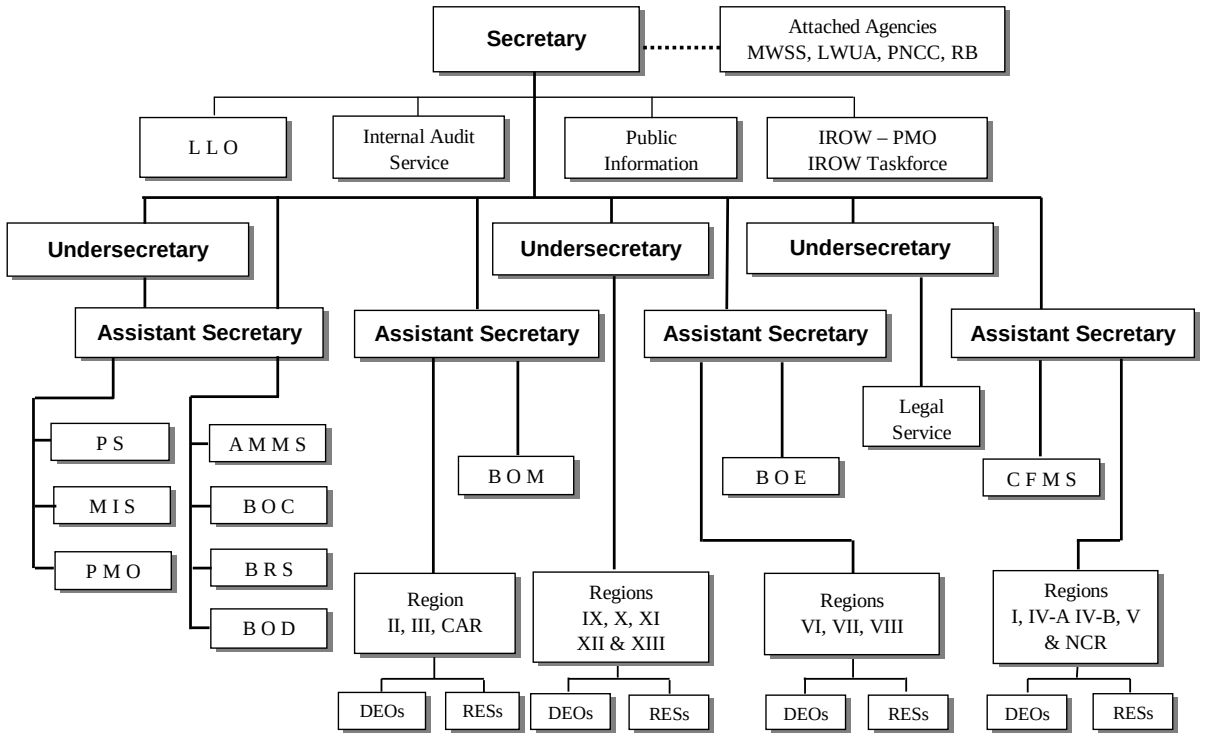
Source: The Study on Flood Control Project Implementation System for Principal Rivers in the Philippines undertaken by JICA, September 2004

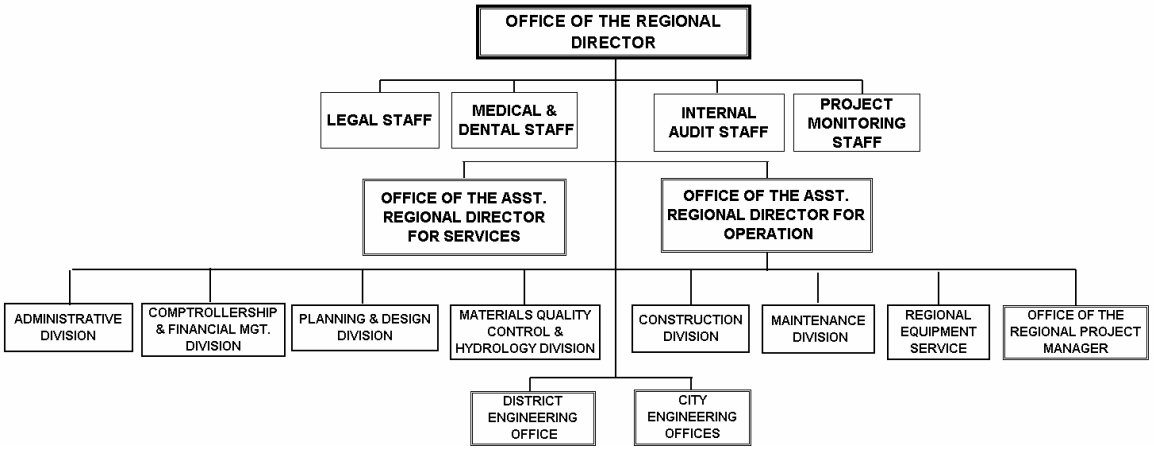
THE PREPARATORY STUDY FOR SECTOR LOAN ON DISASTER RISK MANAGEMENT	Figure1.4
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	Location of 18 Major River Basins

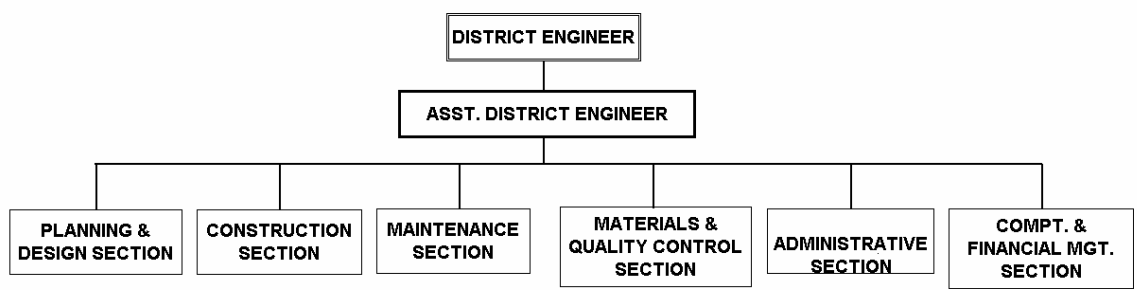


Fund	Prioriti-zation	River name	Basin Area (km^2)	Classifi-cation
Foreign	1	EAST MANGAHAN	84	P(D)
	2	MEYCAUAYAN	154	O(D)
	3	PANAY/MAMBUSAO	2,311	M
	4	MINDANAO	20,673	M
	5	NANGALISAN/BAGGAO-PARED(CAGAYAN)	27,743	M
	6	UPSTREAM of AGNO (include AMBAYAWAN, BANILA)	5,722	P(D)
	7	ILOG-HILABANGAN	2,162	M
	8	DAVAO	1,992	M
	9	KABILUGAN/VELASCO/BATO LAKE(BICOL)	2,999	M
	10	GUAGUA	1,605	O(D)
	11	CEBU/MANDAWE	241	O(D)
	12	UPPER AGUSAN	1,745	P(D)
	13	UPPER MARIKINA	515	P(D)
	14	SAN JUAN	90	P(D)
	15	JALAUR	1,534	M
	16	TAGUM-LIBUGANON	2,434	M
	17	PATALAN/CAYANGA/ANGALACAN	656	P
	18	IMUS	112	P(D)
	19	TUGANAY	747	P(D)
	20	UPSTREAM of PAMPANGA(include RIO CHICO)	8,122	P(D)
	21	SINOCALAN/MAROSOY(DAGUPAN)	1,023	P
	22	TAGO	1,370	P
	23	ABULUG	2,766	M
	24	ABRA	4,951	M
	25	SIBUGUEY	994	P
	26	ANGAT	917	P
Local	1	YAWA/BASUD/QUINANGAY(LEGAZPI CITY)	126	O(D)
	2	KINANLIMAN(REAL-1)	10	O
	3	MANDALAGAN(BACOLOD CITY)	187	O
	4	TAGOLOAN	1,762	M
	5	AGUS/BUAYAN	1,898	M
	6	AGOS	483	P(D)
	7	SANTA RITA/KALAKLAN(OLONGAPO CITY)	102	O(D)
	8	AKLAN	1,010	P
	9	BUAYAN-MALUNGUN	1,400	M
	10	TUMAGA	255	P(D)
	11	MALUPA-DIAN(AGUANG)	666	P
	12	DONSOL/MANLATO	413	P(D)
	13	GUINABASAN	131	P(D)
	14	DINAGGASAN(CATARMAN-1S)	25	O(D)
	15	IPONAN	412	P
	16	AMBURAYAN	1,307	P(D)
	17	BALETE	152	P
	18	BAGO	868	P
	19	LIPADAS	163	P(D)
	20	TALOMO	279	P(D)
	21	ARINGAY	421	P
	22	BALANG	510	P
	23	DUNGC AAN(PAGBANGANAN)	176	P
	24	SILWAY-POPONG-SINAUAL(POLOMOLOK)	577	O
	25	CAGAYAN DE ORO	1,365	M
	26	CAGURAY	361	P
	27	PAMPLONA	698	P
	28	DAGUITAN-MARABONG	292	P
	29	LAKE_MAINIT-TUBAY	473	P
	30	MATALING	420	P
Exceptional Rivers				
		Iloilo (Phase II)		
		Dinalupihan-Hermosa-Luhao		

THE PREPARATORY STUDY FOR SECTOR LOAN ON DISASTER RISK MANAGEMENT	Figure1.5
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	Implementation Schedule of 56 River Basins







THE PREPARATORY STUDY FOR SECTOR LOAN FOR DISASTER RISK MANAGEMENT	Figure2.1
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	Organization Chart of DPWH