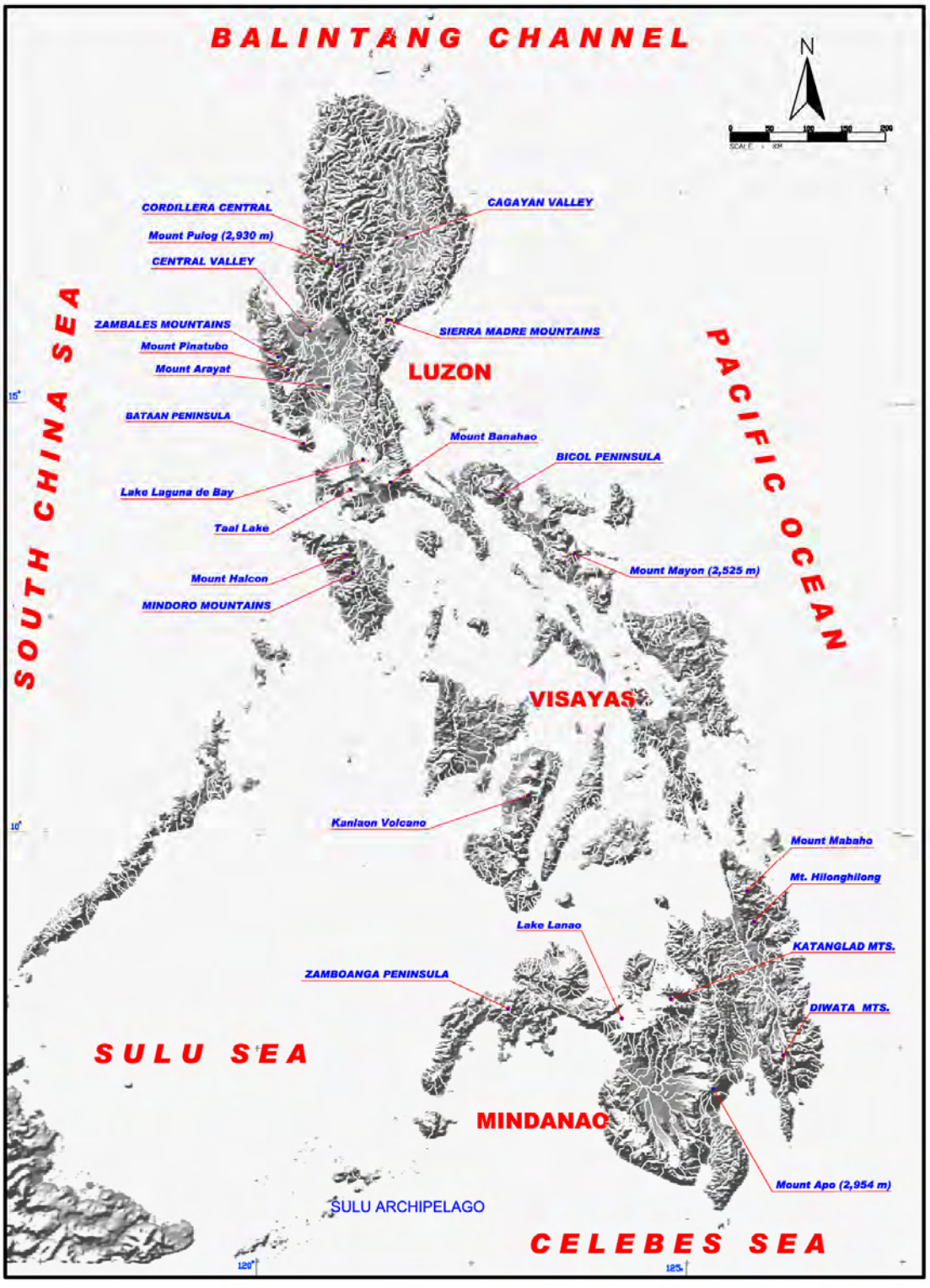
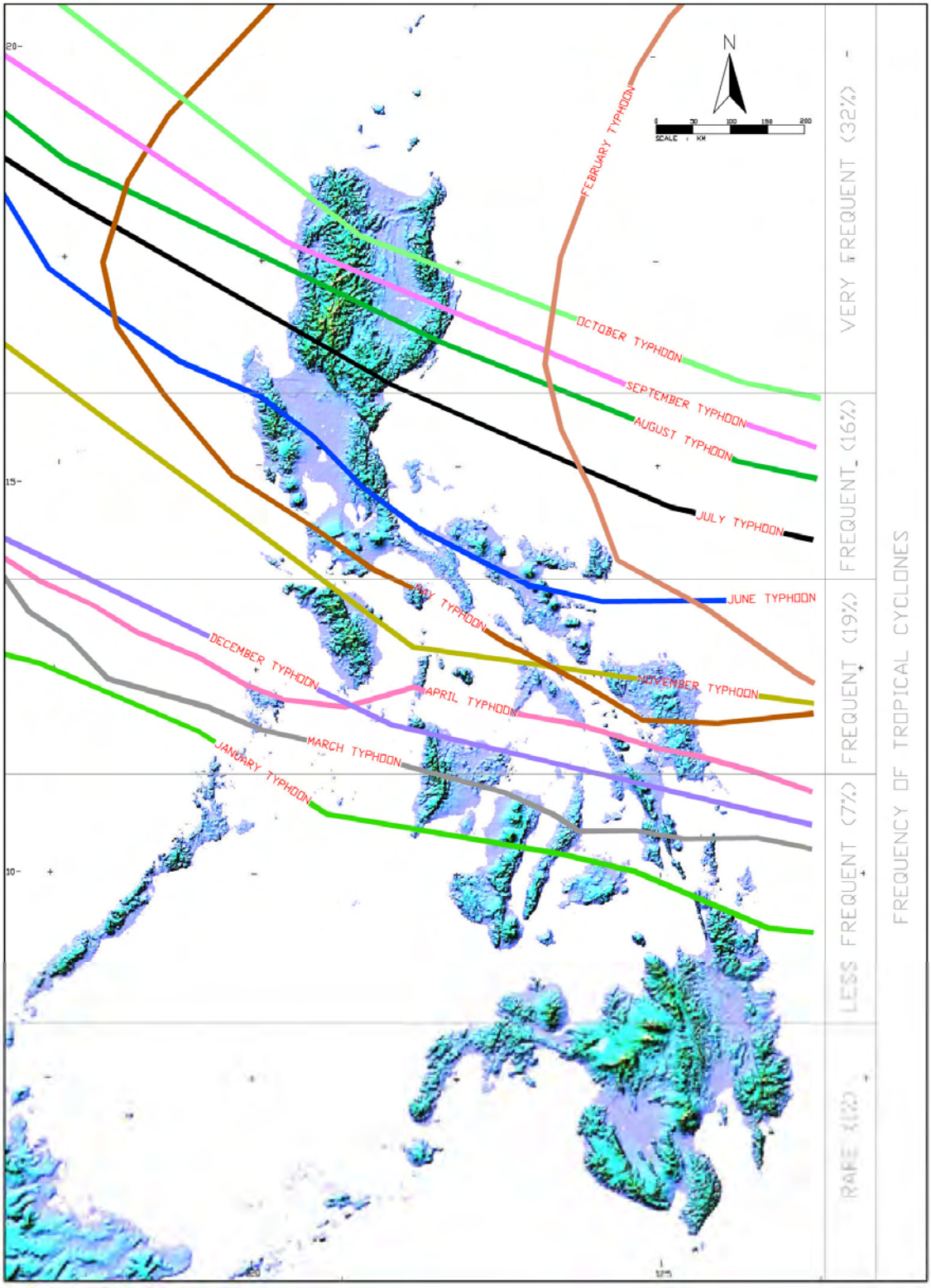
FIGURES



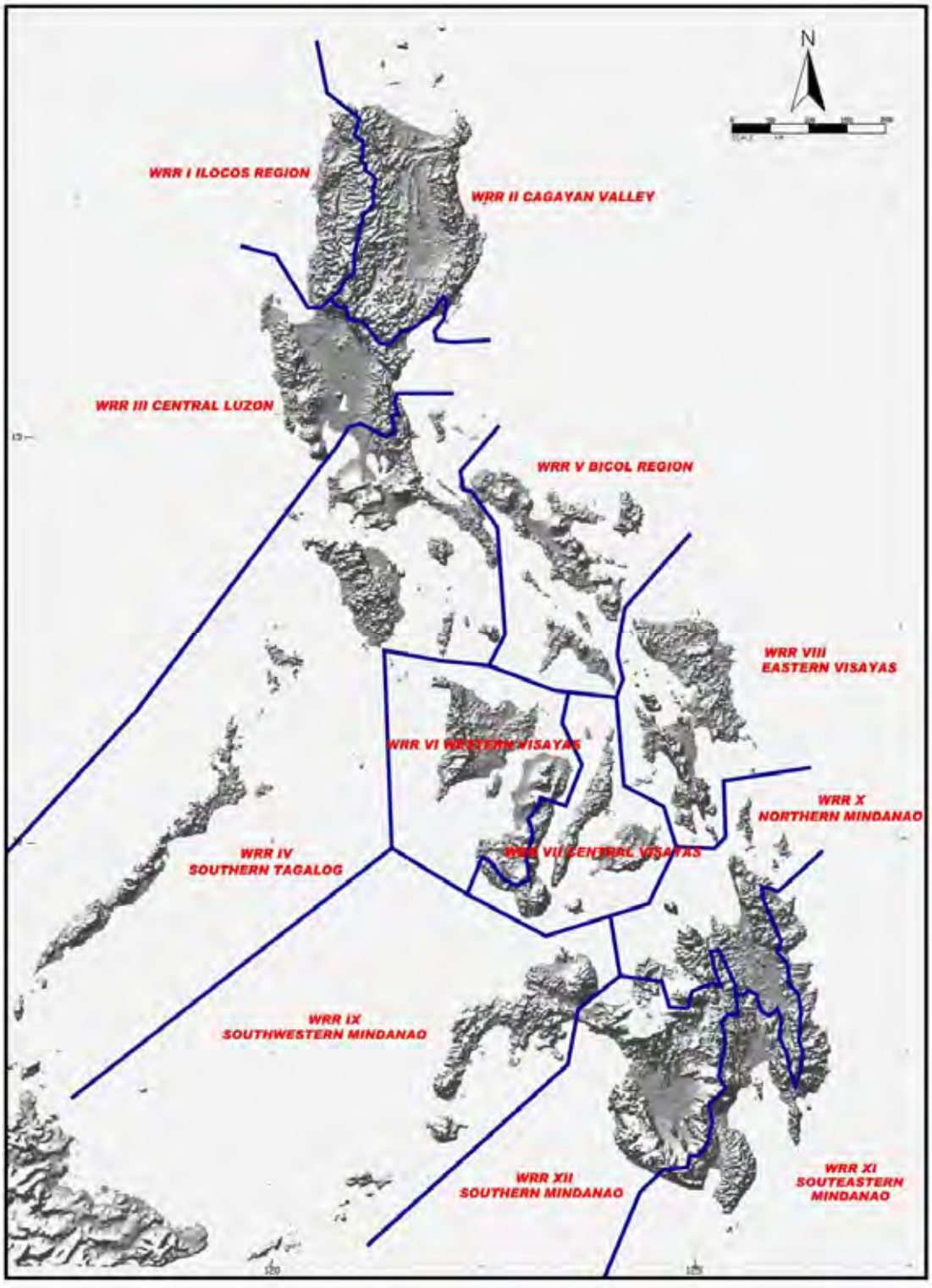
Source: The Study on Flood Control Project Implementation System for Principal Rivers in the Philippines undertaken by JICA, September 2004

THE PREPARATORY STUDY FOR SECTOR LOAN ON DISASTER RISK MANAGEMENT	図 1.1
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	フィリピン列島全図



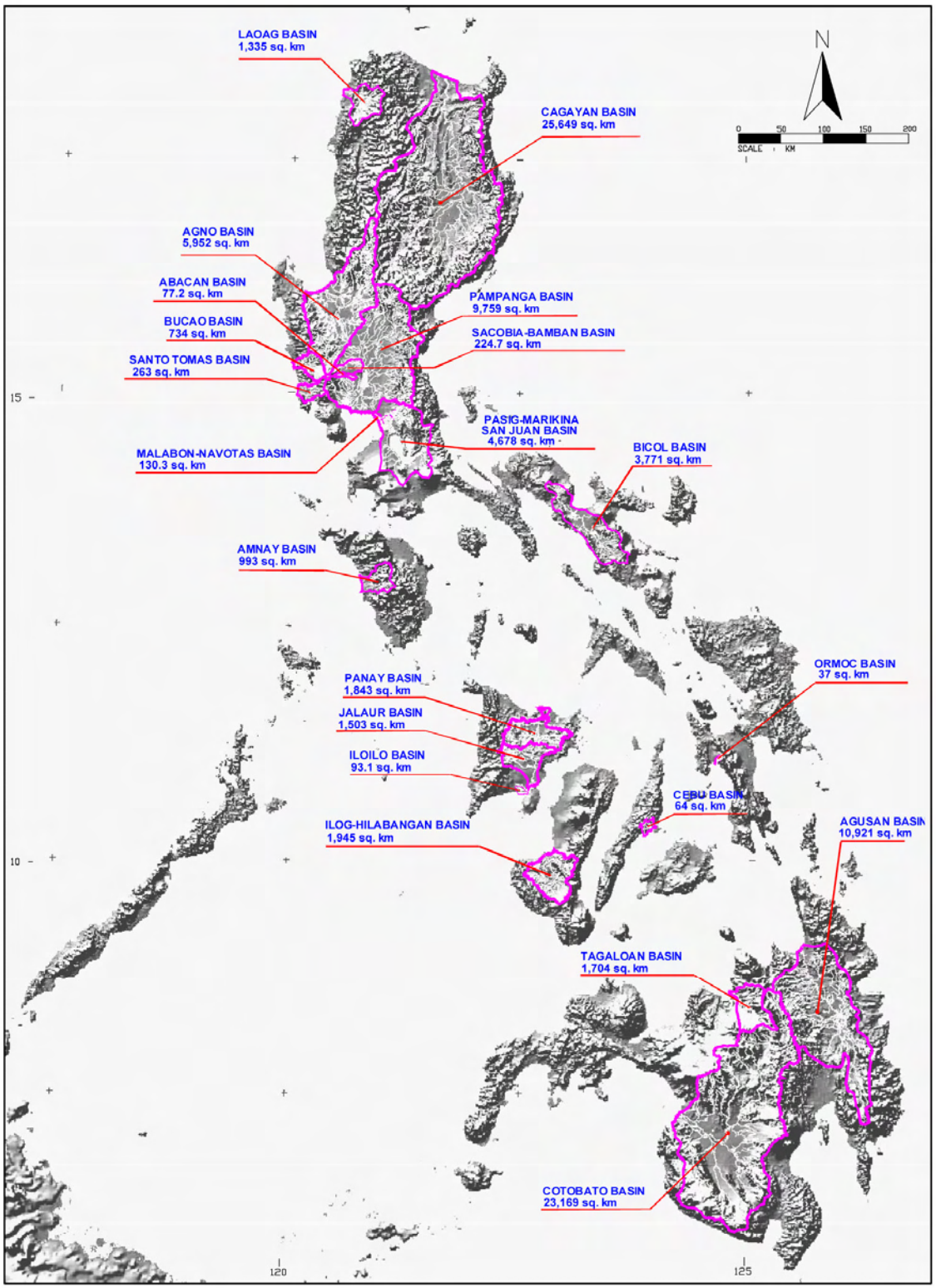
Source: The Study on Flood Control Project Implementation System for Principal Rivers in the Philippines undertaken by JICA, September 2004

THE PREPARATORY STUDY FOR SECTOR LOAN ON DISASTER RISK MANAGEMENT	図 1.2
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	フィリピンを通過する台風の 各月別平均的な軌跡



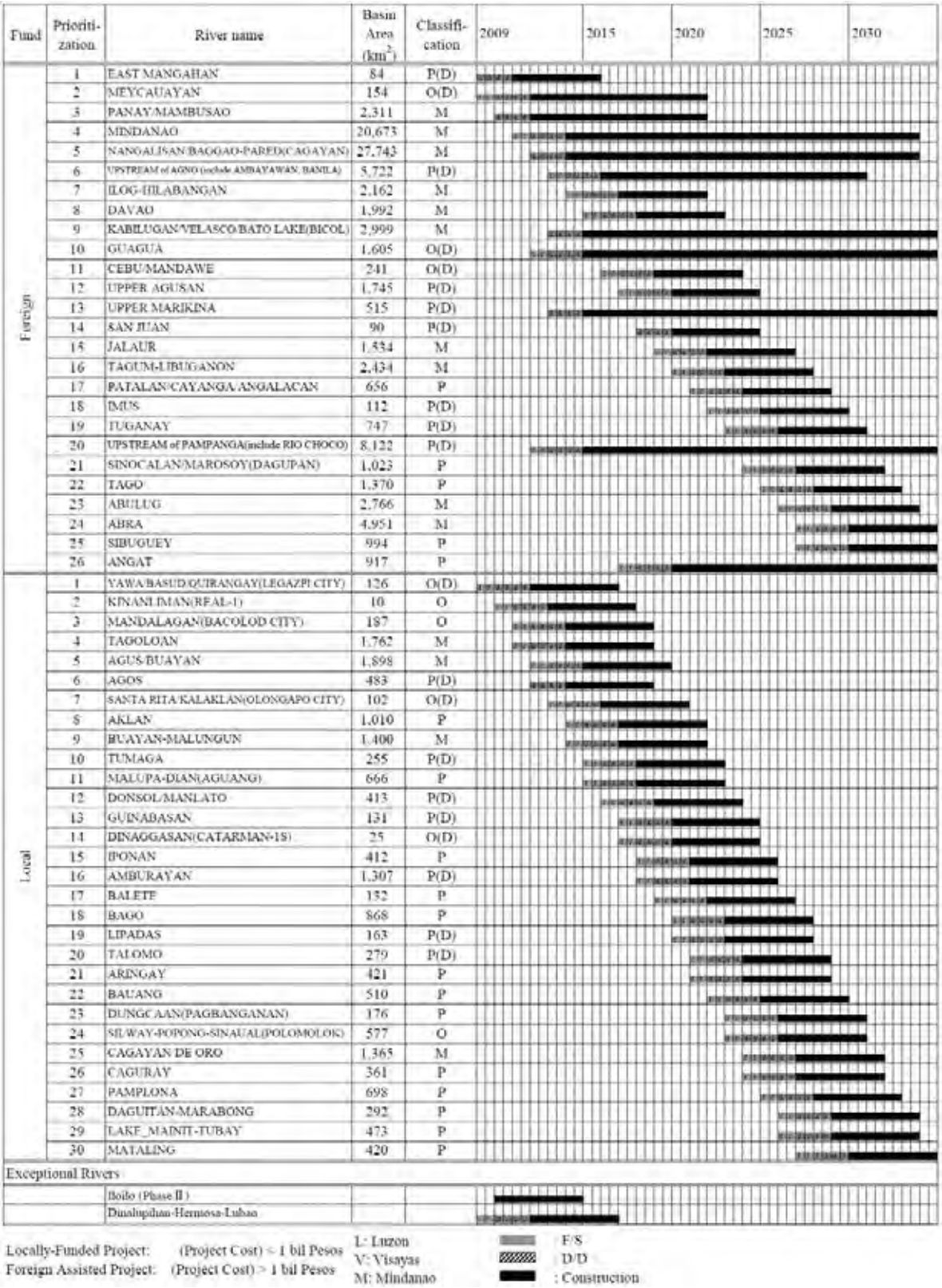
Source: The Study on Flood Control Project Implementation System for Principal Rivers in the Philippines undertaken by JICA, September 2004

THE PREPARATORY STUDY FOR SECTOR LOAN ON DISASTER RISK MANAGEMENT	図 1.3
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	フィリピン国の NWRC による 12 の水資源管轄区



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	図 1.4
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	DPWH で規定されたフィリピン国の主要な 18 流域（重要河川）



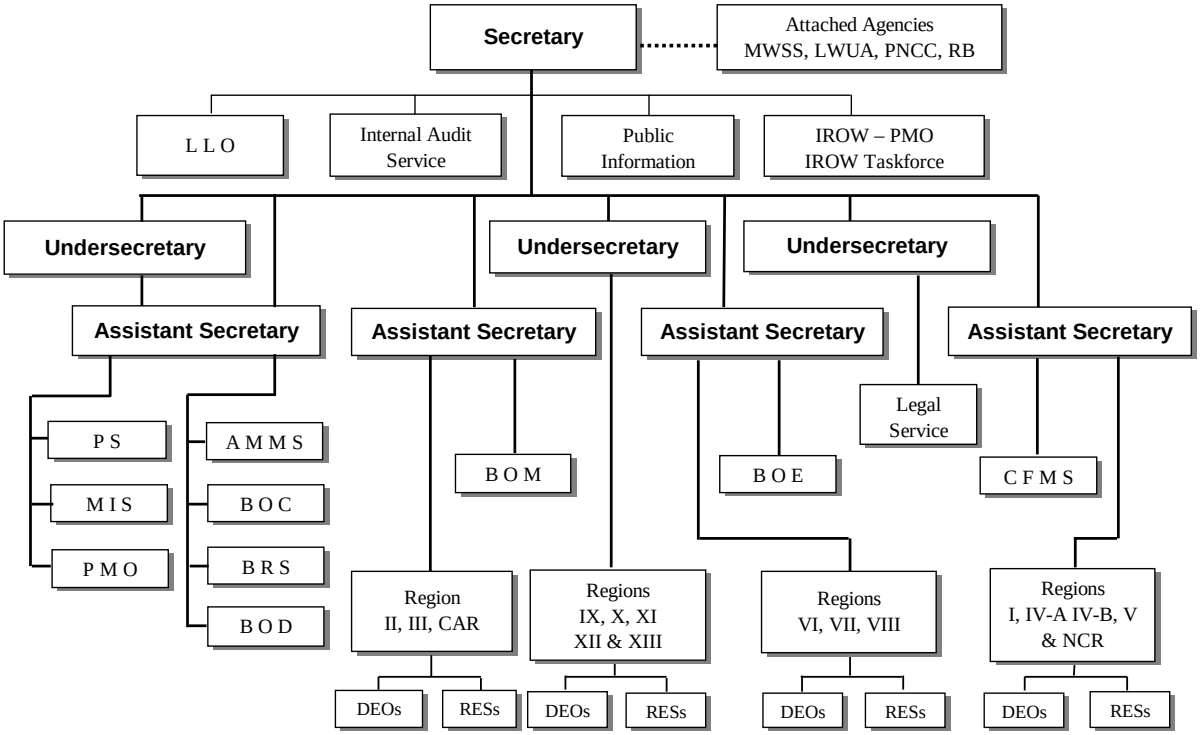
Fund	Prioriti-zation	River name	Basin Area (km^2)	Classifi-cation
Foreign	1	EAST MANGAHAN	84	P(D)
	2	MEYCAUAYAN	154	O(D)
	3	PANAY/MAMBUSAO	2,311	M
	4	MINDANAO	20,673	M
	5	NANGALISAN/BAGGAO-PARED(CAGAYAN)	27,743	M
	6	UPSTREAM of AGNO (include AMBAYAWAN, BANILA)	5,722	P(D)
	7	ILOG-HILABANGAN	2,162	M
	8	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/QUIRANGAY(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	DUNGCAAN(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		

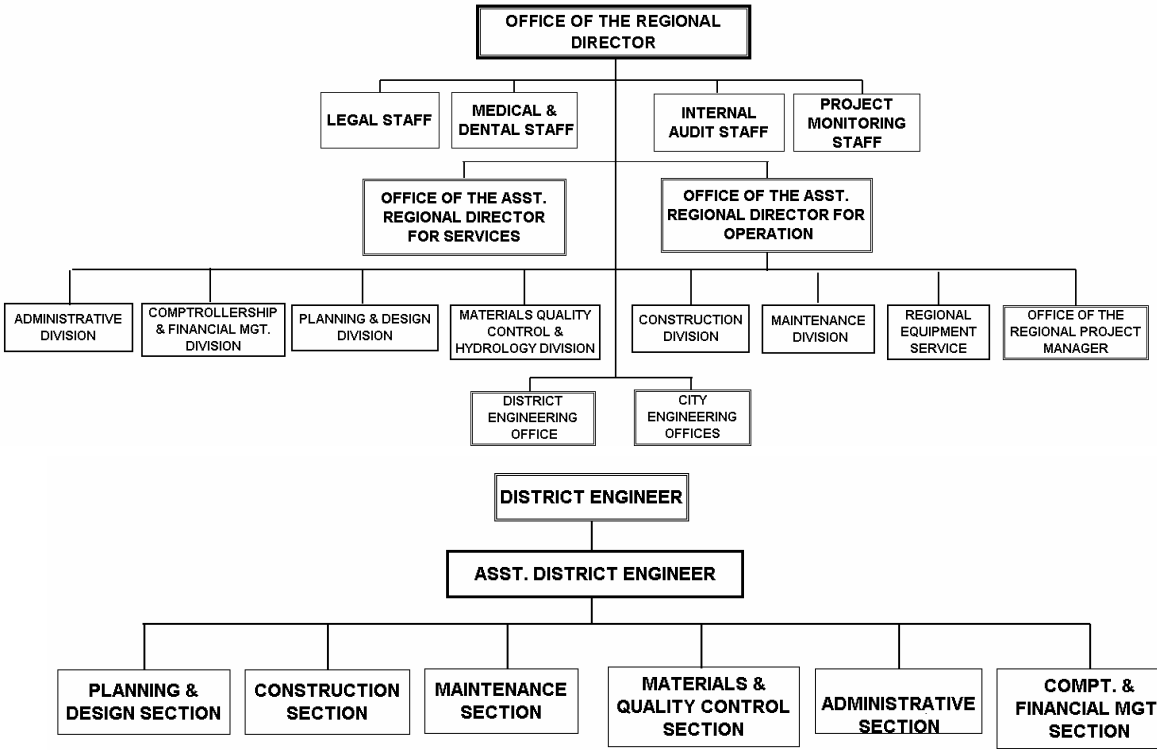
Locally-Funded Project: (Project Cost) < 1 bil Pesos
Foreign Assisted Project: (Project Cost) > 1 bil Pesos

L: Luzon
V: Visayas
M: Mindanao

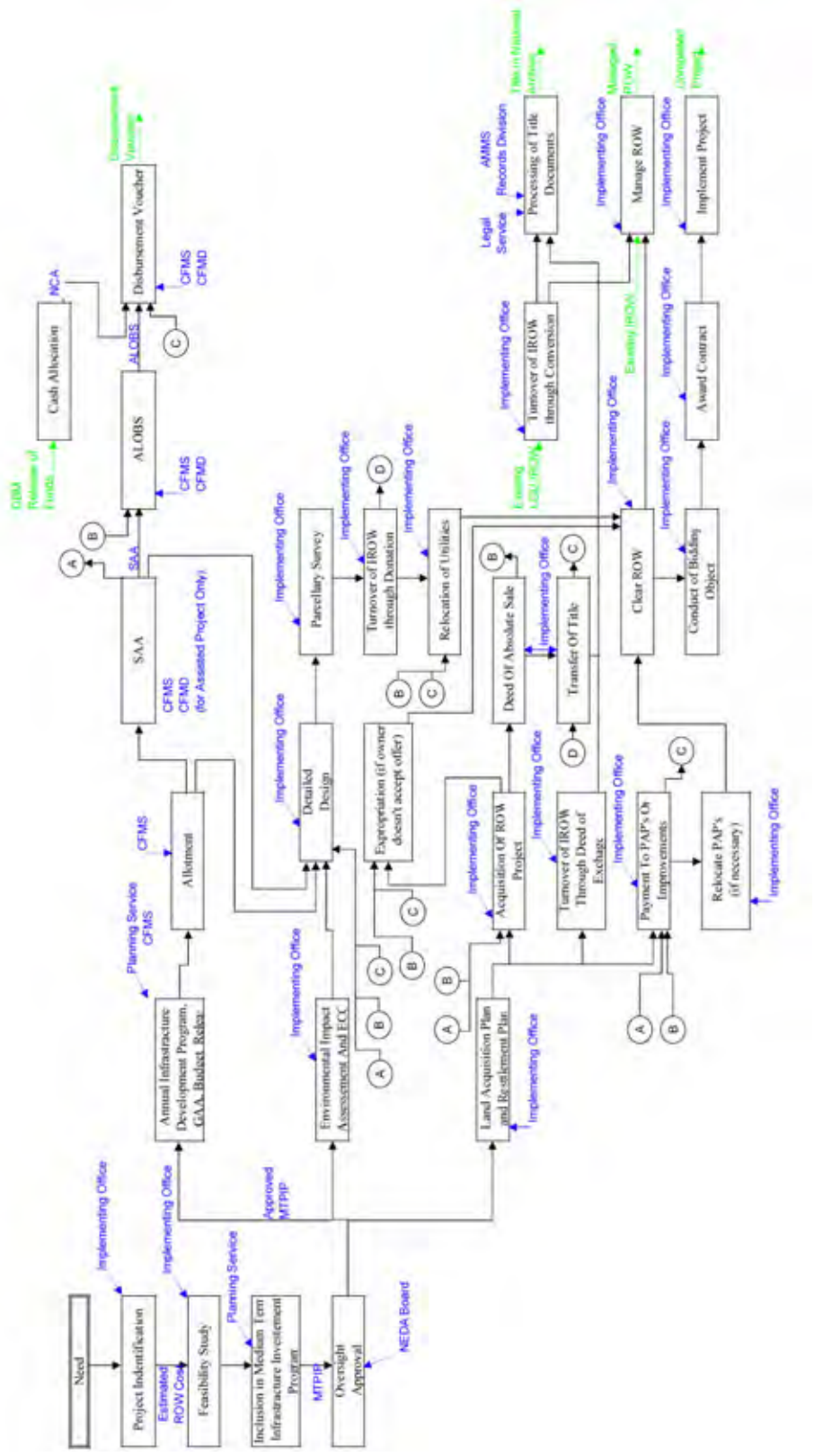
F/S
D/D
: Construction

THE PREPARATORY STUDY FOR SECTOR LOAN ON DISASTER RISK MANAGEMENT	図 1.5
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	全国洪水リスク評価調査で提案された 56 河川の事業実施計画

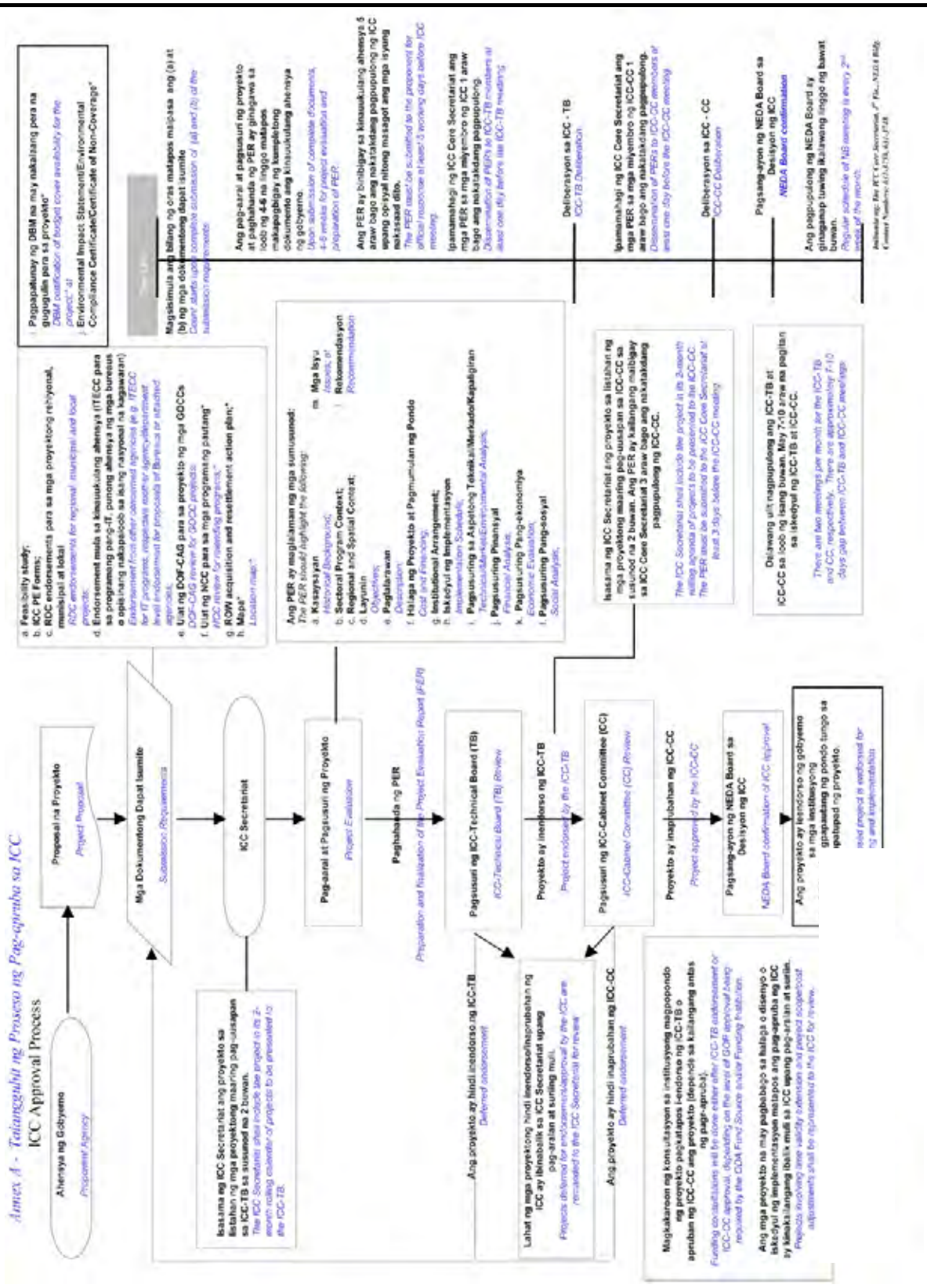




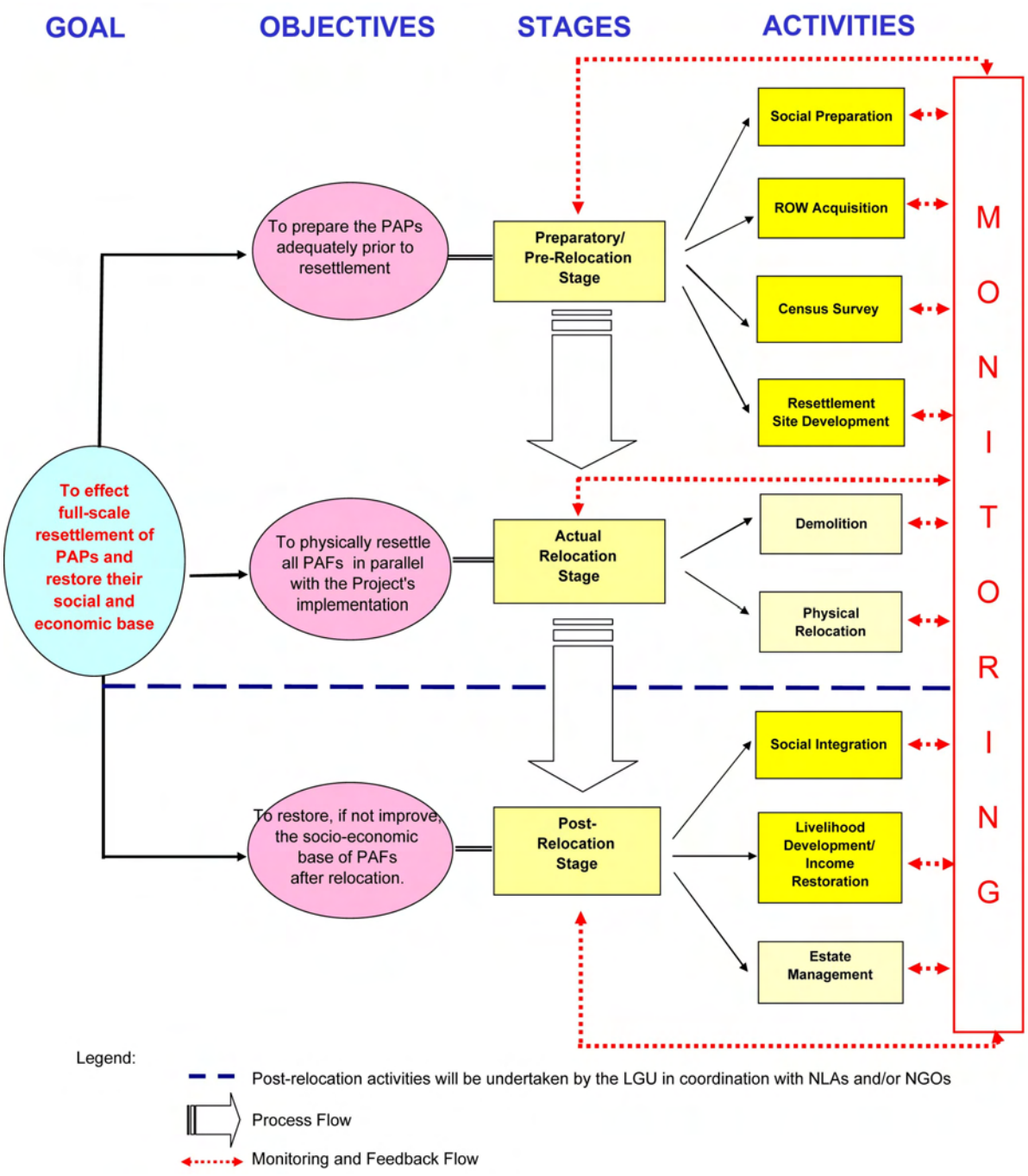
THE PREPARATORY STUDY FOR SECTOR LOAN FOR DISASTER RISK MANAGEMENT	図 2.1
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	DPWH の組織図



THE PREPARATORY STUDY FOR SECTOR LOAN FOR DISASTER RISK MANAGEMENT	図 3.1
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	DPWH が実施する事業における 理想的な用地取得プロセス



THE PREPARATORY STUDY FOR SECTOR LOAN FOR DISASTER RISK MANAGEMENT	図 3.2
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	NEDA が実施する事業評価確認の ICC 承認プロセス



THE PREPARATORY STUDY FOR SECTOR LOAN FOR DISASTER RISK MANAGEMENT	図 3.3
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	移転計画のフレームワーク

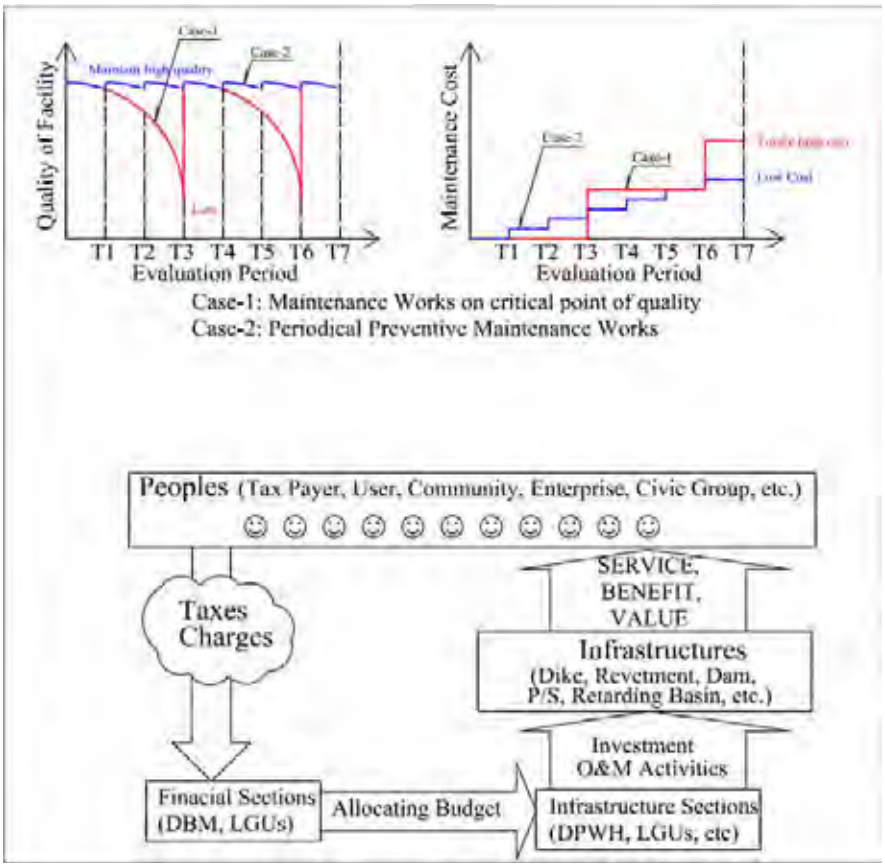


Image of Asset Management

Cycle of Emergency Response Fund

Image of Assistance to Emergency Response Fund

THE PREPARATORY STUDY FOR SECTOR LOAN FOR DISASTER RISK MANAGEMENT	図 3.4
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	DPWH における治水能力強化のための技術協力プログラム案の内容（案）

借款等によって実施する事業の基本方針・条件等

これまでのODAによる治水対策（防災管理対策）事業で指摘されている問題

これまでの防災リスク管理に係る事業

M/Pに基づいた流域全体の治水計画
河口～上流までの一貫した治水対策を基本条件
構造物対策中心

「総合的洪水管理能力の限界」から生ずる不十分な防災管理

構造物対策の不十分な運用
プロジェクト目標の不十分な達成

・不適切な治水・洪水管理計画
・不十分な事業及び運営維持管理の実施のための維持管理予算
・DPWH及びLGUsの不明確な責任所在
・土木工事の不適切な手順(工事変更許可の承認等)
・他のセクターや利害関係者との調整能力の欠如 及び　貧困削減への貢献の欠如

不十分な
非構造物対策の開発

・LGUsの不十分な能力
・DPWHのLGUsに対する不十分な支援対策

不十分な
行政能力

・DPWH本部及び地方事務所の不十分なスタッフの陣容及び組織形態
・不十分な法的制度（水法や河川域の指定など）
・不十分な統治（利害関係者間の調整、地域社会やLGUsの参加）

現地住民及び関係機関における洪水対策事業の必要性に対する責任、認識の欠如

借款等によって実施する事業の新規の基本方針・条件等

望ましい事業実施・事業後の姿及び問題の解決方針

今後の防災リスク管理事業に係る新しいアプローチ（セクターローンによる対応）

重点防御計画に基づいた緊急治水計画の立案
重点防御区域から事業を開始
非構造物対策を構造物対策とともに重視

総合治水、総合的な洪水管理ができる能力を持ち、実施する

構造物対策の実施
／事業目標の達成

・最適な治水計画と洪水管理計画
・事業と維持管理のための十分な予算
・DPWHとLGUsの明確な責任分担とその実行
・LGUs及び他の関係者と十分な協力の下の最適な事業過程の策定とその実施
・貧困削減への貢献

最適な計画の
非構造物対策の
実施

・LGUsの防災対策の十分な能力
・DPWHとLGUsの十分な協力体制の構築

望ましい組織制度の整備、
防災のための十分な能力

・DPWHの本省と地方部局での人員と組織の整備
・治水・河川整備、河川管理に関連する法制度の整備
・治水・防災行政に関連するガバナンスの向上

治水事業の必要性を認識させるための基本活動

(防災リスク管理（治水）セクターローンの目標)

(セクターローンの目的)

具体的な方針（目標達成のための基本方針）

セクターローンの実施（実施条件の遵守）

緊急対応基金の確保と運用（セクターローンにて実施）
(運用方針の設定とその実施)

技術協力の実施
（セクターローン実施支援含）

短期計画

	具体的な実施項目または条件項目	Conditionality (必要最低条件)
I.	DPWHの計画局・FCSEC・地方部局の能力向上	ICDチーム設立/専門家派遣継続
II.	緊急対応基金のための制度・組織の確立(QRF及びGAAとの調整)	Special Accountのアレンジ・継続性
III.	対象自治体の非構造物対策の運用・実施（LGUsへのDPWHの支援）	防災（洪水）対策委員会の設立
IV.	望ましい事業実施体制の確立（参加型計画と適正な移転計画）	防災（洪水）対策委員会の設立
V.	LGUs及び他の機関との連携（MOA、維持管理、流域管理、環境改善)	DPWHとLGUがMOAを締結
VI.	治水事業のガバナンス向上（全ての事業サイクルにおけるLGUsとコミュニティ参加、流域会議）	防災（洪水）対策委員会の設立

今後新たに対応すべき問題

気候変動対策を
全ての方策において
考慮する必要が生じている

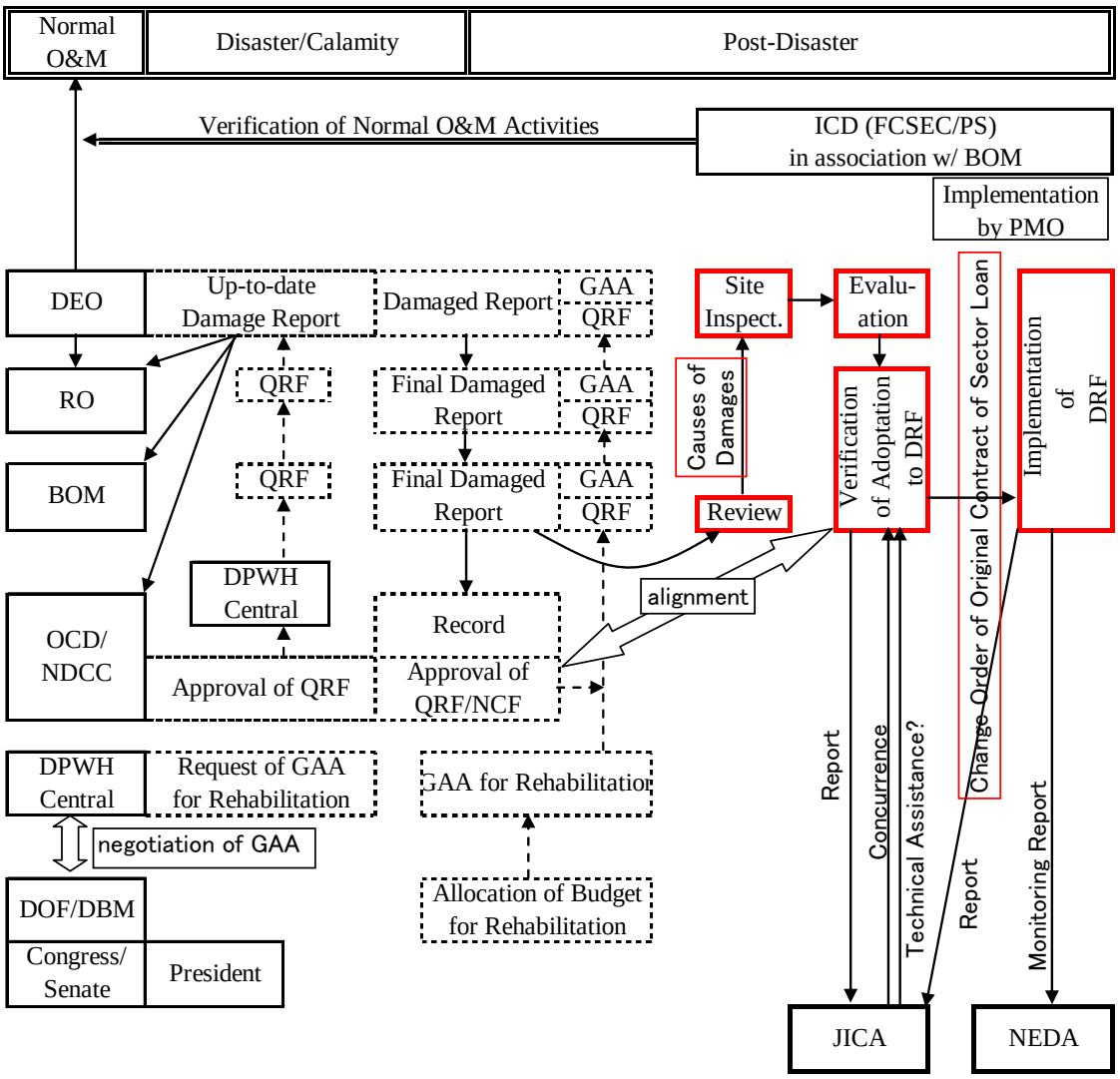
技術協力をする上においても気候変動は考慮する必要がある

技術協力の具体の支援実施項目
1. DPWHの能力向上支援
2. 緊急対応基金の運用のための制度整備及び運用支援
3. 非構造物対策の実施支援
4. 維持管理資金の財源・その収集方法の助言
5. 河川管理のための法的制度作りのための助言

”要検討事項”
・対象河川の選定方法（or基準）
・コアエリアの選定方法（or基準）

長期的目標: DPWH及び関連機関が防災リスク管理関連事業を自ら実施できる

図4.1　セクターローンの事業実施方針
（防災管理事業に係る新しいアプローチ（案））



Legend

QRF : Quick Response Fund under National Calamity Fund (NCF)
GAA : Budget under General Appropriations Act
ICD : Institutional Capacity Development to be setup for Sector Loan Project
DBM : Department of Budget and Management
DOF : Department of Finance
DEOs : District Engineer's Offices
ROs : Regional Offices
BOM : Bureau of Maintenance, DPWH
→ Flow of Actions/Submission
- - - → Flow of Fund/ Monetary Flow

PROPOSAL ON DESIGN PROCESS
River Structures: In-house Enginner thru.
T/A Activities (FCSEC & BOD concerned)
Bridge Structures: Outsourcing (GOP Fund)

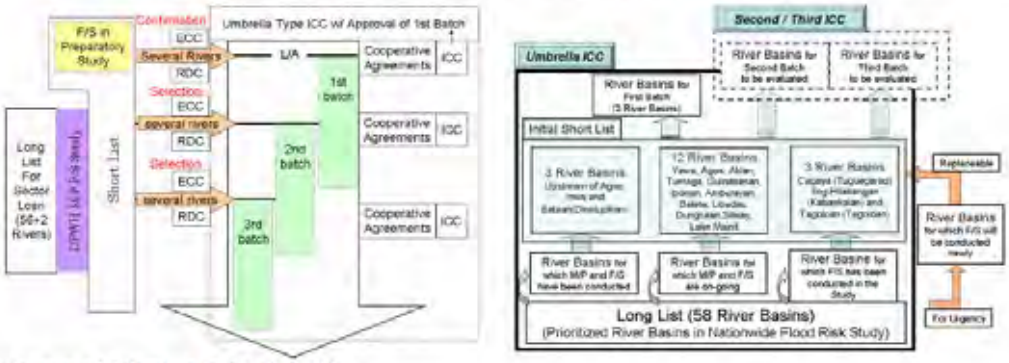
THE PREPARATORY STUDY FOR SECTOR LOAN FOR DISASTER RISK MANAGEMENT	図 4.2 緊急対応基金の運用フロー
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	

Procedure of Selection of Sub-Project for Sector Loan

Definition of Long List and Short List:

1. "Long List" means the list containing the name of the 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.

2. "Short List" means the list containing the name of candidate river basins 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.



Manner of Selection in Each Batch

First Batch

1. It is deemed that Cagayan (Tuguegarao and suburbs), Tagoloan (Tagoloan) and Ilog-Hilabangan (Kabankalan and suburbs) have been selected since F/S has completed
2. However, the selection is subject to the status of cooperative agreements (conditionality), ICC and other conditions to be cleared.

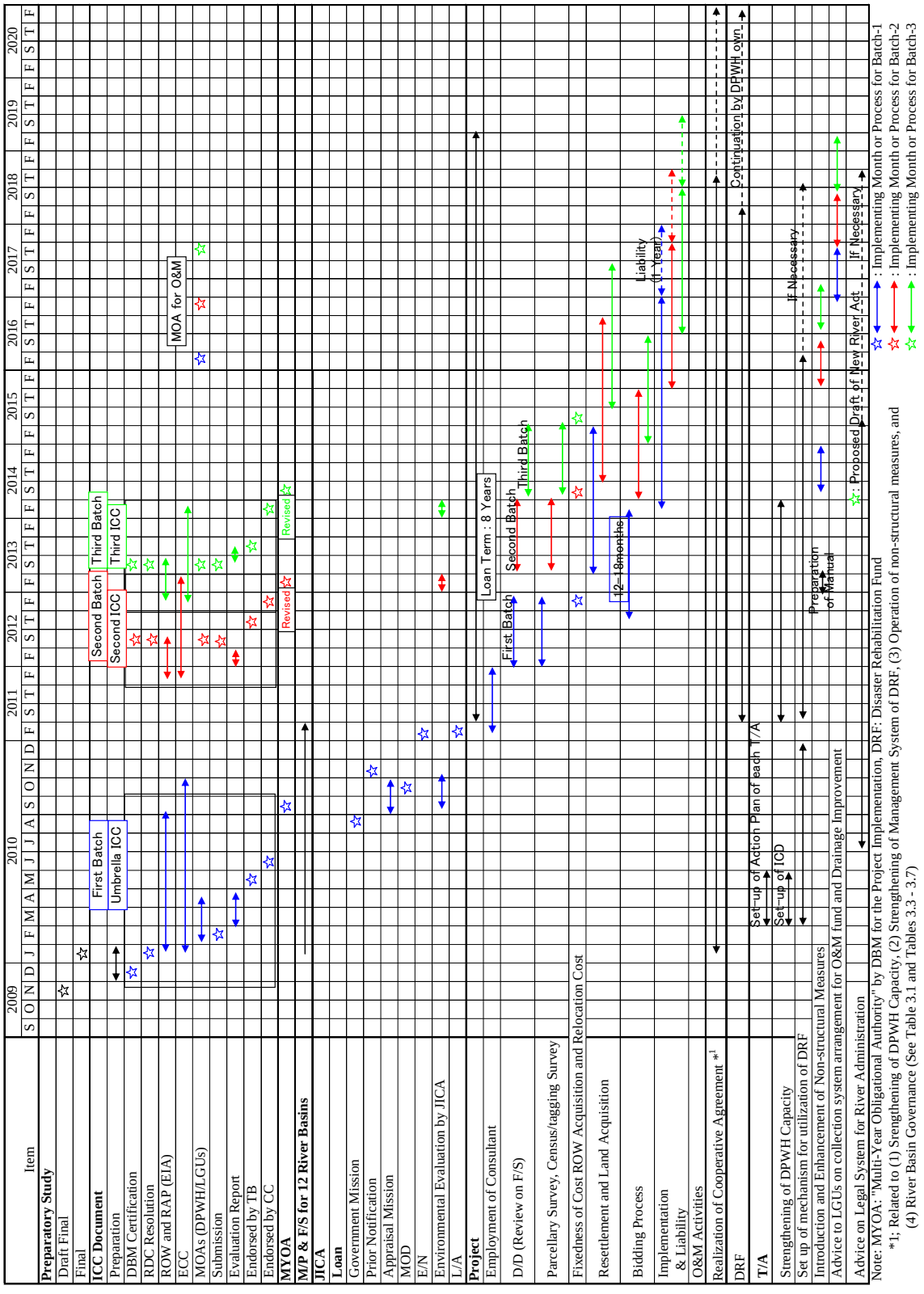
Second Batch

1. Maximum Number of Projects: (Ns)
   $Ns = \Sigma(PC_{(i)}) < A / 2$
   where,
   PCi : Estimated Cost to be loaned for Candidate Project$_{(I)}$, I; 1~n)
   Σ(PCi): Total Costs to be loaned for Project$_{(1\text{-}N)}$
   A: Remaining Loan Amount (Total Loan Amount - Amount in First Batch)
   Therefore, in the Second Batch, 50% of Remaining Loan Amount will be utilized.
2. Candidate Projects: Completion of F/S (ECC, RDC) and Conclusion of Cooperative Agreements (MOA) until the second opportune moment.
   (River Basins of which M/P and F/S has been conducted.)
   (RDC Approval, Conduct of EIA (ECC), Conclusion of MOA)
3. Candidate Projects will be prioritized based on their EIRR.
   (The Project of which EIRR is higher than 15%.)
4. Regionality will be well-considered in terms of fair nationwide development policy.
   (e.g. A Project shall be selected from each Regions, Luzon, Visayas and Midanao.)
5. As many as possible projects will be selected for the Second ICC Approval.
6. Candidate Projects not selected shall be implemented under the Third Batch.

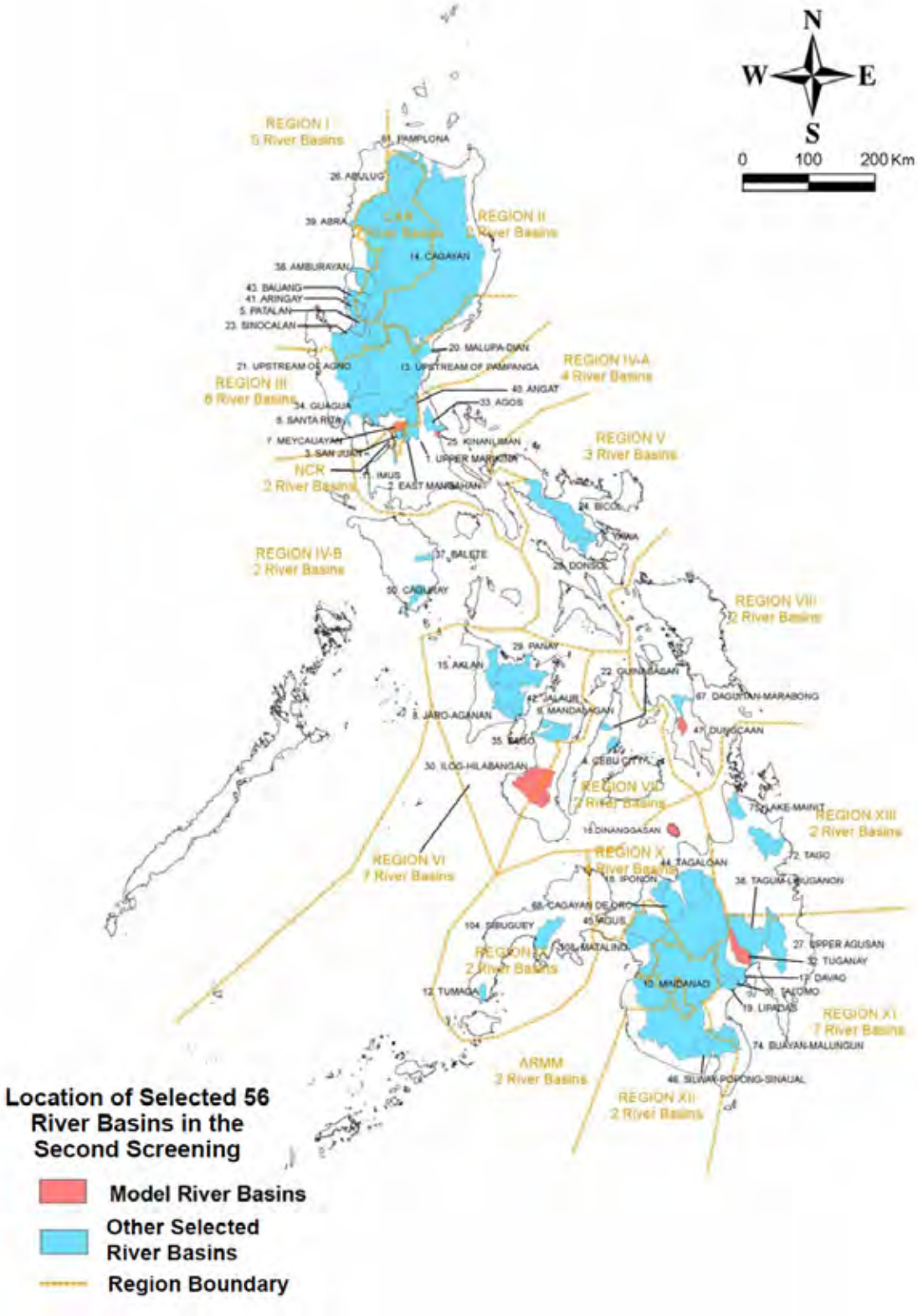
Third Batch

1. Candidate Projects not selected in the Second Batch shall be prioritized.
2. Additional Candidate Projects will be considered for the Third Batch.
3. Additional Candidate Projects will be prioritized based on their EIRR.
4. As many as possible projects that could be accommodated within the limited Loan Amount shall be selected for the Third Batch and submitted to ICC.

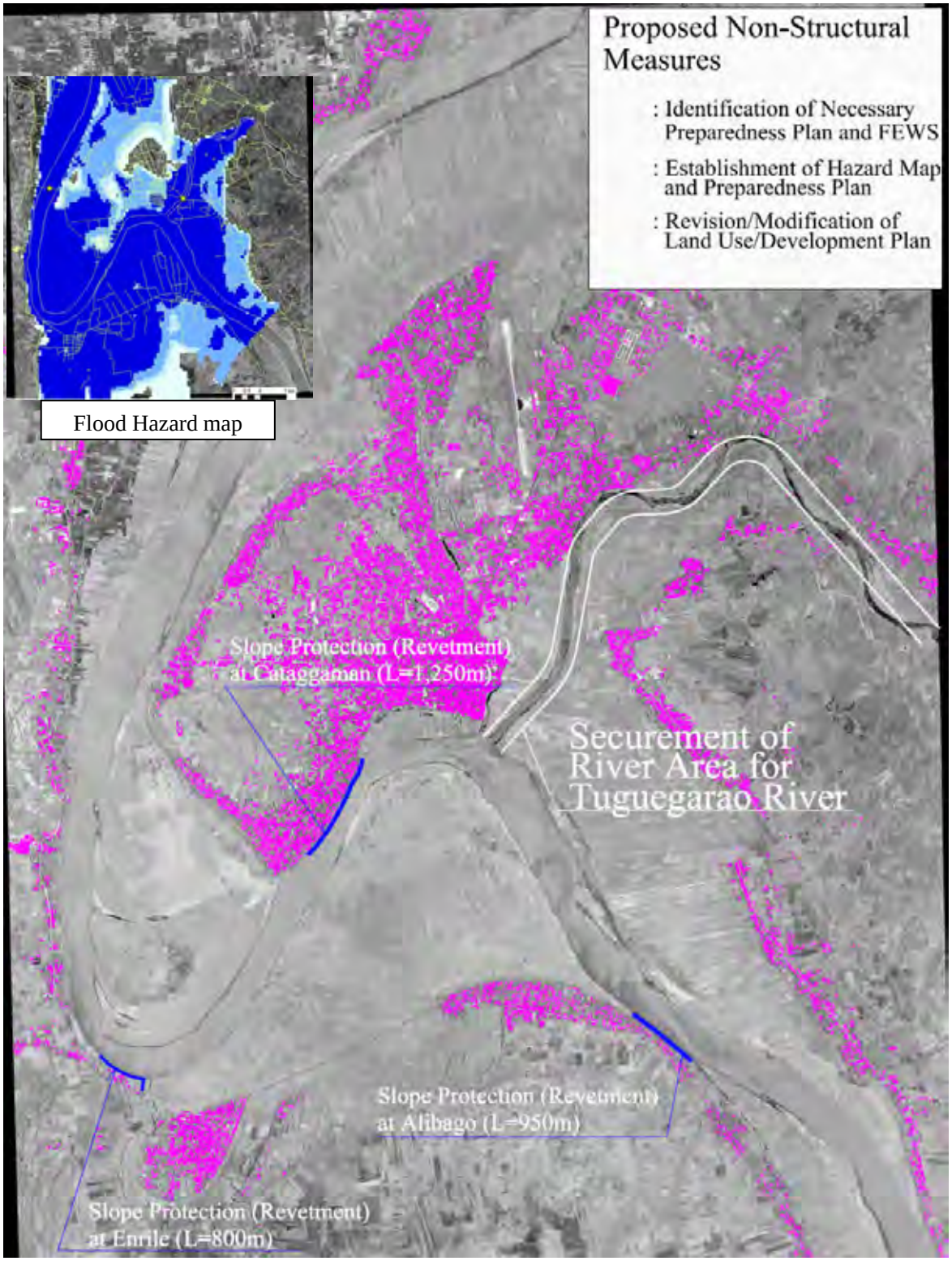
THE PREPARATORY STUDY FOR SECTOR LOAN FOR DISASTER RISK MANAGEMENT	図 5.1
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	セクターローン事業内において サブ･プロジェクトを選定するフロー



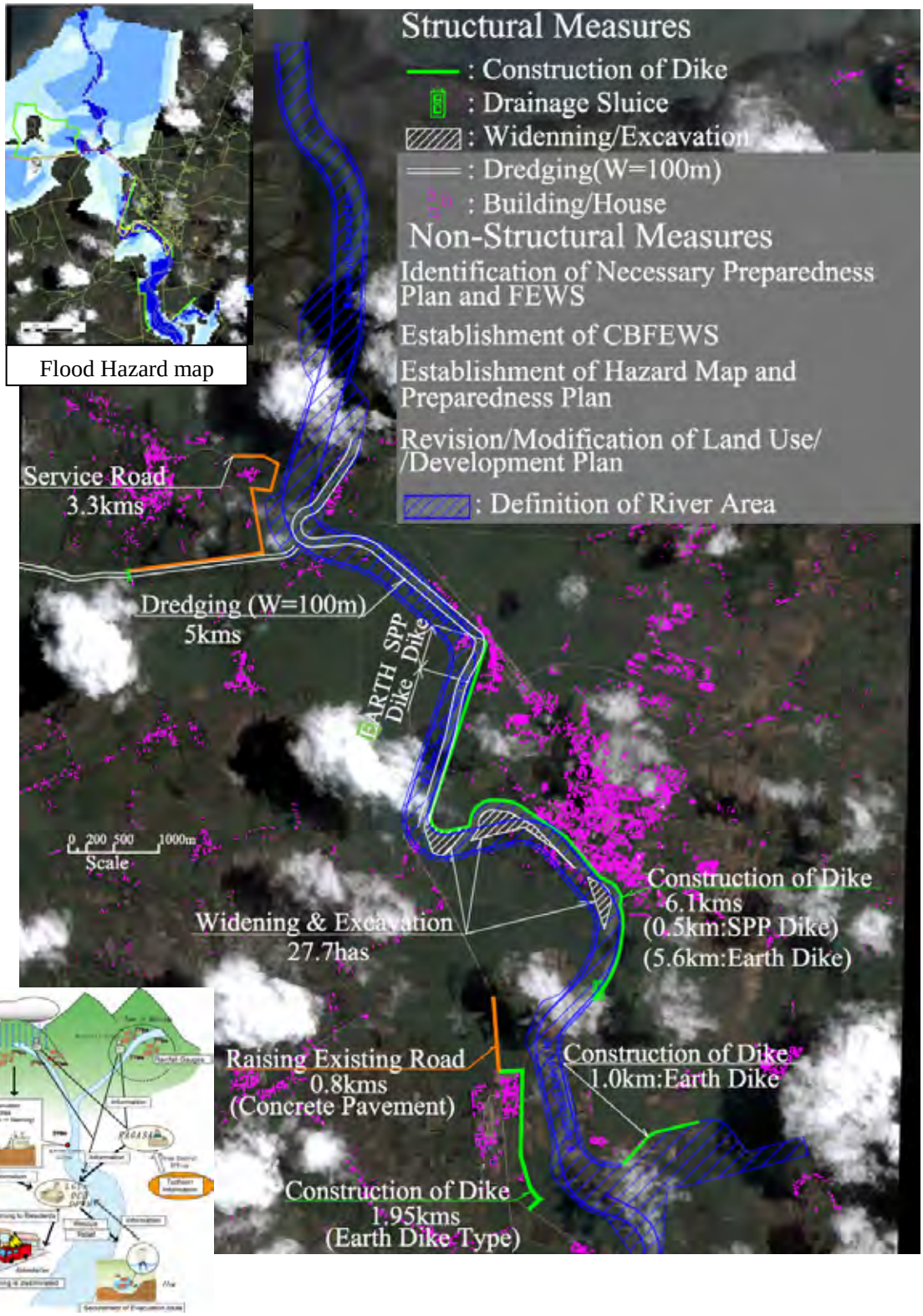
THE PREPARATORY STUDY FOR SECTOR LOAN FOR DISASTER RISK MANAGEMENT	図 5.2
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	セクターローン想定 事業実施計画



THE PREPARATORY STUDY FOR SECTOR LOAN FOR DISASTER RISK MANAGEMENT	図 5.3 ロングリストと選定されている 河川流域の位置図
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	



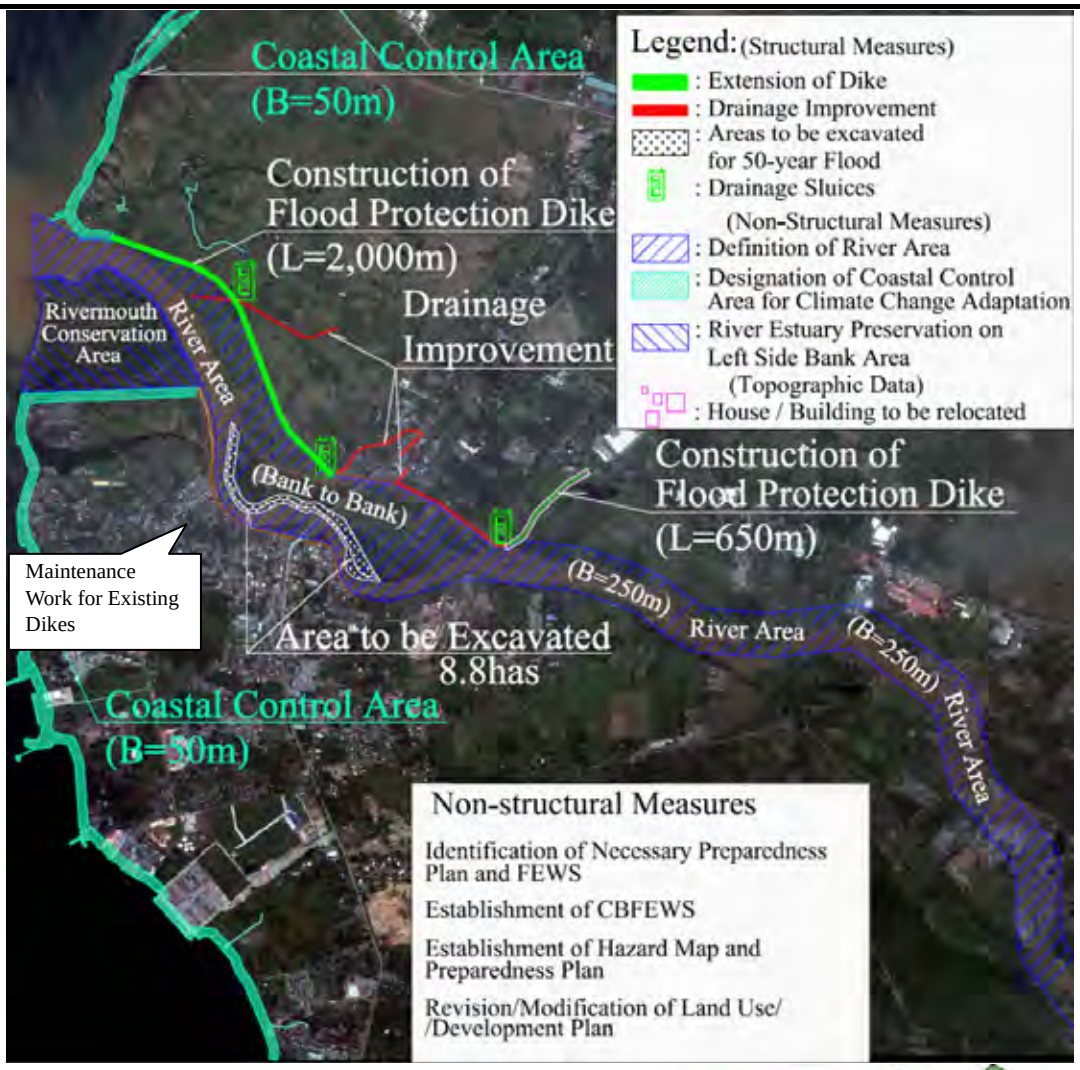
THE PREPARATORY STUDY FOR SECTOR LOAN FOR DISASTER RISK MANAGEMENT	図 6.1 Cagayan 川 Tuguegarao 地区洪水対策事業のための構造物・非構造物対策案
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	

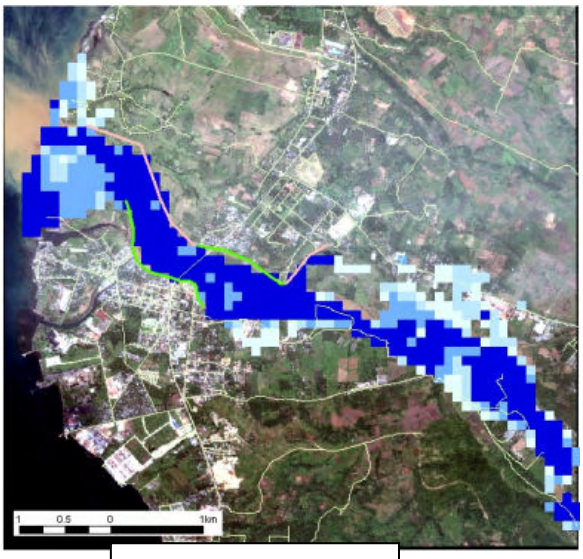


Flood Hazard map

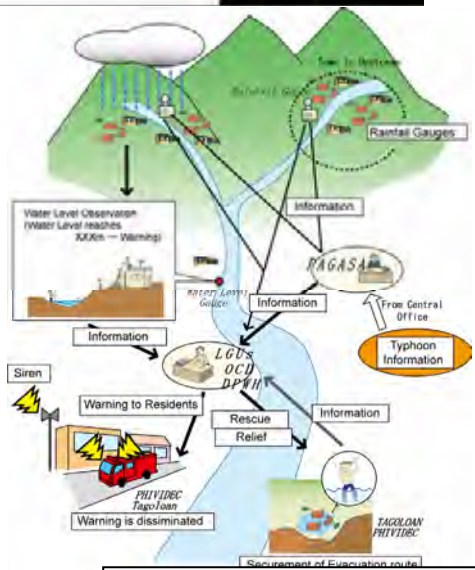
Preparedness Plan and FEWS

THE PREPARATORY STUDY FOR SECTOR LOAN FOR DISASTER RISK MANAGEMENT	図 6.2 Ilog-Hilabangan 川 Kabankalan 及び Ilog 地区の洪水対策事業のための構造物・非構造物対策案
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	





Flood Hazard map



Preparedness Plan and FEWS

THE PREPARATORY STUDY FOR SECTOR LOAN FOR DISASTER RISK MANAGEMENT	図 6.3 Tagoloan 川 Tagoloan 地区の洪水対策事業のための構造物・非構造物対策案
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	

ANNEX 1 ISSUES ON FLOOD CONTROL PROJECTS

1.1 KAMANAVA Project

Project Name	:	The KAMANAVA Area Flood Control and Drainage System Improvement Project
JBIC Loan Agreement	:	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)

1.1.1 Project Background

The project area of 18.5km^2 is located in the northern part of Metro Manila adjacent to the Manila Bay. The area is characteristically low-lying flat terrain, with ground elevation in major parts being below high tide level. This distinct topographical feature renders the area to be frequently flooded by high tide, heavy rain and river overflow. Flooding occurs throughout the year, particularly frequent during the rainy season from May to September when the period of high tide takes place simultaneous with heavy rain. In addition, the habitual floods carry the stinking and heavily polluted water of rivers and people are forced to live in unfavorable environmental conditions.

The Project aims to mitigate flood damage with the construction of flood control and drainage improvement works in the KAMANAVA area (Kalookan–Malabon–Navotas–Valenzuela) of Metro Manila in order to improve living conditions and promote the economic activities in the area. The Project was one of the priority projects identified in the JICA Study completed in 1990 for the "Metro Manila Flood Control and Drainage Master Plan."

The Feasibility Study was reviewed by DPWH in August 1998. The DENR issued an ECC on June 28, 1998. Considering its huge potential impact to flood mitigation and environmental improvement, the project was cleared by the ICC-CC on October 26, 1998. Implementation of the Project consisting of the detailed design and construction was financially supported by the JICA Loan (formerly, JBIC Loan before merger with JICA).

During the JICA (the former JBIC) appraisal of the Project in October 1999, the project cost was reviewed and a conclusion was reached that the cost would exceed the approved ICC amount by more than 20%. After reevaluation, the revised project cost was submitted to the ICC and approved in the ICC-CC meeting held on November 19, 1999. The Loan Agreement was finally signed on April 7, 2000, and the Project was started in September 2000 with the target completion date of February 2006 for the 5.5-year implementation period.

1.1.2 Original Scope, Implementation Period, Project Cost and Economic Viability

The protection scale against flood is 30-year return period for the Malabon/Navotas/Marala River Improvement Works and 10-year return period for the

Urban Drainage Improvement Works. The original major scope of the Project consists of the items described in Table RA 1.1 with comparison to the amended scope.

The ICC-CC in the meeting held on November 19, 1999 approved the 5.5-year implementation period from the year 2000 consisting of 1-year detailed design, 1-year bidding and 3.5-year construction and the project cost of 5,183.5 million pesos (Php 3,188.48 million for the foreign component and Php 1,995.02 million for the local component using 1999 price indices and the exchange rate of Php 1.0 = JPY3.0). The Project is economically viable with an EIRR of 15.08% and an economic NPV of 12.20 million pesos.

The financial support of Php 3,929 million was confirmed under the Memorandum on the Project between DPWH and JICA (or the former JBIC) signed on April 7, 2000. Of this original total project cost of PHP 3,929 million, the Japanese special yen loan covers 75.74% (PHP 2,976 million) and the local counterpart fund covers 24.26% (PHP 953 million), respectively. The JICA (JBIC) loan of JPY8,929 million (equivalent to PHP 2,976 million) for the Project was agreed under Loan Agreement No. PH-P212 dated April 7, 2000 with the expiry date of September 4, 2008 using exchange rate of JPY3.0 to PHP 1.0 (USD1.0 = JPY114 = Php 38.0). The original allocation of loan proceeds from Category "C" Contingency to Category "A" Civil Works and Procurement of Equipment/Materials was amended in accordance with the approved contract cost for Civil Works in May 2003.

On the other hand, the FOA (Forward Obligation Authority) corresponding to PHP 3,929 million was issued by the Department of Budget and Management (DBM) on April 6, 2000; i.e., Php 2,976 million for Loan Portion and Php 953 million for the GOP Portion, the same as amount as stipulated the loan agreement (See Table RA 1.2 for reference).

Table RA 1.1 Loan Amount for the KAMANAVA Project

Category		Original (April 7, 2000)	Approved Revision (May, 2003)
A.	Civil Works and Procurement of Equipment/Materials	7,144 million Yen	7,744 million Yen
B.	Consultancy Services	1,071 million Yen	1,071 million Yen
C.	Contingency	714 million Yen	114 million Yen
	Total	8,929 million Yen	8,929 million Yen
	Peso Equivalent (Php 1.0=JPY3.0)	Php 2,976.3 million	
	Loan Expiry Date	September 4, 2008	September 4, 2009

1.1.3 Implementation Arrangement

The Department of Public Works and Highways (DPWH) is implementing the project through the KAMANAVA Project Office of the Project Management Office for Major Flood Control and Drainage Projects, Cluster I (PMO-MFCDP I).

1.1.4 Issues and Causes (KAMANAVA Project)

(1) Issue: Non-Completion or Delay of Construction Work

The detailed design work for the Project was started in September 2000 and the Civil Works under the one-package contract commenced in June 2003 for a contract duration of four (4) years with target completion in June 2007. The Contract was however mutually terminated on September 4, 2008 after an overall physical accomplishment of the Japanese contractor of 88.70% due to the DPWH's **failure of acquisition of the right-of-way (ROW)** for the remaining works. The remaining works of 11.30% are presently being carried out by a joint venture of local contractors employed through negotiated procurement. The Notice to Proceed was issued to the said Joint Venture of Local Contractors on February 9, 2009, targeting completion in December 2009. However, there is apprehension that the target completion date of December 2009 could not be met due to prevailing problems.

(2) Issue: Increment of Project Cost

The total project cost has increased as summarized below compared to the ICC-approved Project Cost and the amount of loan agreement, which requires a new ICC approval.

Table RA 1.2 Summary of Revised Project Cost (Proposed for New ICC Approval)

Unit: Amount in Million Pesos (Million Yen)

Component	ICC-App P.C. *2	L/A (PH-P212)		Proposed Revised P.C.	Cost Increase *4	
		MOA L/A*3	Loan Allocation*6		Amount	%
1. Civil Works	3,074	2,285	2,285/2,581*5 (¥7,144/7,744)	4,017*7	+943	+31%
2. Consultancy*1	357	357	357 (¥1,071)	519	+162	+45%
3. ROW*1	859	858	-	990	+131	+15%
4. Management*1	94	81	-	124	+30	+32%
5. Physical Contingency	77	238	38 (¥714/114)	134	+57	+74%
6. Price Contingency	723	110		993	+270	+37%
Total	5,184	3,929	2,976 (¥8,929)	6,777	+1,593	+31%

Note *1: Including Physical and Price Contingencies
*2: ICC-Approved Project Cost
*3: Memorandum for L/A
*4: Compared to ICC-Approved Project Cost
*5: Refer to Table RA 1.1
*6: Php 1.0 = JPY3.0 as of 2000
*7: Excluding Price Contingency

(3) Summary of Causes of Issues

The Project is on its 9th year of implementation as of 2009. Actual implementation of the Project was started in September 2000 and construction

works actually started in June 2003, or a nine (9) months delay from the original schedule of September 2002. The presently revised target completion date of December 2009 is 3.8 years delay against the original target completion date of February 2006) as described in item (1) above.

The causes of issues on such delay of construction works and increment of the project cost are attributed to the following compound reasons.

Table RA 1.3 Summary of Causes of Issues on KAMANAVA Project

Causes	Description
Issues on Delay of Implementation	
Delay in deliberation of bidding	Bidding was started in August 2001 as originally scheduled. However, due to delay of deliberation, the bidding was completed August 2003, which was about a one (1) year delay from the original schedule.
Problem on Right-of-Way and removal/relocation of affected informal settlers	Delay in the acquisition of ROW and relocation of informal settlers has caused a 3-year delay in the construction of remaining works to complete the Civil Works. The ROW problem and presence of fishing boats caused the delay of implementation of the works, such as 113 calendar days for Navigation Gate and P/S and 345 calendar days for River Improvement Works. As a result, 456 calendar days of time extension was approved for the works.
Delay of relocation of affected public facilities by utility companies	Such as water supply pipes of MWSI and electric lines of MERALCO.
Issues on the Increment of Cost	
High Bid amounting to PHP 406 million	ICC approved cost and Loan amount cost were PHP 3,074 million and PHP 2,285 million respectively. However, the contract price was PHP 3,480 million. Therefore, the difference between the ICC cost and the bid price was PHP 406 million based on the initial term of the Project
Contract Variation Orders for Civil Works and Remaining Works	Contract variation including deletion/addition of Contract Works due to ROW problem is estimated at PHP350 million. Deleted works from the original contract with the Japanese Contractor are to be done by the Joint Venture of Local Contractors. These works are now being done by the Joint Venture. The estimated cost has been updated PHP 887 million. Therefore, total project cost has increased.
Price Contingency	During project implementation the average construction material price increase rate from the bidding in 2002 to completion in 2008 is 26% and 38% for foreign and local materials respectively due to drastic price increase of fuel and steel materials during the period. The total cost of price escalation is estimated at Php 993 million, while only 24% of price increase was considered in the ICC-approved cost of Php 723 million.

1.1.5 Lessons Learned from the KAMANAVA Project

Lessons learned from the KAMANAVA Project could be as described below.

(1) Recognition of Increment of the Project Cost due to Not Negligible Price Contingency

The Php 270 million increment of Project Cost for the construction works has been caused by price contingency. In addition to the increment of construction cost, an increase of Php 162 million has been incurred due to the additional period

of consultancy services required for the Project. These are attributed to the extension of the term of the Project. The Project Proponent (DPWH) should bear these cost increments because of the extension of the project term and should be given utmost consideration.

(2) Necessity of Enlightenment of the Project Benefit to Stakeholders in Terms of ROW Acquisition

According to a daily newspaper during the project's implementation, some people have neglected proper relocation activities (See Fig. A 1-1). It is then essential for us to be enlightened on the fact that we might be restricted in our activities for the sake of public welfare in parallel with proper livelihood programs and respect of human rights.

1.2 West Mangahan Project

Project Name	:	Metro Manila Flood Control Project – West of Mangahan Floodway
JBIC Loan Agreement	:	JBIC Loan Agreement No. PH-P179 (Loan Amount: ¥9,411million Japanese Yen)

1.2.1 Project Background

(1) Goals and Objectives

The Project aims to promote the general welfare of the residents of the project area through uplifting the quality of life, improvement of living conditions and enhancement of environmental atmosphere. Specifically, it aims to mitigate flood damage due to high water stages of Laguna Lake in the areas of Taguig, Pateros and Pasig in Metro Manila and Taytay and Cainta in Rizal Province which are located west of the Mangahan floodway.

(2) Description and Scope

The original project is composed of i) construction of 9.5 km dike which also serves as public road (2 lanes) along Laguna Lakeshore; ii) two bridges (305 m and 153 m long; iii) four pumping stations and four floodgates with four regulation ponds along Laguna lakeshore; iv) 5.8 km parapet wall and four floodgates along Napindan River; v) resettlement site development; and vi) consulting services for pre-construction, construction supervision and study on land development plan, transfer of technology and assistance on inter-agency coordination.

(3) Project Contract Packages

Implementation of the Project has been carried out in four (4) Contract Packages (CPs), as follows:

CP1: Construction of 8.5 km lakeshore dike with 2 bridges and 4 regulation ponds along the northern shoreline of Laguna de Bay and Napindan River

CP2: Construction of concrete parapet wall along both banks of Napindan River with 3 floodgates

CP3: Construction of 2 pumping stations (Tapayan and Labasan), 3 floodgates (Tapayan, Labasan and Pasig), and 500m lakeshore dike

CP4: Construction of 2 pumping stations, 2 floodgates (Taguig and Hagonoy) and 500m lakeshore dike

1.2.2 Original Scope, Implementation Period, Project Cost and Economic Viability

The ICC in July 1996 approved a total project cost of Php 3,137 million, of which Php 2,353 million (75%) was the peso equivalent of the foreign cost component, while Php 784 million (25%) was for the local fund component. The JICA (the former JBIC) loan for the Project amounted to JPY 9,411 million.

As proposed to the ICC, the original implementation duration of the project was 6.5 years starting from 1998 up to 2004, including the 5 years construction period. The JICA (JBIC) Loan Agreement was signed on March 18, 1997, became effective on June 26, 1997 and supposed to close on June 26, 2006.

On the other hand, the FOA (Forward Obligation Authority) corresponding to Php 3,137 million was issued by the DBM on February 5, 1997; i.e., Php 2,353 million from the loan portion and Php 784 million from the GOP counterpart portion, the same as the amount of the loan agreement (See Table RA 1.2 for reference).

Table RA 1.4 Loan Amount for the West of Mangahan Project

	Category	Original (March 18, 1997)
A.	Civil Works	7,363 million Yen
B.	Consultancy Services	1,192 million Yen
C.	Contingency	856 million Yen
	Total	9,411 million Yen
	Peso Equivalent (Php 1.0=JPY4.0)	Php 2,352.8 million
	Loan Expiry Date	March 17, 2006

1.2.3 Implementation Arrangement

The Department of Public Works and Highways (DPWH) is implementing the project through the Project Management Office for Major Flood Control and Drainage Projects, Cluster I (PMO-MFCDP I).

1.2.4 Issues and Causes (West of Mangahan Project)

(1) Issue: Delay of Construction Work (Two-Year Extension of Loan Validity)

As of December 2005, the Project was in its 8th year of implementation or 1.5 years delayed. CPs 3 and 4 were completed in 2004 and CP 2 was completed in 2005. However, CP 1 is currently encountering **ROW problems, and the relocation of illegal settlers remains** to be an issue.

Construction schedule for all CPs was affected by **difficulties in the acquisition of ROW and the issue on the alignment of dike** raised by concerned LGUs, NGOs, people's organizations and affected families. Construction of CP 1 (construction of dike), the most critical component of the project, has been suspended several times due to the afore-cited issues. This was further compounded by **the lack of budget and delay in cash releases for ROW/relocation of informal settlers**.

As of 2005, of the four contract packages of the project, CPs 3 and 4 were completed in 2004, while CP 2 is to be completed within 2005. Physical works under CP 1 (construction of lakeshore dike and regulation ponds) was due for completion in June 2007 given that the remaining volume of works and the critical issue on ROW as well as relocation of affected informal settlers is targeted to be resolved by December 2005. Construction of the dike would require two dry seasons (January 2006 to June 2007). After completion of the dike in June 2007, one year is needed for defects liability period, final payment to Contractor and release of retention money.

(2) Issue: Increment of Project Cost

As of 2005, DPWH was proposing an increase in cost from Php 3,137 million to Php 5,133 million or a 63% increase in cost. The original, revised project cost and the cost increase/decrease are summarized, as follows:

Table RA 1.5 Increment of Project Cost of the West of Mangahan Project

Component	Per MOD/Loan Agreement (Million Php)	Revised Cost (Million Php)	COST INCREASE	
			(Million Php)	(%)
1. Civil Works	1,987	3,130	1,144	58%
2. Price Escalation	190	190	0	0
3. Consulting Services	304	421	117	38%
4. Land Acquisition	329	886	557	170%
5. Administration Cost	109	155	46	42%
6. Contingency	218	330	112	52%
TOTAL	3,137	5,113	1,976	63%

As reported by DPWH, the major causes of increase in total project cost were: i) considerable fluctuation of exchange rates for costs of civil works and consultancy services; ii) contract variation order for civil works; and iii) increased valuation of lots for ROW. The increase in cost affected five components; namely,

civil works, consulting services, land acquisition, administration cost and contingency.

(a) Cost Increment due to Civil Works

The increase in civil works cost of Php 1,144 million was due to the following reasons:

- Foreign exchange rate fluctuation - Php 723 million (63%)
- Contract variation orders - Php 355 million (31%)
- High bid price - Php 66 million (6%)

The civil works cost was affected by foreign exchange fluctuation because the exchange rate used in the Minutes of Discussion (1996) was ¥4.00=P1.00. At the time of bidding for CPs 1 and 2 (July 1999), exchange rates averaged ¥3.23 to P1.00 and for CPs 3 and 4 (Jan. 2000), ¥2.70 to P1.00.

(b) Contract Variation Orders

In terms of contract variation , the following table shows the different variation orders by contract package:

Table RA 1.6 Summary of Revised Construction Cost of West of Mangahan Project

(Unit: million pesos)

Contract Package	Per MOD in 1996 (a)	ABC/AAE* and Date Issued (b)	Original Contract Price & Date of Award	Variation Orders			Revised Civil Works Cost (g)=(c)+(f)
				Approved (d)	Under Evaluation (e)	Sub-Total (f)	
1	685,974	904,090 Jul 20 1999	637,851 May 26, 2000	50,963	16,037	67,000	704,851
2	328,408	195,392 Jul 20 1999	159,852 Jan 15 2000	16,465	128,535	145,000	304,852
3	477,630	793,419 Jul 25 2000	996,120 Jan 15 2000	76,929	0	76,929	1,073,049
4	494,603	782,559 Jul 25 2000	981,744 Jan 15 2000	65,743	0	65,743	1,047,487
TOTAL	1,986,615	2,675,460	2,775,567	210,100	144,572	354,672	3,130,239

Note: *Approved Budget for the Contract/Approved Agency Estimate

(c) Consulting Services

The increase in cost of Php 117 million was mainly due to the considerable fluctuation of exchange rates which affected the foreign currency portion of the original contract cost of consultancy services. The monthly exchange rates averaged ¥2.34 to Php 1.00 and fluctuated between ¥3.1 to ¥2.0=Php 1.00 between December 1997 and April 2005 based on the monthly progress billings.

The MOD cost for consulting services of Php 304 million is 15% of the original civil works cost of Php 1,987 million, while the proposed revised

consulting services cost of Php 421 million is 13% of the revised civil works cost of Php 3,130 million. Cost for consulting services includes not only construction supervision but also the "Study on Land Development Plan" for the development of potential areas after project completion.

(3) Issue: Land Acquisition/Right-of-Way (ROW) - Main Cause of Delay

The issues on land acquisition and ROW resulted in the delay of implementation and the increment of Project Cost.

The Php 557 million increase in ROW cost is due to the following reasons:

- Increase in land valuation between 1996 and 2005; and,
- Increase in the number of squatter families and structures affected.

The original estimated cost of ROW in 1996 was Php 300.00/m^2, while that of unit cost (2005) was Php 1,100.00/m^2. In this regard, during implementation, the number of affected informal settlers more than tripled from 142 families to 450 families, particularly at Lupang Arenda (Proclamation No. 704), Pasig City and Taytay municipality.

(4) Issue: Creation of Proclamation No. 704 - Main Cause of ROW Problem

Relevant legislation and the new presidential proclamation that affected the project are as follows:

Table RA 1.7 Relevant Legislation and New Presidential Proclamation for West of Mangahan Project

Legislation/Proclamation	Contents
PD No. 813 (Oct. 17, 1975)	Lands below elevation 12.5 m are part of the bed of Laguna Lake and are, therefore, under the jurisdiction of Laguna Lake Development Authority (LLDA)
Proclamation No. 704 (Nov. 28, 1995)	Reserves 80 hectares in Lupang Arenda for socialized housing and transfer to NHA ownership of said government land

Most lots affected by the project are considered as public land under PD No. 813. However, the holders, possessors or claimants of said lands have continuously refused to cooperate with the DPWH by preventing the entry of contractor's equipment to said areas to start construction and claimed payment for their lots.

In response to the issue, DPWH initiated expropriation proceedings over these lands through the Office of the Solicitor General (OSG) so that the proper court could issue the necessary Writs of Possession which entitles the Government/DPWH to enter said land and undertake construction. With the issuance of opinion of the OSG on October 10, 2005, DPWH had determined the specific lots to be given appropriate compensation.

During the start of the project implementation in 1998, many informal settlers entered the site at Lupang Arenda. Based on the original dike alignment, approximately 2,000 families will be affected by the construction of the dike,

hence DPWH acquired and developed (roads, water and electricity) a resettlement site in Baras, Rizal Province, which is 25 kms from Lupang Arenda. However, the final 450 families to be affected by the re-aligned dike opted for just compensation instead of resettlement.

(5) Summary of Causes of Issues

As described above, implementation was delayed for 2 years and the cost was increased. The causes of issues on such delay of construction works and increment of project cost are summarized in the following compound reasons including unstated minor causes.

Table RA 1.8 Summary of Causes of Issues on West of Mangahan Project

Causes	Description
Delay of the Project Implementation (Two-Year Extension of Loan Validity)	
ROW and relocation problems	Due to Proclamation No. 704, some holders, possessors or claimants of said lands have continuously refused to cooperate with DPWH.
Lack of budget and delay in cash releases for ROW/relocation	Construction of CP 1 (construction of dike), the most critical component of the project, has been suspended several times due to the lack of budget and delay in cash releases for ROW/relocation of informal settlers.
Increment of the Project Cost	
Considerable Fluctuation of Exchange Rate	Civil works cost was affected by foreign exchange fluctuations since the exchange rate used was ¥4.00=P1.00. At the time of bidding for CPs 1 and 2 (July 1999), exchange rates averaged ¥3.23 to P1.00 and for CPs 3 and 4 (Jan 2000), ¥2.70 to P1.00.
Contract Variation Orders for Civil Works	Change of length of lakeshore dike from 9,500m to 10,800m. Additional Scope: Dredging of Labasan Drainage Channel, Construction of wharf, Construction of Additional P/S
Consulting Services	The increase in cost of Php 117 million was mainly due to the considerable fluctuation of exchange rates
Land Acquisition/ ROW	The Php 557 million for ROW cost was additionally required due to increase in land valuation and increase in the number of informal settlers.
Administration Cost	The original Administration Cost was Php 109 million which is approximately 5% of the original civil works cost. An additional Php 46 million was requested, corresponding to the 2-year proposed time extension.

1.2.5 Lessons Learned from the West of Mangahan Project

Lessons learned from the West of Mangahan Project are as described below.

(1) Necessity of Close Cooperation with LGUs on Land Zoning

The most significant causes of delay of project implementation were the new residential areas along the original alignment due to Proclamation No. 704 in spite of the current regulation specifying that no one can reside in the designated area. It was confirmed that closer coordination between the project proponent and the LGUs concerned should have been required strictly. In this connection, it should have been necessary for the LGUs to create new Land Zoning ordinances in advance of the implementation of the Project.

(2) Proper Allocation of Budget for ROW Acquisition

The delay of project implementation was attributed to the lack of budget and delay in cash releases for ROW/relocation. In view thereof, the project cost should be estimated, based on up-to-date zonal value rates.

1.3 Agno River Project II

Project Name	:	The Agno River Flood Control Project, Phase II
JBIC Loan Agreement	:	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)

1.3.1 Project Background

(1) Background of the Project

To identify the flood control measures, determine an appropriate implementation sequence, and establish a master plan of flood control for Agno River and the Allied Rivers in the long term, a comprehensive study was carried out from April 1989 under the technical assistance of JICA. The study identified a number of projects for short-term implementation. Improvement works for the Pantal-Sinocalan River and the Upper Agno River were selected as the priority projects.

A feasibility study for the proposed high priority projects was undertaken by JICA and completed at the end of 1991. In view of the importance and urgent need for flood control in the Pangasinan plains, the Government of the Philippines (GOP) requested financing and technical assistance from the Government of Japan (GOJ) for undertaking the Detailed Engineering Design of the proposed urgent flood control project. After appraisal of the project, JBIC (Japan Bank for International Corporation) agreed to provide assistance for the design works. The detailed engineering design consisted of urgent rehabilitation works in the Lower Agno River and the Upper Sinocalan River and river improvement works in the Upper Agno River. The Detailed Engineering Design commenced in January 1993 was completed in one year (1994).

The target of the flood control works is to confine the 10-year high flows within the contemplated flood control facilities and to consider fifty (50) years of lifetime for the Project. It means that the criteria of 50-year sediment deposition in the Poponto Swamp may be applicable for the urgent flood control schemes.

A Hydraulic Model Test was conducted to verify the flood diversion system in Alcala and was completed in April 1994. Modifications of the previous detail designs were conducted based on the results of the Hydraulic Model Test and the Addendum for Detailed Design was prepared and completed in May 1997.

The Agno River Flood Control Project (ARFCP) was originally divided into four (4) Packages for implementation, as follows:

Table RA 1.9 Original Packaging of Whole Agno River Project

Package	Contents
I	Bayambang Stretch including the floodway towards Poponto Swamp (L=23 km)
II	Asingan-San Manuel Stretch (L=16 km)
III	Alcala-Asingan Stretch (L=31 km)
IV	Lower Agno River (L=54 km) and Upper Sinocalan River

After the detailed design, GOP requested financial assistance from GOJ for implementation of the ARFCP works. In response to this request, GOJ agreed to finance the implementation of the urgent rehabilitation works of the Lower Agno River and Upper Sinocalan River (Package IV described in the table above) as ARFCP Phase I under the 20th JBIC Yen Credit. This project is now referred to as the Agno and Allied Rivers Urgent Rehabilitation Project (PH-P155). Pre-construction work for the project (Review of Detailed Design, P/Q, and Tendering Work) was conducted from May 1997. The construction works were commenced in April 1998 and completed in May 2005.

The remaining works of Package I, Package II and Package III shown in the table above were proposed as the Agno River Flood Control Project, Phase II (ARFCP II) for financing under the 22nd JBIC Yen Credit in 1996. However, GOJ decided to take up only Package I as ARFCP II, which is now referred to as ARFCP IIA, in September 1997. Further, the 22nd JBIC Yen Credit (Loan No. PH-P193) covers only the whole consulting services and a part of civil works. The residual civil works, construction of the Hector Mendoza Bridge and feasibility study for the Tarlac River Overall Improvement Works are covered by the 24th JBIC Yen Credit (Loan No. PH-P223) as ARFCO IIB. The detailed design and tender assistance for Hector Mendoza Bridge are undertaken under the consulting services of ARFCP IIA as Supplemental Agreement No. 1, which was approved by DPWH on September 14, 2000

(2) Objective

The project aims to mitigate flood damage in the Agno River Basin by protecting villages, towns, vast agricultural lands, vital infrastructure facilities (roads, irrigation, etc.) with improvement of the existing river channel; heightening of existing dike system; construction of new earth dikes, closure dike, diversion structures and floodway control weir; and the provision of bank protection works, spur dikes, revetments and sluiceways.

1.3.2 Original Scope, Implementation Period, Project Cost and Economic Viability

The Project is the second phase of the Agno River Flood Control Project (ARFCP-II). The river stretch to be improved in the Upper Agno River extends from the Wawa Bridge to Alcala in Pangasinan. The river improvement works in the Project would be carried out for 23 km of the Bayambang-Alcala stretch. Major improvement works include construction of floodway to the Poponto retarding basin and closure dike at the floodway entrance, heightening of existing dike, construction of new dikes, revetment, groin, and bridges. The Project aims at increasing the flow capacity of the river stretch to cope with a 10-year probable flood (4,000m^3/sec at upstream of floodway).

ARFCP-ll is further divided into four (4) contract packages with Packages 1 and 2 for the main flood control components, Package 3 for the social development components and Package 4 for the bridge component. As for relation between packaging and covering of individual loans, PH-P193 only covers Packages 1 to 3. Package 4 for the bridge component and the consultancy services including supplementary studies are included in PH-P223.

Table RA 1.10 Loan Amount for Agno River Project II

Category		Phase II-A (PH-P193)	Phase II-B (PH-P223)
A.	Civil Works	5,180 million Yen	2,527 million Yen
B.	Consultancy Services	1,295 million Yen	233 million Yen
C.	Contingency	259 million Yen	29 million Yen
	Total	6,734 million Yen	2,789 million Yen
	Peso Equivalent	Php 2,172 million	Php 996 million
	Loan Commencement	Jan. 7, 1999	Sept. 25, 2001
	Loan Expiry Date	Jan. 7, 2007 (8 years)	Sept. 25, 2009 (8 years)

1.3.3 Implementation Arrangement

The Department of Public Works and Highways (DPWH) is implementing the project through the Project Management Office for Major Flood Control Projects, Cluster II (PMO-MFCP II).

1.3.4 Issues and Causes - Agno River Project II

(1) Issue: Delay of Construction Work (3 years and 2 Months Extension of Loan Validity of Phase II-A)

Due to some subsidiary issues such as the delay of ROW acquisition and additional construction activities, the delay of construction caused the 3 years and 3 months Extension of Loan Validity for Phase II-A.

The construction period of each package was extended, as summarized below.

Table RA 1.11 Summary of Extended Contract Periods of Agno River Project II

Package	Description	Contract Period		Time Extension (C.D.)
		Period	C.D.	
Package 1	Original Contract	18 Nov 03 to 19 Jun 06	945	
	Approved T.E.	18 Nov 03 to 31 Jan 08	1,536	591
Package 2	Original Contract	14 Feb 06 to 01 Mar 09	1,340	
	Proposed	14 Feb 06 to 31 Jul 10	1,614	274
Package 3	Original Contract	21 Mar 02 to 20 Oct 04	945	
	Proposed	21 Mar 02 to 23 Feb 06	1,080	135
Package 4	Original Contract	02 Sep 02 to 29 Sep 04	760	
	Proposed	02 Sep 02 to 18 Mar 04	565	-

(2) Issue: Increment of Project Cost

As shown above, some subsidiary issues such as the delay of ROW acquisition and additional construction activities have also caused the increment of Project Cost. The Project Cost increases are as summarized below.

Table RA 1.12 Summary of Revised Project Cost of Agno River Project II

Unit: Million

Package	Description	Total (Pesos)	L.C. (Pesos)	F.C. (JPY)	VAT (Pesos)
Package 1	Original	679	255	938	22
	Total V.O., P.A. & S.A.	216	223	- 71	23
	VAT Diff.	41			41
	P.E.	20	8		1
	Total	955	497	867	87
Package 2	Original	1,156	407	1,673	32
	Total V.O., P.A. & S.A.	324	135	423	8
	VAT Diff.	20			20
	P.E.				
	Total	1,501	542	2,096	60
Package 3	Original	497	447	13	45
	Total V.O., P.A. & S.A.	45	44	- 9	4
	VAT Diff.				
	P.E.	32	29		3
	Total	574	520	4	52
Package 4	Original	726	296	1,017	21
	Total C.O., & E.W.O.	85	35	133	- 4
	VAT Diff.	51			51
	Standby Claim	18	4	32	2
	Incentive Bonus	86	33	115	7
	P.E.	30	14	28	2
	Total	995	382	1,325	79
All Packs	Original	3,058	1,405	3,641	120
	Increment	967	536	651	158
	Grand Total	4,025	1,941	4,292	278

Note: V.O.: Variation Order; P.A.; Price Adjustment; S.A.: Supplemental Agreement
VAT Diff.: VAT Difference/Adjustment; P.E.: Price Escalation;
C.O.: Change Order; E.W.O.: Extra Work Order

(3) Issue: Land Acquisition/Right-of-Way (ROW) - Main Cause of Delay

The status of ROW acquisition as of the end of December 2008 is summarized in the table below.

Table RA 1.13 Status of ROW Progress of West of Mangahan Project as of end of December 2008

Package	Area Taken (m^2)	Total No. of Lots	Workable Lots	Lots w/ Permit to Enter	Acquired Lots	Lots w/ Plant Damage	Lots w/ Imprv't.
Total of CP1	1,700,916	444	-	-	-	315	69
Acquired Lot	-	-	444	444	418	311	69
Acquired Area (m^2)	-	-	1,700,916	1,700,916	1,682,114	-	-
Total Progress	-	-	100.0%	100.0%	98.9%	97.7%	100.0%
TOTAL of CP2	904,274	185	-	-	-	114	50
Acquired Lot			149	163	118	64	33
Acquired Area (m^2)	-	-	767,249	814,019	689,451	-	-
Total Progress	-	-	84.85%	90.0%	76.2%	56.1%	66.0%

Notes, *1:Workable Lot: Construction work can start in a lot anytime without any condition.*
2: Lot w/ Permit to Enter: Not only workable lot but also lot where construction work can start with certain conditions such as partial or full payment for the property (lot, plant or improvement).
3: Acquired Lot: Lots are fully paid
4:There are about 20,460 newly/illegally planted trees at CP2 area
5: The number of lost in CP2 was reduced from 185 to 183 in November 2007 because 2 lots in the as-staked survey will no longer be excavated, hence excluded from ROW negotiation. In July 2008, another lot owner surfaced during excavation of his property thus, the number of lots became 184. In December 2008, 1 lot was subdivided into 2, so the number of lots became 185

The table above shows the status of ROW acquisition in December 2008. As mentioned above, 36 lots of 137,025 m^2 or 15.2% are not workable in the CP 2 area. There are 20,460 newly planted trees, mostly mahogany, scattered in the 36 lots. Claimants are demanding payment in the amount of Php 1,500.00 per tree. PMO/AFCS refused to pay because the trees were planted after the inventory survey in 2002 and the DPWH Secretary gave instructions to the PMO/AFCS not to pay for these illegally planted trees.

The ROW problems in CP 2 area and the actions taken are as described below:

(a) Lots with newly/illegally planted trees for expropriation (21 lots of 84,595 m^2 or 9.4% with 12,631 Trees)

These Lots are located at: (1) approach channel, 15 lots / 68,687 m^2 / 7.1% /10,256 trees; and (2) closure dike and T-head spur dike, 6 lots / 15,908 m^2 / 1.8% / 2,375 trees.

Expropriation proceedings are currently underway at the Regional Trial Court Branch 50, Villasis, Pangasinan. Expropriation was resorted to because lot owners do not want to sell their properties unless mahogany trees are paid. PMO/AFCS would not pay claiming the trees were newly planted in bad faith, i.e., after the lot owners were informed about the construction of the project in their properties.

The Court wrote the "Order of Expropriation" on 22 July 2008. The PMO/AFCS received an unofficial copy of this Court Decision on 24 July 2008. The Court formed a Committee on 12 August 2008 to evaluate the properties under expropriation proceedings for eventual payment. Then the Sheriff officially issued (served) the "Order of Expropriation" to the plaintiffs and defendants on 23 October 2008. Meanwhile, the Committee had to make its recommendation or report for payment of properties by 08 October 2008; however, it requested and was granted by the Court an

extension of 60 days to complete the report. The new deadline for the completion of the report was 08 December 2008.

The disagreement between the two parties, plaintiff-PMO/AFCS and defendant lot owner, is due to the huge difference in their respective assessments of the amount for payment of the properties. PMO/AFCS allocated Php 15.4 million for payment of all properties, while the lot owners claimed Php 180 million as the fair market value of the properties. The Committee held 3 hearings in October 2008 and another 2 more hearings in November 2008 to resolve the problem on payment for the properties acceptable to both parties. The Committee submitted the report to the Court in the first week of December 2008. The Court should then decide on the case. According to PMO/AFCS, the tentative schedule the Court would decide on the case was 23 December 2008. Unfortunately, PMO/AFCS has not yet received the Court decision as of 31 December 2008.

At the same time, PMO/AFCS is obtaining permit to cut the trees from the DENR. However, the "permit" needs the signature of lot owners and certainly the lot owners would not sign unless the problem of payment for the properties is resolved or the Court has decided on the case. According to information from the DENR, only the big trees require the "permit" and the smaller ones can be cut without the "permit". When the properties are paid and the permit to cut trees is obtained, construction can start on said lots.

During the clearing (cutting of trees) of the affected lots under expropriation proceedings, the newly planted trees will also be cut together with the legal trees to make the construction area completely clear of obstructions.

(b) Lots with newly/illegally planted trees for continuous negotiation (15 lots / 52,430m2 / 5.8% / 7,829 trees):

The lots are located at: (1) approach channel, 11 lots / 46,189m^2 / 5.1% / 6,897 trees; (2) closure dike and T-head spur dike, 2 lots /2,11 m^2 / 0.2% / 316 trees; and (3) guide channel and diversion structure, 2 lots / 4,123m^2 / 0.5% / 616 trees.

The lots were excluded from expropriation, because 12 of the lots were already paid and all can be made workable by continuous negotiation according to PMO/AFCS. PMO/AFCS will adopt whatever is the Court decision about the newly planted trees in the expropriation proceedings and use the decision to negotiate with the lot owners.

The schedule to make the remaining lots workable by 31 August 2008 was not met. However, the schedule is not yet re-set by PMO/AFCS.

(4) Issues and Concerns of Congressman, Re: Agno River Flood Control Project, Phase II (ARFCP-II)

The construction of the closure dike in Alcala across the Agno River would have a backwater effect on the dikes upstream along the Alcala-Rosales stretch.

Considering that some dike sections had been breached even before the construction of the closure dike, inclusion of the Alcala-Carmen Bridge stretch (ARFCP Phase III Stretch) under ARFCP-II is strongly requested by the District's Congressman. These works comprise:

- Improvement/strengthening and provision of two-way road on top of the improved dike section, at left and right dike from Alcala-Santo Tomas (Carmen Bridge) stretch for the lengths of 11km and 15km, respectively;
- Road heightening for 5.3km, Barangay Baluyot-Manambong Parte Road; and
- Strengthening of a 1.5km stretch of the critical right dike section of Agno River.

In connection with the above concerns, preparatory works such as survey, geotechnical investigation, designing and planning were started on 08 August 2003 and completed by the end of May 2004.

Notwithstanding the completed detailed engineering design, substantial revisions to the proposed project were introduced by the proponent Congressman. Thus, the new composition of the proposed project is as enumerated below.

(a) Widening of the top widths of the existing left and right dikes from Alcala up to Carmen Bridge from 6m to 12m to make full use of the dikes as alternative roadways in this area.

(b) Widening of the top width of the proposed closure dike from 6m to 12m under Contract Package II. This dike will be connected to the above-mentioned right dike, hence the need for continuity of the 12m width.

(c) Resolution of the localized drainage problem of the municipalities of Sto. Tomas, Alcala and Malasiqui.

(d) Widening of the present width of 6m to 12m of the existing northern and southern floodway dikes by utilizing the excavated materials from the floodway.

PMO/MFCDP-II committed to widen about 4,620m length of the right dike (R-1) in item (a) above, starting from the closure dike, thence eastward (upstream) by inserting it as a "Variation Order" in Contract Package I (CP1). Design drawings and quantity estimates for this work were submitted to the Bureau of Design for approval and the parcellary survey was completed in May 2005.

However, JBIC disagreed on the construction of the 4,620m long R-1 under the JBIC loan due to budgetary constraint of JBIC loans in a meeting held on 21 April 2006 at the Consultant's office with the attendance of JBIC representatives, the PMO, the Contractor of CP 1 and the Consultant.

Therefore, DPWH decided to undertake the widening of the existing right dike under GOP funds and the designed total length was extended up to approximately 6.5 km. PMO/AFCS started the widening works in December 2006 with target completion date of 22 April 2007. However the works have been temporarily

suspended due to ROW problems (trees and lots) after the completion of approximately 2 km of widening works.

In the 4th week of October 2008, the Project Director and the Congressman discussed the widening of R-1 and the closure dike and the said matter is under review by the PMO and the Consultant as of the end of December 2008.

Roughly estimated cost and period for widening of Closure Dike (L=2.9km) and the remaining R-1 (L=6.5km) are as follows:

Table RA 1.14 Cost and Period for Widening of Closure Dike under Agno River Project II

Item	Description
1) Parcellary Survey	Php 2.34 million (cost); 3 months (work duration)
2) Construction Cost	i) Widening of Closure Dike w/ embankment materials from vicinity of the site: Php 16.6 million
	ii) Widening of R-1 w/ embankment materials from vicinity of the site, using 2 motor scrapers: Php 43.5 million*
	iii) Total: Php 60.1 million
3) Construction Period	i) Widening of Closure Dike & R-1: 18 months

Note 1. *: Two motor scrapers are provided by DPWH to the Contractor without charge
2. The cost includes embankment, gravel pavement t=200m, sodding & general items (10% of civil works cost)
3. The construction period is estimated on the condition of 20 workable days/month and one rainy season (4 months)

Furthermore, in case an additional bridge (L=1 05m) is constructed across the Guide Channel to provide a two-lane road, additional construction cost will be required as shown in the table below.

Table RA 1.15 Additional Cost for Widening of Closure Dike in case of Construction of Additional Bridge in the Agno River Project

Item	Description
Additional Construction Cost	i) Additional one-lane bridge: Php 92.4 million
	ii) Additional two-lane bridge: Php 115.5 million*

Note 1. The cost includes a bridge & general items (10% of civil works cost). Design cost of bridge is not included.
2. Additional period will not be required, since the construction of the bridge is in parallel with the widening of Closure Dike & R-1.

The widening works shall be undertaken only with GOP funds and be subject to approval of the DPWH Secretary.

(5) Summary of Causes of Issues

As described above, implementation was delayed for more than 3 years and the cost had increased due to unforeseen extra works and time extensions. The causes of issues on such delay of construction works and increment of the project cost are summarized in the following compound reasons:

Table RA 1.16 Summary of Causes of Issues on Agno River Project II

Causes	Description
Delay of the Project Implementation (Three-Year and Two-Months Extension of Loan Validity)	
ROW and relocation problems	Due to illegal tree plantation or other properties, expropriation dispute dragged for long term.
Delay in cash releases for ROW/relocation	Due to the decision of the Court, additional ROW acquisition payment was required of DPWH.
Issues and Concerns of Congressman	The construction of the closure dike in Alcala across the Agno River would have a backwater effect on the dikes upstream along Alcala-Rosales stretch. Considering that some dike sections had been breached even before the construction of the closure dike, inclusion of the Alcala-Carmen bridge stretch (ARFCP Phase III Stretch) under ARFCP-II is strongly requested by the Congressman. Therefore, these requests forced DPWH to consider additional works in upstream sections of the Project Site.
Increment of the Project Cost	
Contract Variation for Civil Works	Change of works with extra work orders resulted in the increment of Project Cost.
Land Acquisition/ ROW	Due to the decision of the Court, additional ROW acquisition payment was required of DPWH.

1.3.5 Lessons Learned from the Agno River Project II

Lessons learned from the Agno River Project II are as enumerated below.

(1) Necessity of Close Cooperation with LGUs on Land Zoning and Utilization

As considered for the West of Mangahan Project, it is essential that cooperative agreements or MOA between DPWH and the LGUs concerned are concluded with regard to the preparation of project sites and restriction of land use based on an ordinance to be enacted by the municipal councils as early as possible.

(2) Dissemination and Revision of DPWH Policy regarding ROW Acquisition with Court Precedents

It is difficult to strike at the root of some disputes regarding ROW acquisition activities even though a project proponent (DPWH) continues to take efforts for alleviating them.

1.4 Iloilo Flood Control Project

Project Name	:	Iloilo Flood Control Project (Phase II)
JBIC Loan Agreement	:	Loan Agreement No. PH-P230 (Loan Amount: 6,790 million Japanese Yen (2,952 million Philippine Pesos, Php 1.0=JPY2.3)

1.4.1 Project Background

The Project aims to mitigate flood damage and inundation with the aim of creating a more sustainable urban community and of providing a safer and a more pleasant living

condition for people in the urban area of Iloilo City and its vicinity and create a more dynamic regional economy by providing a flood-free urban center.

The Project is a part of the "Study on Flood Control for Rivers in the Selected Urban Centers" formulated in 1993 to 1995 with JICA technical assistance. Detailed Design was conducted in March 1999 to July 2000. Consulting Services for the Project started in October 2002 and implementation of major construction works (Contract Packages 1 and 2) commenced in March 2006. The **revised targeted completion of the Project at present is in July 2010**.

1.4.2 Original Scope, Implementation Period, Project Cost and Economic Viability

Implementation of the whole Iloilo Flood Control Project is divided into two (2) stages considering the necessary budget and immediate project results; namely, Stage I to attain flood control on the scale of 20-year return period for river improvement; and Stage II to attain flood control on the scale of 50-year return period for river improvement works. The ongoing project, the Iloilo Flood Control Project (Phase II), is to implement Stage I.

The original major scope of the Project (Stage I) comprise the construction of a floodway with 4.75 km in length, 5 bridges crossing the floodway, 1 bridge crossing the Iloilo River, improvements of Tigum River (2.9 km) and Aganan River (3.9 km) by widening the existing channels with slope protection, improvement of the Iloilo River (4.0 km) with the provision of dike/floodwall, improvement of the Jaro River Mouth (5.5 km) with dike/bank protection works, and improvement of Upper Ingore Creek (3.0 km) by deepening and widening.

JBIC Loan Agreement (PH-P230) was signed on 28 March 2002 with the expiry date of 24 September 2010. Original implementation period is 5.0 years starting from 2002 up to 2007 consisting of the 1.5-year pre-construction and 3-year construction periods and the 0.5 year training on operation and maintenance. The construction of the project is being implemented under four (4) contract packages, as follows:

(1) Package 1: Construction of Jaro Floodway and Improvement of Tigum/Aganan River (ongoing)

(2) Package 2: Improvement of Iloilo River, Jaro River Mouth and Upper Ingore Creek (ongoing)

(3) Package 3: Development of Relocation Sites for Stage I (completed in 2004)

(4) Package 4: Development of San Isidro Relocation Site for Stage II (not bidded yet)

The total project cost of Php 4,262 million has been approved as specified in the Minutes of Discussions (MOD) between DPWH and JBIC signed on November 23, 2001. Of this original total project cost, the Japanese yen loan covers 70% (Php 2,952 million) and the local counterpart funds cover 30% (Php 1,310 million) respectively. The JBIC loan of ¥6,790 million (equivalent to Php 2,952 million) is financed to the project based on the exchange rate of ¥2.3 to Php 1.0 (US$1.0 = ¥122 = Php 53.0) under Loan Agreement No. PH-230 dated March 28, 2002. Based on the above financing procedure, the FOA

(Forward Obligation Authority) of the same amount (Php 4,262 million) has been issued for the Project by the DBM.

Table RA 1.17 Loan Amount for Iloilo Flood Control Project

Category		Original (March 28, 2002)
A.	Civil Works and Procurement of Equipment/Materials	4,899 million Yen
B.	Consultancy Services	1,401 million Yen
C.	Contingency	490 million Yen
	Total	6,790 million Yen
	Peso Equivalent (Php 1.0=¥2.3)	P2,952 million
	Loan Expiry Date	March 27, 2010 (8 years)

1.4.3 Implementation Arrangement

The Department of Public Works and Highways (DPWH) is implementing the project through the Project Management Office for Major Flood Control and Dtainage Projects, Cluster I (PMO-MFCP I).

The consultancy services for the Project have been divided into 2 components. The objectives of each consulting engineering service are to carry out the following:

Component I

(1) Construction supervision of the Project including the environmental monitoring;

(2) Construction supervision of the infrastructure development of the relocation sites for Stage I and Stage II; and

(3) Technical assistance services for operation and maintenance works including preparation of manuals and implementation of training on appropriate Operation and Maintenance works after the completion of construction.

Component II

(1) Assistance in the resettlement of Project Affected Families (PAFs) including the preparation of livelihood programs for the PAFs;

(2) Information campaign on flood control and the prevention of illegal waste disposal to the tivers;

(3) Study on the sediment condition in the upper basin; and

(4) Study on the improvement plan of the solid waste management program, specifically, for the project's sustainability,

1.4.4 Issues and Causes on the Iloilo Flood Control Project

(1) Issue: Delay of Construction Work

This Project started in October 2002 with pre-construction services (design review and bidding). According to the original schedule agreed between JBIC and DPWH, time of contractor procurement is to be 10 months. However, 10 months are actually not enough for bidding based on previously conducted bidding procedures. As for the selection of contractors of major packages (CP-1 and CP-2), it actually started in June 2003 which was about 2 months behind the schedule. Then, the NTP (Notice to Proceed) was issued in March 2006. The delay on the start of construction was 2 years and 8 months. This delay included the 1 year suspension of the project (bidding activities) due to budgetary constraint of the national government.

(2) Issue: Increment of Project Cost

The total project cost had increased and the summary of the cost increments are as tabulated in the following table compared with the originally approved Project Cost.

Table RA 1.18 Summary of Revised Project Cost of Iloilo Flood Control Project

Unit: Amount in Million

Component	Original		Revised		Difference		Increase (%)
	Loan (Yen)	Pesos	Loan (Yen)	Pesos	Loan (Yen)	Pesos	
1. Civil Works		2,343		3,190		+847	+36%
Loan	4,899	2,130	5,389	2,151	+490	+21	+1%
GOP		213		1,039		+826	+388%
2. Consultancy		670		647		-23	-3%
Loan	1,401	609	1,401	631	0	+22	+4%
GOP		61		16		-45	-74%
3. ROW		899		1,500		+601	+67%
Loan							
GOP		899		1,500		+601	+67%
4. Management		116		150		+34	+29%
Loan							
GOP		116		150		+34	+29%
5. Physical C.		234		100		-134	-57%
Loan	490	213		0		-213	-100%
GOP		21		100		+79	+376%
Total		4,262		5,587		+1,325	+31%
Loan	6,790	2,952	6,790	2,782	0	-170	-6%
GOP		1,310		2,805		+1,495	+114%
Exchange Rate	P1.0=¥2.3		P1.0=¥2.5 for CP-1&2 P1.0=¥1.81 for CP-3 P1.0=¥2.22 for Consultancy				

(3) Summary of Causes of Issues

The Project is on its seventh year of implementation as of 2009. Actual start of the Project was in October 2002. On the other hand, actual start of construction was in March 2006 which was 2 years and 8 months delayed from the original schedule of June 2003. The presently revised target completion date of December 2010 is approximately 3 years delayed from the original target date.

The causes of issues on such delay of construction works and increment of the project cost are attributed to the following compound reasons.

Table RA 1.19 Summary of Causes of Issues on Iloilo Flood Control Project

Causes	Description
Issues on Delay of Implementation	
Delays in deliberation of bidding	Actual bidding was started in June 2003, about 2 months behind schedule. Then, the NTP was issued in March 2006. The delay in the start of construction work was thus 2 years and 8 months.
Issues on the Increment of the Cost	
Additional scope for bridge construction	After the D/D, new subdivisions were developed where the alignment of floodway grazes. In addition, it was necessary to construct a new bridge for area prepared as relocation site for Stage II.
Fluctuation of Exchange Rates	From the advance payment for contracts to the end of April 2008, exchange rates fluctuated between P1.0=¥2.248 and P1.0=¥2.683. The trend of strength of Peso Currency affected the loan amount because the loan amount was decided based on the exchange rate P1.0=¥2.3.
Contract variation for Civil Works	Most of the additional budget for contract variation orders was due to modifications of detailed design to avoid ROW problems and further delay of completion and for easy maintenance after completion.
Increase in cost for ROW	Schedule of market values of properties has increased since 1998. The 1998 BIR Zonal Valuation is still being applied, but it is already far below the current market value.

1.4.5 Lessons Learned from the Iloilo Flood Control Project

Lessons learned from the Iloilo Flood Control Project are as described below.

(1) Improvement of the System of Formulation of Comprehensive Land Use Plan by LGUs

Based on the MOA between DPWH and Iloilo City, the contents and scopes of river improvement work, as well as the alignment of new river courses and floodway, were recognized and agreed by the LGU. However, the approved new subdivision projects have affected the project cost due to the additionally required structures or modification of design. This is attributed to the lack of accuracy of base data used by the LGU. Therefore, it is assumed that the project will provide guidance and assistance in the development planning of the LGUs concerned around the project sites.

(2) Well-Considered Unit Price Projection of ROW Acquisition

According to the explanation of the project cost increment, certain increments resulted from the increase in cost for ROW acquisition. It is necessary to take due

consideration of the unit price projection of land value. In addition, land zoning activities and regulation of land use by the LGUs are also essential.

1.5 Ormoc Flood Mitigation Project (Phase I & II)

Project Name	:	The Project for Flood Mitigation in Ormoc City (Phase I & II)
Japan Grant Aid Project	:	Phase I: Grant Amount: ¥1,111million Japanese Yen Phase II: Grant Amount: ¥2,144 Million Japanese Yen

1.5.1 Project Background

(1) Overviews

On 5 November 1991, Ormoc City was hit by a devastating flood brought by *Typhoon Uring*, which caused tremendous damage to the city, accounting for 4,922 deaths, 3,000 missing, 14,000 houses destroyed and more than Php 600 million worth of properties damaged.

Rehabilitation works have been carried out both by the national and local government right after the typhoon. However, these were the reconstruction of bridges and dikes. Major improvement works of the two (2) biggest rivers in Ormoc City, Anilao and Malbasag rivers, were left almost unattended, because of fund limitation. As a result, Ormoc City remained exposed to the menace of disastrous floods.

Upon the request of the Philippine Government (GOP), the Japan International Cooperation Agency (JICA), conducted the *"Study on Flood Control for Rivers in the Selected Urban Centers,"* including Ormoc City and vicinity. After completion of the JICA Study, the GOP made a request for financial Grant Assistance which the Government of Japan approved for the implementation of the *"Flood Mitigation Project in Ormoc City."*

The Detailed Design of the Project, Phase I, was completed in December 1997 and construction started in the early part of March 1998. Phase I of the project was completed on 15 March 1999.

Phase II of the Project was started 11 February 1999. The completion of Phase II was on 07 August 2001.

(2) Objectives

The objective of the rehabilitation and enhancement project is to enhance the function and sustainability of structures constructed in the Ormoc City Flood Mitigation Project so as to attain a safe and pleasant living condition in Ormoc City.

The avoidance of flood disasters like the 1991 Ormoc City Tragedy will be the most important contribution of the project. The effectiveness of the existing flood control structures will be hardly attained if the rehabilitation/enhancement works

will not be implemented. Hence, the benefit of the project will be the cost of the existing structures and the reduction of flood damage.

People living in the area will have peace of mind and will further improve their living standard as well as the environment. With the assurance of safety of Ormoc City from devastating floods, more investors and tourists will come to the city and economic activities will be more progressive. The implementation of the project will also generate jobs and related opportunities for the people of Ormoc City, as well as the whole region.

(3) Project Contract Packages

Project implementation was divided into two phases, as follows:

Table RA 1.20 Work Items of Each Phase of Ormoc Flood Mitigation Project

Phase	Work Item	Quantity/Specification	
		Anilao River	Malbasag River
Phase I	Slit Dam	2	1
	Bridge	3	2
Phase II	River Improvement	610m^3/s	330m^3/s
		1,930m	1,920m
	Drop Structure	3	5
	Sluice	2	0

1.5.2 Issues and Causes on the Ormoc Flood Mitigation Project

(1) Issue: Delay of Construction Work

In Phase II, the construction work was extended due to the ROW acquisition problem, as follows:

Table RA 1.21 ROW Issues on Ormoc Flood Mitigation Project

Issue		Schedule		Actual			
Delay of Completion		2001.03.31		2002.3.31			
Status	F/S	B/D		Construction			
Year	1994	1996		1998			
Site	All	Anilao	Malbasag	Phase I		Phase II	
Classification	All	All		Lot	Improv.	Lot	Improv.
Estimated No. of Relocations	200	211	154	46	77	239	690
(Total)	(200)	(365)		(767)			

(2) Issue: Stacked VAT Refund Claim

For Japan Grant Aid Projects, the VAT incurred by Japanese Contractor should be repaid. However, system procedures have disturbed the repayment of VAT.

1.5.3 Lessons Learned from the Ormoc Flood Mitigation Project

Lessons learned from the Ormoc Flood Mitigation Project are as described below.

(1) Necessity of Efforts to be taken by LGUs on ROW Clearance

As shown in Table RA 1.21, the construction work was delayed and the completion was fraught with the critical situation of incompletion within the expiry date in the E/N for the Project. Under this critical situation, all parties concerned have managed to solve the ROW issue and completed the Project within such expiry date in the E/N for the Project. These experiences should not be kept to themselves but be shared with the other parties such as the LGUs, DPWH, Consultants and Contractors.

(2) Dissemination of O&M Activities by LGU in coordination with DEO-DPWH

After the Project, all of the river facilities have been well-maintained and rehabilitated. The maintenance activities shouldered by the LGU as well as the harmonization of responsibilities for the river administrative system in a primary river between DPWH and the LGU should be disseminated nationwide.

1.6 Issues on Other Flood Control Projects

Besides the projects discussed above, there were issues on completed or ongoing flood control projects as described in the subsections below.

1.6.1 Issues on Delay of Project Implementation and Increment of Project Cost

(1) The Pasig-Marikina River Channel Improvement Project (Phase II)

The detailed engineering design was carried out from October 2000 to March 2002 under the 23rd JBIC Loan Package. After the detailed engineering design, the Chairman of MMDA still had a lot of queries that had to be addressed. This led to the conduct of a Value Engineering Study (VES) by the University of the Philippines Engineering Research and Development Foundation, Inc. - National Hydraulic Research Center (UPERDFI-NHRC) from June to September 2005. Results of the VES had been presented to NEDA and MMDA wherein project approval was made.

Based on the approved VES results, construction of the Project has been requested for financing under the 26th JBIC Yen Loan Package (STEP: Special Term Economic Partnership). JBIC Loan Agreement PH-P239 was signed on February 27, 2007. The additional design review for river structures as well as the revision of cost estimates was required to make adjustments on the estimated construction costs between 2002 and 2008 and to amend the stretches to be implemented since river bank conditions have changed.

(2) The Laoag River Basin Flood Control and Sabo Project

A series of four (4) typhoons affected the project area from July to August 2008. As a result of water level rising above the design flood level, continuous high river discharge and local erosion/deposits due to irregular sand bar movement, damage occurred to dikes, spur dikes and other river improvement structures/facilities during project implementation. DPWH was instructed to prioritize the

repair/rehabilitation of the damaged portion of the project during the NDCC Cabinet Level meeting held on August 26, 2008. As of 2009, the Office of the President has given assurance of rehabilitation budget in response to the request from DPWH. The damages also involved the issue on responsibilities for O&M between DPWH and the LGU (Multi-Agency). Therefore, a MOA on O&M has been drafted, but not concluded yet.

DPWH has prepared minimum requests on the frequency of inspections, inspection items, proposed works and work categories and responsibilities for O&M work together with assumed costs in detail. The Draft MOA will be concluded based on the compliance with the minimum requests.

1.6.2 Issues on No or Lack of O&M Activities

Currently, it is striking that O&M activities for completed river facilities are quite insufficient. Detected actual site conditions are as enumerated below:

- Gates in front of sluices to prevent inundation in protected area from backwater of main rivers as well as appurtenant facilities such as steel stairs, hoists and spindles are heavily rusted and deteriorated. In fact, these present conditions have crippled their functions and effectiveness.
- Due to resettlement of returners or new informal settlers in and around river facilities, the river facilities constructed could not be maintained properly. Moreover, such returners or new informal settlers cause deterioration of facilities and decrease of flood mitigation effectiveness.
- Most of the river facilities constructed have lain neglected without minor maintenance, such as cutting grasses on slope of dikes, painting of iron/steel ware and supplementation of lubricants of mechanical equipment. These neglects result in the rapid degradation of river facilities. It is essential to conduct minor maintenance for longer operating life and reduce rehabilitation costs.

In taking this opportunity for implementation of the Sector Loan Project, the proper O&M activities should be proposed and created.

ANNEX 2 REVIEW OF PREVIOUS M/P AND F/S OF FLOOD MITIGATION PROJECT

2.1 Introduction

For the preliminary review before selection of the objective river basins for feasibility study (F/S) in this preparatory study for the sector loan on disaster risk management, data and information on river basins whose master plans (M/P) and/or feasibility studies (F/S) have already been carried out were collected (see **Table AR 2.1**). Based on the review, the outline of the M/P and the F/S is traced, and then the study on the possibility of application of the sector loan scheme is conducted. These river basins are listed in the manner of a Screening List of Objective River Basins, as described in Chapter 5 of Main Report. Core areas in each river basin are selected for adoption as candidate river basins for the sector loan project and then the priority project is studied.

Table AR 2.1 Candidate River Basins and the Related Studies

River Name	Collected Material
East Mangahan	- Feasibility Study on Flood Mitigation Project in the East Mangahan Floodway Area, DPWH 2007 - Implementation Program for Flood Mitigation Project in the East Mangahan Floodway Area, DPWH 2008
Meycauayan (VOM)	Implementation Program for drainage system improvement in VOM Area
Panay	- The Panay River Basin-wide Flood Control Study, JICA 1985 - The Feasibility Study on the Panay River Flood Control Project, JETRO 2002 - Updated Implementation Program on the Panay River Flood Control Project
Mindanao (Cotabato)	Nationwide Flood Control Plan and River Dredging Program, JICA 1982
Cagayan	- Master Plan Study on the Cagayan River Basin Water Resources Development, JICA 1987 - The Feasibility Study on the Flood Control Project for the Lower Cagayan River, JICA 2002 - Implementation Program for Cagayan Rover Flood Control Project, Phase I, Urgent River Bank Protection Work, DPWH 2008
Upstream of Agno	Study on Agno River Basin Flood Control, JICA 1991
Ilog-Hilabangan	- Study on Ilog-Hilabangan River Basin Flood Control Project, JICA 1991 - The Study on the Nationwide Flood Risk Assessment and the Flood Mitigation Plan for the Selected Areas, JICA 2008
Davao	The Study on the Nationwide Flood Risk Assessment and the Flood Mitigation Plan for the Selected Areas, JICA 2008
Bicol	Water Resources Management Plan Formulation and Phase I Project Feasibility Study for the Bicol River Basin, WB 2003
Guagua	The Study on the Nationwide Flood Risk Assessment and the Flood Mitigation Plan for the Selected Areas, JICA 2008
Cavite	The Study on Comprehensive Flood Mitigation for Cavite Lowland Area, JICA 2009
Tuganay	The Study on the Nationwide Flood Risk Assessment and the Flood Mitigation Plan for the Selected Areas, JICA 2008
Iloilo (Stage II)	Detailed Engineering Design of Iloilo Flood Control Project, Phase I, DPWH 2000
Bataan (Dinalupihan)	- Pre-Feasibility Study on Dinalupihan-Hermosa - Lubao Flood Control and Regional Development Plan, BCDA 2005 - (Draft) Feasibility Study on Dinalupihan - Hermosa - Lubao Flood Control Component of the Regional Development Plans of the Provinces of Bataan and Pampanga, DPWH 2009
Others	Nationwide Flood Control Plan and River Dredging Program, 1982

2.2 Panay River Basin

2.2.1 Previous Study

The Master Plan Study was carried out by JICA in 1985. The proposed measures for flood control in the Master Plan are composed of structural measures such as river improvement, construction of floodway, polder dikes and multipurpose dams, and non-structural measures such as flood plain management, resettlement plan and installation of flood forecasting and warning system.

The Japan External Trade Organization (JETRO) conducted a feasibility study on the major parts of the urgent project proposed in the M/P in 2002.

2.2.2 F/S Project

Design Scale: 25-year return period

The targets of the JETRO F/S were the structural measures proposed by the JICA M/P composed of the floodway and river improvement of the Pontevedra and Panay rivers and the non-structural measures composed of flood forecasting and warning system covering the whole Panay river basin.

Table AR 2.2 Panay River Flood Control Plan

Contents	Project Cost (Million Pesos) (Price Level : Year 2001)		
	Total	FC	LC
Floodway, River Improvement and Flood Forecasting and Warning System	5,160	2,560	2,600

Source: The Feasibility Study on the Panay River Flood Control Project, JETRO 2002
Note : Including Compensation Cost and Contingencies (Price Escalation and Physical Contingency)
FC denotes the foreign currency component; LC is the local currency component.

Based on the above, DPWH prepared the Implementation Program (I/P) to propose the floodway and the flood forecasting and warning system as the Phase I Project and river improvement as the Phase II Project.

Therefore, the Phase I Project is examined as a candidate for Sector Loan application. **Figure A2.1** shows the location of each measure, and the project evaluation is summarized below.

Table AR 2.3 Project Evaluation of Phase I Project of Panay River Flood Control Project

Construction Cost (million Pesos)	EIRR (%)	B/C	NPV (million Pesos)	Land Acquisition (ha)	House Relocation (No.)
4,505	17.7	1.23	553	424	164

Note: Price level 2003

2.3 Mindanao River Basin

The M/P was formulated in the project called "Nationwide Flood Control Plan and River Dredging Program" in 1982. The M/P proposed a short-cut channel for the downstream of Cotabato City and embankment of tributary against a 100-year return period flood.

Moreover, river dredging, embankment and revetment against 25-year return period flood were proposed as First Phase Plan in the M/P. Therefore, this first phase plan is examined as a candidate for Sector Loan application. The outline of the plan is as follows.

Table AR 2.4 Project Evaluation of First Phase Plan of Mindanao River Flood Control Project

Construction Cost (million Pesos)	EIRR (%)		Land Acquisition (ha)	House Relocation (No.)
	Present	Future		
1,296	9.2	12.7	2,692	260

Note: Price level 1982

2.4 Cagayan River Basin

2.4.1 Previous Study

The M/P study for the whole Cagayan river basin was carried out in 1987. Framework plans including flood control dams in upstream against a 100-year return period flood and Long-Term plans consisting of dike embankment, narrow excavation, cut-off channel works, bank protection, flood control dams, evacuation system and resettlement plan were formulated in the M/P.

In addition, the F/S was conducted to review the M/P of 1987 and to carry out the F/S for the flood control project in the Lower Cagayan River in 2002.

2.4.2 F/S Project

Design Scale: 25-year return period

Flood control structural measures are planned to be implemented in four phases as presented in **Figure A2.2**. According to the table below, total project cost is over 15 billion pesos, which is very much higher than the capacity for this Sector Loan Project.

Table AR 2.5 Lower Cagayan River Flood Control Plan

Phase	Projects	Project Cost (million Pesos) (Price Level: Year 2001)		
		Total	FC	LC
1	Urgent bank protection (21 sites), River bank (three zones), Dike systems (river mouth to Magapit)	2,786	1,448	1,339
2	Dike systems (Magapit to Amulung); Gabut cut-off channel	2,828	1,445	1,383
3	Dike systems (Amulung to Tuguegarao); San Isidro cut-off channel	4,420	2,337	2,087
4	Dike systems (Tuguegarao to Cabagan); Tuguegarao cut-off channel	5,347	3,156	2,190
	Total	15,381	8,385	6,996

Source: The Feasibility Study on Flood Control Project for Lower Cagayan River, JICA, 2002
Note : Including Compensation Cost and Contingencies (Price Escalation and Physical Contingency)

2.4.3 Conceived Core Area Protection for Sector Loan Application

It is necessary to select the core area based on the idea of "core area protection" to apply the flood control measures of the Cagayan River as a sector loan project. Tuguegarao City, which is the capital of Cagayan Province as well as the regional capital city of Region 2, is selected as a core area.

Therefore, Phase 4 to protect Tuguegarao City was reviewed. There were the following three (3) alternatives for Phase 4:

Alternative 1: Improvement of the present Cagayan river channel and construction of two dike systems (Tuguegarao and Enrile)

Alternative 2: Construction of Tuguegarao diversion channel and one dike system (Tuguegarao)

Alternative 3: Construction of cut-off channel (Tuguegarao) and two dike systems (Tuguegarao and Enrile)

These three alternatives are shown in **Figure A2.3**, and the project evaluation is summarized below.

Table AR 2.6 Project Evaluation of Three Alternatives of Phase 4

Case	Construction Cost (million Pesos)	EIRR (%)		Land Acquisition (ha) *1	House Relocation (No.) *1
		Present	Future		
1	2,011	15.3	26.0	11	270
2	16,025	4.1	10.5	858	360
3	4,975	16.4	27.6	516	0

*1: According to the F/S report, this value was based on the preliminary study for each alternative.

The F/S in 2002 proposed Alternative 3 as the optimum one for Phase 4 in **Table AR 2.5**.

While considering Alternative 3 as optimum plan in the 2002 F/S, the revetment and dike systems in Alternative 1 that can be applied to the Sector Loan will be examined in this

Preparatory Study because it is difficult to execute the proposed Alternative 3 judging from the total cost of about 6 billion pesos.

2.5 Upstream Agno River Basin

2.5.1 Previous Study

The M/P study and F/S were carried out for Agno River and Allied Rivers (Cayanga-Patalan River and Pantal-Sinocalan River) from the right bank side of Agno River to Lingayen Gulf in 1991.

The M/P is composed of two-stage plans: the Framework Plan, which was set for a 100-year probable flood for the Main Agno River and Tarlac River and a 50-year probable flood for the other tributaries of Agno and the Allied rivers, and the Long Term Plan, which was set for a 25-year and 10-year respectively.

2.5.2 F/S Project

Design Scale: 10-year return period

The Upper Agno River is planned to be protected with river improvement works and flood retarding basin as the priority project in the M/P. The proposed flood control plan is divided into 4 components as shown in **Figure A2.4**, and the total project cost is 3.9 billion pesos under the year 1991 price level.

Table AR 2.7 Upper Agno River Flood Control Plan

Stretch	Components	Project Cont (million Pesos) (Price Level: Year 1991)		
		Total	FC	LC
A-1	River Improvement (Bayambang-Alcala) and Flood Retarding Basin	2,148	1,154	994
A-2	River Improvement (Alcala-Rosales)	708	374	334
A-3	River Improvement (Rosales-Asingan)	519	294	226
A-4	River Improvement (Asingan-San Manuel)	538	261	227
	TOTAL	3,913	2,083	1,831

Source: Study of Agno River Basin Flood Control, JICA, 1991
Note : Including Compensation Cost and Contingencies (Price Escalation and Physical Contingency)

The project for the A-1 stretch has been implemented under JBIC Loan "Agno River Flood Control Project (Phase II-B)." The A-2 to A-4 stretches have not started yet, and the project cost is estimated at 1,765 million pesos under year 1991 price level.

2.5.3 Core Area Protection for Sector Loan Application

It is necessary to select the core area based on the idea of "core area protection" to apply the flood control measures of the Upper Agno River as a sector loan project.

However, the continuous levee along the right side of Upper Agno River, as well as the countermeasures for the Allied rivers, are required due to the feature of flood inundation

that the flood runoff from the upstream of Agno River is partly diverted and/or overtopped into the Allied river basins as shown in **Figure AR 2.1**.

Therefore, all the remaining stretches are examined as a candidate for Sector Loan application. The project evaluation is summarized below.

Table R 2.8 Project Evaluation of Upper Agno River Flood Control Project

Project Cost (million Pesos)	EIRR %	NPV million Pesos	Land Acquisition (ha)	House Relocation (No.)
1,765	20.6	976	628	374

Note: Price level 1991

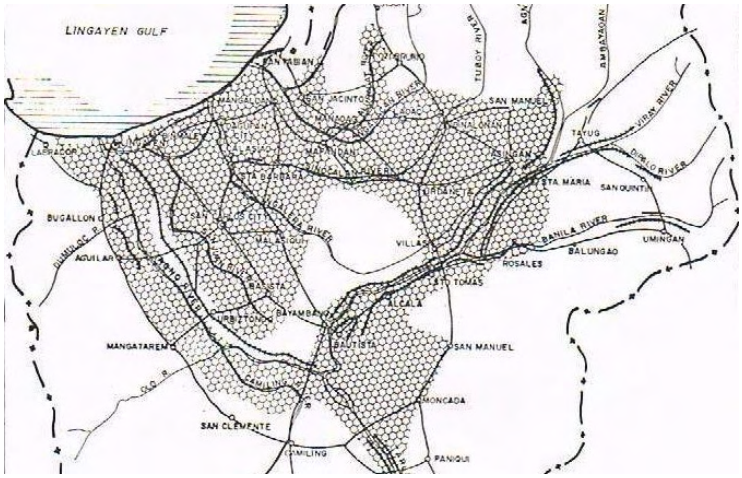


Figure AR 2.1 Inundation Area of Agno River Basin (1984 flood)

2.6 Ilog-Hilabangan River Basin

2.6.1 Previous Study

The M/P study on the flood control project for the whole Ilog-Hilabangan river basin was conducted in 1990. River improvement along the present river channel was proposed as the optimum one against a 100-year probable flood, and the project cost was estimated at 1,253 million pesos under year 1990 price level.

Ilog-Hilabangan River was selected as a model river and the review on the flood control plan including the M/P was conducted in the Nationwide Flood Risk Assessment Project in 2008.

2.6.2 Flood Control Plan

Design Scale: 25-year return period

The Nationwide Flood Risk Assessment Project in 2008 reviewed the M/P of 1990 and estimated the project cost at 2,106 million pesos at year 2007 price level assuming that river improvement of main channel of Ilog River is implemented.

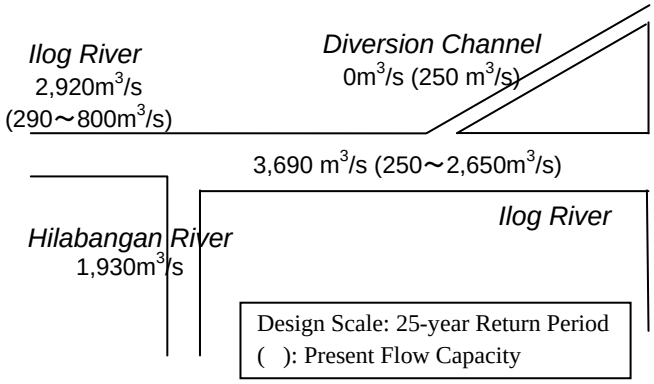


Figure AR 2.2 Design Discharge Distribution in the Ilog-Hilabangan River Basin

The diversion channel in **Figure AR 2.2** was constructed in 1999, with the provision of short-cut channel (3 places), channel dredging and bank revetment along the old Ilog River.

Table AR 2.9 Project Evaluation of Ilog-Hilabangan River Flood Control Project

Project Cost (million Pesos)	EIRR (%)	B/C	NPV (million Pesos)	Land Acquisition (ha)	House Relocation (No.)
2,160	18.9	1.31	269	221	354

Note: Price level 2007

If the river is selected as a target of F/S in this Study, the flood control plan should be studied taking the core area into consideration.

2.7 Davao River Basin

There is no study regarding the flood control plan for the Davao River. The Nationwide Flood Risk Assessment Project in 2008 roughly estimated the cost at 1,369 million Pesos for the project that is assumed to implement river improvement along Davao River. However, river embankment and river channel widening are necessary in the Davao City stretch and it turned out that more than 1,000 houses might be relocated through the brief investigation of satellite images.

2.8 Bicol River Basin

2.8.1 Previous Study

The following Feasibility Study on water resources management in the Bicol river basin was carried out by the World Bank.

Stage 1 Formulation of Scenarios/Options for the Water Resources Plan

Stage 2 Consultations and Finalization of the Basin Plan

Stage 3 Preparation of "Phase 1 Project, Stage 1"
Formulation of Scenarios/Options for Stage 2

2.8.2 Flood Control Plan

The flood control plan proposed in the above study is summarized below.

Table AR 2.10 Bicol River Flood Control Plan

Item No.	Contents	Project Cost (million Pesos) (Price Level: Year 2003)		
		Total	FC	LC
1	Libumanan-Cabusao Flood Dike Rehabilitation Works	245	171.7	73.6
2	Naga-Calabanga Flood Dike Rehabilitation Works	81	56.7	24.3
3	Quinali Flood Diversion Channel Works	432	302.2	129.5
4	Quinali and Talisay Flood Dike Construction Works	102	71.4	30.6
	Total	860	602	258

Source: Water Resources Management Plan Formulation and Phase I Project Feasibility Study for the Bicol River Basin, WB 2003

FC denotes the foreign currency portion; LC is local currency portion.

This project is examined as a candidate of F/S for Sector Loan application.

2.9 Guagua River Basin

2.9.1 Previous Study

The nationwide flood risk assessment project in 2008 roughly estimated the cost of 31,715 million pesos for the project that is assumed to implement river improvement along the Guagua River.

2.9.2 Core Area Protection for Sector Loan Application

Angeles City is selected as a core area for Sector Loan Application and the required river improvement to protect the core area is estimated to be about 10 km and the project cost is roughly estimated at 2,300 million pesos under year 2003 price level.

2.9.3 Site Investigation

The JICA preparatory study team conducted site investigation for the Guagua River on April 21, 2009 due to less data and information on this river. As a result, the team obtained the following information.

(1) In and Around the Municipality of Guagua

The Municipality of Guagua is located at the downstream of Pampanga Delta. According to the residents along the river, they have been suffering from perpetual flood during heavy rain and/or typhoon. Under the circumstances, DPWH Region III started the "Third River Dredging Project" for the dredging volume of about 1.6 million m^3, and they are implementing river dredging of rivers in and around the Municipality of Guagua and reclamation of the lowland area.

(2) In and Around Angeles City

The JICA preparatory study team visited the Angeles City Hall to confirm the flood condition in Angeles City. According to the planning division of the city, sedimentation of the river flowing in the city which is a tributary of Guagua River is at present moderate and a large flood has not occurred recently although a large amount of sediment was deposited after the eruption of Mt. Pinatubo.

2.10 Cavite River Basin

2.10.1 Previous Study

M/P and F/S were conducted for three (3) river basins in Cavite Province (Imus, San Juan and Canas) in 2009.

2.10.2 Flood Control Plan

To cope with the complex factors of vulnerability to floods in the Study Area (the extremely low ground elevation, the high tide, the insufficient flow capacity of the river/drainage channels and the current excessive urbanization), a comprehensive flood mitigation plan is proposed, including a variety of structural and non-structural project components. The measures to mitigate river overflow flood are designed to cope with a flood of 10-year return period for the mainstreams of Imus and San Juan rivers. As for inland drainage improvement, the proposed structures are designed to cope with a flood of 2-year return period and protection against high tide is by the tidal gate with height of 1m higher than the maximum tide level.

Table AR 2.11 Flood Control Plan in Cavite Lowland Area

Plans	Objective Area	Deign Scale (Return Period)*1	Project Cost*2 (million Pesos)		EIRR (%)	No. of House Evacuation
			Implementing Agency	Land Developer		
River Overflow Flood	Imus river basin	10	2,855	2,826	32.4	275
	San Juan river basin	10	1,445	1,508	20.7	74
Inland Flood	Entire drainage area	2	2,560	378	8.1	121
Total			6,860	4,712	22.2	470
Annual O&M Cost			35	36	-	-

Note: *1: The design scales of two tributaries of Imus, namely Bacoor River and Julian River, are limited to 2-year return period and 5-year return period respectively due to the limited available flow capacity of the river channel.

*2: The costs above are exclusive of Price Contingency; otherwise, the costs in parentheses show grand total grand costs under all considerations. The price level is year 2007.

2.10.3 F/S Project

F/S for the priority project in the above M/P was carried out. Three (3) flood retarding basins (RB-I1 along Imus River, RB-B4 along Bacoor River and RB-J1 along Julian River) are selected as the priority project of structural measure against river overflow, as shown in **Figure A2.5**.

Table AR 2.12 Project Cost of Priority Project

Item No.	Contents	Project Cost (million Pesos) (Price Level : Year 2008)		
		Total	FC	LC
1	Imus Retarding Basin (RB-I1)	808	270	537
2	Bacoor Retarding Basin (RB-B4)	311	106	205
3	Julian Retarding Basin (RB-J1)	622	210	412
	Total	1,740	586	1,154

Source: The Study on Comprehensive Flood Mitigation for Cavite Lowland Area, JICA 2009
FC denotes the foreign currency component; LC is the local currency component.

Table AR 2.13 Project Evaluation of Cavite Priority Project

Project Cost (million Pesos)	EIRR (%)	Land Acquisition (ha)	House Relocation (No.)
2,120	29.6	81	14

Note: Price level 2008

This priority project is examined as a candidate for Sector Loan application.

2.11 Tuganai River Basin

2.11.1 Previous Study

Tuganai River was selected as a model river and the flood control plan was examined (Pre-F/S level) against a 25-year probable flood in the Nationwide Flood Risk Assessment Project in 2008. The project cost was roughly estimated at 2,669 million pesos to implement river widening and embankment and construction of flood retarding basin.

2.11.2 Pre-F/S Project

Design Scale: 25-year return period

The flood control project proposed through the field reconnaissance and workshop is as shown below.

Table AR 2.14 Tuganai River Flood Control Plan

Objective River Name	Contents	Project Cost (million Pesos) (Price Level: Year 2007)
Tuganai River	River Improvement + Retarding Basin	1,537
Anibongan River	River Improvement	674
Ising River	River Improvement + Retarding Basin	457
	Total	2,669

Source: The Study on the Nationwide Flood Risk Assessment and the Flood Mitigation Plan for the Selected Areas, JICA, 2008
Note: Including Compensation Cost and Contingencies (Price Escalation and Physical Contingency)

2.11.3 Core Area Protection for Sector Loan Application

The Municipality of Carmen is selected as a core area for the application on Sector Loan. Carmen is located along Ising River which is a tributary of Tuganai River. The following contents are assumed for the protection against floods as shown in **Figure AR 2.3**:

- River improvement of Ising River and Old Ising River (Contents for Ising River are in **Table AR 2.14**)
- Flood Retarding Basin (Contents for Ising River are in **Table AR 2.14**)
- Heightening of road embankment located at north side of Carmen (Protection against inflow of floodwaters from Tuganai River)

Figure R 2.3 Core Area Protection in Tuganai River Basin

Project cost is roughly estimated at 600 million pesos based on the above assumption, and this project is a candidate objective river basin for the Sector Loan.

2.12 Iloilo River Basin

2.12.1 Previous Study and Project

As for the necessity of integrated flood control plan for rivers flowing in provincial capitals, thirteen (13) local cities were listed and the M/P study on flood control for the Iloilo River, which flows in Iloilo City, was completed in 1993 while the F/S was conducted in 1995.

Eventually, the Iloilo Flood Control Project (Phase I and Phase II (Stage I)) has been started with JBIC Loan and Phase III (Stage II) is waiting for implementation.

2.12.2 Flood Control Plan

Design Scale: 50-year return period

The outline of the flood control plan is shown in **Figure A 2.6** and as follows.

Table AR 2.15 Iloilo River Flood Control Plan

Work Site	Scope of Work	
	Stage 1	Stage 2
River Improvement of Jaro River		
Tigum River	Raising of banks and stretching of alignment	
Aganan River	Raising of banks and stretching of alignment; Excavation of cut-off channel	
Jaro Floodway	Excavation and embankment	
Jaro River (middle section)		Raising banks and stretching alignment
Jaro River (mouth section)	Raising of banks and stretching of alignment	Construction of La Paz Floodway
River Improvement of Iloilo River		
Iloilo River	Raising of both banks and development of riverside park	Dredging of river channel
Dungon Creek		Raising of banks and stretching of alignment
Improvement of Urban Drainage System		
Urban Drainage Channel	Upper Ingore Creek	Lower Ingore creek, Rizal Creek and Bo. Obrero Creek
Project Cost (million Pesos) (Price Level: Year 2000)	4,262	4,290

However, the priority of Stage II for the Sector Loan is not high because a 25-year return period of safety level of flood control is already secured by Stage I.

2.13 Bataan (Dinalupihan-Hermosa-Lubao) River Basin

2.13.1 Previous Study

The Subic-Clark-Tarlac Expressway Project (SCTEP) implemented by the Bases Conversion Development Authority (BCDA) had prepared the following reports on floods:

- Probable Dredging Study for Almasen River System, July 2003
- The Dinalupihan Flood Study Report, October 2003
- Supplemental Report on Hydraulic Analysis, October 2003

Moreover, BCDA had carried out a Pre-F/S on flood control for the Dinalupihan, Hermosa and Lubao areas and proposed implementation of subsequent F/S.

In response, DPWH conducted the F/S and submitted a draft final report in March 2009. DPWH held a seminar to explain the results of the F/S to the LGUs in Balanga City, capital of Bataan Province, on May 15, 2009 and obtained their acknowledgement of the plan.

2.13.2 F/S Project

Design Scale: 25-year return period

According to DPWH's draft final report, the selected optimum plan shows the highest economic efficiency among the three (3) alternatives. The plan is divided into three (3) phases, as shown in the table below.

Table AR 2.16 Flood Control Plan in Bataan (Dinalupihan-Hermosa-Lubao)

Phase	Contents	Project Cost (million Pesos) (Price Level: Year 2008)
1 (Urgent)	Dredging of river estuary (Almacen River); Sabo works in upstream of Caulaman River	682
2 (Short-Term)	Construction of Layac Diversion and River improvement	611
3 (Medium)	River improvement (Almacen River and Caulaman River)	1,183
	Total	2,476

Source: (Draft) Feasibility Study on Dinalupihan-Hermosa-Lubao Flood Control Component of the Regional Development Plans of the Province of Bataan and Pampanga, DPWH 2009
Note : Including Compensation Cost and Contingencies (Price Escalation and Physical Contingency)

2.13.3 Core Area Protection for Sector Loan Application

Phase 1 and Phase 2 are selected for the application of Sector Loan. The possibility of Phase 3 implementation depends on the combination of other rivers and the project costs.

2.14 Tagoloan River Basin

2.14.1 Previous Study

The M/P was formulated in the project called "Nationwide Flood Control Plan and River Dredging Program II" in 1982. The M/P proposed a construction of flood protection dikes on both sides at approximately 10km long for the downstream of Tagoloan River together with dredging works.

2.14.2 Flood Control Plan

Design Scale: 25-year return period

In the M/P, flood control scheme against a flood corresponding to 50-year return period was proposed as the Basic Plan and compromised flood control plan against 25-year return period flood was also proposed as the First Phase Plan. These flood control plan in the M/P has already been concentrated into downstream stretches in the Tagoloan River Basin. The plan aimed at the flood damage mitigation in the Municipality of Tagoloan.

If the river is selected as a target of F/S in this Study, the flood control plan should be studied taking the core area into consideration and the these flood control plan could be adopted to one of the candidate Sub-Projects in Sector Loan Project.

ANNEX 3 SAMPLE MOA

Sample MOA on Project Implementation for the Sector Loan Project on Disaster Risk Management

(at immediate after the F/S)

(To facilitate Project Implementation)

Note:

- A MOA between DPWH and the LGU concerned (and DENR, in case also concerned) shall be submitted as required, together with the concurrence of JICA and NEDA on the implementation of each Sub-Project of the Sector Loan Project on Disaster Risk Management.
- It is deemed that clauses marked as Mandatory are indispensable in the MOA.
- It is deemed that the clauses marked as Recommended might be required as indispensable in the MOA.
- The reason for modification of passages in any clause of the MOA might be asked by JICA prior to concurrence.
- During Project Implementation, the LGU shall be required to conclude two (2) MOAs with the DPWH. The contents of the First MOA shall be as described and specified in this Sample MOA and concluded in advance of the endorsement of ICC and concurrence of project implementation by JICA.
- The Second MOA shall be prepared as Supplemental Agreement (S/A) containing the responsibility/s for O&M activities and sustainability of the project. For the contents of the S/A, please refer to another Sample MOA.

MEMORANDUM OF AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

This **MEMORANDUM OF AGREEMENT** made and entered into this *date* day of *month, year,* at the City/Municipality of ***Name of City/Municipality,*** by and between:

Mandatory

The **DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS**, represented herein by its Secretary/Authorized Representative, the Honorable ***Name of Secretary or Authorized Representative***, with principal office address at Bonifaclo Drive, Port Area, Manila, Philippines, hereinafter referred to as the **"DPWH";**

Recommended

The **Department of Environment and Natural Resources**, represented herein by its Secretary or Authorized Representative, the Honorable ***Name of Secretary or Authorized Representative*** with principal office address at Visayas Avenue, Quezon City, Philippines, hereinafter referred to as the **"DENR".**

- and -

Mandatory

The **CITY/MUNICIPAL GOVERNMENT OF *Name of City/Municipality***, represented herein by the City/Municipal Mayor, the Honorable ***Name of Mayor***, with principal address at *Office Address of City/Municipality*;

WITNESSETH

Background

Whereas, it is essential to alleviate the damages caused by natural disasters, especially by flood, one of the major causes of poverty that also hamper the socio-economic development of the country. To this end, the Government of the Philippines (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);

Background

Whereas, in the previous study conducted by DPWH and JICA in 2008, known as "The Nationwide Flood Risk Assessment Study," 56 river basins were selected and arranged in the order of priority as the 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 in the other basins also desire the implementation of flood protection measures in even such middle level priority river basins believing that flood disasters will occur in all river basins;

Necessity

Whereas, the ***Name of River*** which was one of the rivers with middle level priorities that had waited for a long time to receive funding for

project implementation, has been selected as one of the priority river basins and the Feasibility Study (hereinafter referred to as the "F/S") to mitigate the damages in the core areas, or the areas referred to as the center of population, assets and properties in the regions, against floods of a certain probable scale has been conducted;

Necessity

Whereas, the DPWH seeks to undertake the implementation of the ***Name of River*** Flood Control Project as one of the sub-projects in "**the Sector Loan Project on Disaster Risk Management**" consisting of river improvement works (*please specify contents of actual works, such as construction of dike, dredging, widening of river, etc.*);

Necessity

Whereas, the City/Municipal Government of ***Name of City/Municipality*** has requested the DPWH to let the national government, through the DPWH, to undertake the implementation of the project for and in its behalf;

Mandatory

Whereas, prior to the implementation of the project, the relocation of informal settlers and the acquisition and compensation for the right-of-way of the project shall have to be completed, since their completion is a vital contributing factor to the smooth implementation of the Project;

Mandatory

Whereas, a cost-sharing scheme between the DPWH and the City/Municipal Government of ***Name of City/Municipality*** has been conceptualized, with the City/Municipal Government sharing in the cost of right-of-way acquisition, acquisition and development of resettlement sites, and construction of complementary drainage systems;

Mandatory

Whereas, it is stressed that non-structural measures in/around the areas to be protected by the project are indispensable items to achieve alleviation of flood damages, especially by floods beyond the design scale; and

Recommended

Whereas, it is also essential to consider consistency and harmonization with the IWRM Plan for the whole basin, because it has been noted that the perennial or the extraordinary scale of flood in the area might be caused by the deterioration of watershed management and unfair aqueous distribution in the basin.

Mandatory

NOW, THEREFORE, for and in consideration of the foregoing premises, a collaborative effort through a Memorandum of Agreement (MOA) needs to be effected between the concerned agencies and, in consideration hereof, the **PARTIES** to this ***Memorandum of Agreement*** hereby agree to jointly cooperate to ensure that the measures called for as aforementioned are undertaken, to wit:

A. That the City/Municipal Government of ***Name of City/Municipality*** shall:

Mandatory

1. Commit to generate and allocate more local resources in support of the implementation of the project;

Mandatory

(a) That the yearly allocation of the City/Municipality of ***Name of City/Municipality*** for informal settler resettlement to purchase and develop the resettlement area including minimum requirement infrastructures shall substantially cover those that will be affected by the proposed projects;

Recommended

(b) That the **City's/Municipality's** secondary drainage system that will be constructed under its regular budget shall complement the major works of the project in line with the project implementation;

Recommended

(c) That the **City/Municipal Government** is committed to provide the local technical and administrative personnel as may be required during the project implementation;

Mandatory

(d) That the **City/Municipal Government** shall be committed to appropriate **Actual Amount in Words Pesos (Php Amount in Arabic numerals .00)**[1] as its initial counterpart to be spread according to the implementation schedule of the project;

Recommended

(e) That the **City/Municipal Government** shall be committed to appropriate substantial sums for the implementation of the drainage program that will complement the main flood control project.

Mandatory

(f) That the **City/Municipal Government** shall be committed to shoulder the operation and maintenance of the Project at the present moment and the actual amount[2] shall be determined at the appropriate opportune moment during the implementation of the project as supplemental agreement of this MOA. As basic acceptance, most flood control facilities will be turned-over to the **City/Municipal Government** after completion of the project.

Mandatory

2. Create a ***Flood Mitigation Committee (FMC)***[3] composed of multiple-agency members to enhance/strengthen the publicity and awareness of the project:

Mandatory

(a) That the main purpose to create the ***Committee*** is to coordinate and facilitate the activities of the resettlement and acquisition of ROW in advance of the project implementation and to execute non-structural measures recommended during and after the construction of flood control facilities.

[1] Actual Amounts for the project implementation shouldered by LGU shall be determined through sincere discussions between DPWH and LGU. As reference, a year's worth of mean budget Local Development Fund (20% of Internal Revenue Allotment (IRA)) in the past 5 years is considerable.

[2] As reference, Ormoc City and Iloilo City have secured 2 million pesos and 5 million pesos respectively for annual maintenance costs.

[3] Any name can be chosen for the Committee as the City/Municipality desires. In addition, activation of C/MDCC may be acceptable instead of the creation of FMC.

Mandatory

(b) In this connection, the ***Committee*** shall set up a "query window" for the project at an appropriate location in the City/Municipal Hall.

B. That the DPWH shall:

Mandatory

1. Undertake the Detailed Design Engineering Services, Parcellary Survey, and Census/Tagging Survey together with the preparation of Resettlement Action Plan, and completion and construction of all stipulated scopes of work in the aforesaid project, subject to the endorsement of the ICC Board of the implementation of the project and concurrence of JICA that the project may be included as a part of the Sector Loan Project on Disaster Risk Management;

Mandatory

2. In coordination with DENR-*No. of Region* and the LGU, conduct information dissemination to beneficiary communities on the benefits of the project;

Recommended

3. Coordinate with the DENR on the establishment of IWRM for the ***Name of River Basin***, particularly with regard to the consistency and harmonization between Water Resource Plans and Flood Control Plans, taking into consideration the expected flood control project.

Recommended

4. Provide quarterly updates to the Regional Development Council (RDC) of Region *No. of Region* on the status of the project as well as the implementation of this MOA.

Mandatory

5. In close coordination with the ***City/Municipal Government***, identity the specific project area for the right-of-way acquisition, defining the manner by which the share of the ***City/Municipal Government*** shall be expended; and

Mandatory

6. Shoulder the remaining cost of the land acquisition only for the right-of-way and full construction cost of the project.

C. That the DENR-*Number of Region* shall:

Recommended

1. In close coordination with the DPWH, immediately evaluate the environmental and social consideration portions of the F/S report and advise the DPWH regarding the issuance of ECC/CNC for the project as soon as possible;

Recommended

2. Consider immediate formulation of the master plan and the action plan for the IWRM of ***Name of River*** to harmonize the basin development policy with the flood control measures; and

Recommended

3. Join the ***Committee*** to be established by the LGU as a key member and support/advise the LGU on the enhancement of non-structural

activities for the Project.

IN WITNESS WHEREOF, the ***PARTIES*** have hereto affixed their respective signatures on the date and at the place mentioned above.

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS By:	**CITY/MUNICIPAL GOVERNMENT OF *Name of City/Municipality*** By:
(Name of Secretary or Representative) Secretary, *or Position of Representative*	*(Name of Mayor)* Mayor

Recommended

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

By:

(Name of Secretary or Representative)
Secretary, or Position of Representative

Signed in the presence of:

(Name of Witness) *(Designation)*	*(Name of Witness)* *(Designation)*
(Name of Witness) *(Designation)*	*(Name of Witness)* *(Designation)*

ANNEX 4 BEST PRACTICE (STUDY ON PROGRAM FORMATION IN THE DISASTER PREVENTION SECTOR IN THE PHILIPPINES (MARCH 2008, JICA)

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

For the disaster prevention related to water, sediment, earthquake and volcano eruption, Japanese Government has been assisting for more than 30 years in a wide range. Through the out puts and lessens learned by these practices, it is necessary to designate the prioritization in order to maximize the effectiveness of the investment with the limited budget, and 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 by their own.

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

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

Many flood control projects have been formulated previously, through master plan and feasibility studies. However, when such projects proceed to implementation stage in a manner of financial assistance from the international funding agencies, they sometime delay for completion and take a longer time for completion requiring the increase of the project costs.

River improvement plans in most cases has been formulated in a manner of continuous dike from the river mouth to outlet of mountainous areas to protect flood prone areas. In this case, 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 volcano eruption, the following assistances 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 assistances could achieve the certain level of project targets. From now on, the major target in the disaster risk management sector is to be flood damage reduction; main objective of the sector is alleviation of flood damages..

表 A.2.1 これまでの主な治水事業における問題点

Type	プロジェクト名	施工時期	発生した直接的問題		教訓
			SAPI (1999)	プロジェクト進捗報告書等 Key Informantsへのインタビュー含	
有	カマナバ地区排水改善事業			事業実施の遅れ 入札審査の遅れ 用地取得問題及び移転者の再定住 水道・電線等の移設許可の遅れ 事業費の増加 予定価格を上回る入札価格(約P4億) 土木工事の追加変更	物価上昇費(Price Contingency)が事業費に与える影響の大きさの再認識 事業の便益と必要用地取得に関するステークホルダーへの啓発
有	メトロマニラ西マンガハン地区洪水制御事業	97-09	ローカルコントラクター、コンサルタント、LGU、PMOの不十分な事業実施能力と不十分な地籍測量 ROW取得の問題 ・不明確なROWの基準 ・不明確な土地登記 ・非正規居住者の増加	事業実施の遅れ 用地取得の遅延 用地取得/移転のための資金発出の遅れ 事業費の増加 円・ペソ交換レートの変更 土木工事の追加変更 コンサルティング費用の増加 用地補償費の増加 監理費の増加	土地利用計画と事業実施のより細かい協力関係 適正な用地補償費見積もり
有	アグノ川洪水制御事業 (I)	95-03	施行業者の能力不足 ROW取得の遅れ ・予算支出の遅れ 1998年の台風によるダメージ 設計変更 ・地質調査が不足していた ・等	洪水ゲートの運用規則の作成の必要性	
	アグノ川洪水制御事業 (II)	98-	Poponto遊水地の環境影響	事業実施の遅れ 用地取得の遅延 用地取得/移転のための資金発出の遅れ 下院議員からの事業による追加工事要請 事業費の増加 土木工事の追加・変更による費用増 用地補償費の増加	LGUとの土地利用計画の緊密な協力関係の必要性 DPWHの用地取得方針と裁判判例の公布
	アグノ川洪水制御事業 (IIB)	01-			
有	イロイロ洪水制御事業 (II)	02-	用地取得問題 非正規居住者の移転問題 コミュニティによる放水路建設の反対	事業実施の遅れ 入札審査の遅れ 事業費の増加 橋梁等の新規に必要な構造物による増額 円-ペソ交換率の変化 土木工事の追加変更 用地取得費/移転費	LGUによる都市計画策定の能力向上 適正な用地取得費用を算出する方法の必要性
有	パンパンガデルタ洪水制御事業 (I)	90-01	土地収用に関する問題 ・用地取得の大幅遅れ ・住民移転の遅延(Opposition) 反対運動 ・住民の計画への理解不足 ・地元政治の混乱 予算不足(30%以上のCost Overrun) ・設計変更 ・工事の停止 塩水遡上	SAPI報告書と同様 O&Mの実施能力が低い 河川施設の損傷が顕著	河川施設の維持管理活動の必要性
有	アグサン川下流域開発事業 (I)	97-04	施行業者の能力不足 ・サポートスタッフの不足 ・施工に必要な資金の不足 ・施工に必要な資機材・労働力不足 ・施工に必要な知識・経験不足 土地収用に関する問題 ・土地所有者が不明確 ・LGUsの能力不足	SAPI報告書と同様 O&MのためのMOAが締結	
有	マニラ地区洪水制御排水事業 (II)		ROWの問題 地質による設計変更 輸入材の遅延 DENRの許可取得の遅延 工事規制(トラック通行の日中規制) 残土処理場の未決定	・MMDAへの事業(維持管理)移管 ・無償リハビリの拒否	
有	ピナツボ火山災害緊急復旧事業 (I), (II)	97-06	長官による承認の長期間の待機 その他の承認プロセスの長期間の待機		
有	ピナツボ火山災害緊急復旧事業 (III)	08-	None because of D/D stage	現在D/D実施中	
有	ラオアグ川治水・砂防事業	01-		・建設時の台風による被災 ・用地取得に時間を要す	
有	パッシグ・マリキナ川河川改修事業 (I)	09-		D/D終了後(02)から工事まで7年 (MMDAによる工事の反対)	
無	オルモック(I), (II)	98-99 99-01 06-07		事業実施の遅れ 用地取得/移転に時間を要 VAT還付金問題	用地取得に係るLGUの位置づけの重要性 維持管理活動におけるDPWHとLGUの連携の重要性

表 A 2.2　治水事業の実施円滑化のために「フィ」国及びDPWHが実施してきた制度整備の変遷

項目	Description	Remarks	YEAR 1995-2015
			95 96 97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13
事業	パンパンガPhase I	Start in 1990 Completed	←
	ピナツボ緊急 I and II	Completed	
	アグノ緊急改修	Completed	
	メトロマニラ- 西マンガハン	Completed	
	アグノ川 (Phase IIA)	ongoing	
	アグノ川 (Phase IIB)	ongoing	
	ラオアグ川治水・砂防	Completed	
	カマナバ 地区排水対策	Completed	
	アグサン下流域 開発事業及び治水-Phase II	ongoing	
	イロイロ洪水対策 *(コンサルタンシーサービスの2コンポーネント化(非構造物対策の並行実施))*	ongoing	
	ピナツボ緊急 Project III	ongoing	
	パシグマリキナ川河道改修事業 *(広報活動をコンサルタンシーサービスに含む)*	ongoing	
	オルモック洪水軽減対策(無償)	Grant-Aid	
	メトロマニラ地区洪水予警報システム改善(無償)	Grant-Aid	
FCSEC Poject			
関連調査	Study on Institutional Capability Building (SAPI 調査)		*
	防災分野プログラム化促進調査(2004年)		*
	治水・砂防技術力強化プロジェクト中小河川治水事業実施体制改善調査(2004年)		*
	防災分野プログラム形成調査(2008年)		*
	The Study on Nation Wide Flood Risk Assessment and Mitigation Plan for Selected Areas in the Philippines		*
これまでに策定整備更新された法制度規則マニュアル	水法及びその施行細則	水法: 1976年制定	E
	災害管理能力強化とコミュニティの災害準備に関する国家プログラム策定法(PD1566)	1978年制定	
	DPWH　移転復興政策方針 (LARRIPP) (1999年第1版作成)	第2版 2004年 第3版 2007年	E R R
	地方自治法(RA7160)	Code 1991	
	共和国法 (R.A.8976)に基づくDPWH土地収用政策方針		E
	NCRにおける治水対策責任機関がDPWHよりMMDAに移管		E
	政府調達・入札改定法 (R.A. 9184)		E
	DPWH 事業時に発生する土地収用方法マニュアル		*
	DENRにおける河川流域管理事務所(RBCO)の創出		E
	DPWH 災害リスク管理のための運用マニュアル		*
	災害リスク管理法(案)上院案(2006~2009シリーズ) 下院案(上院・下院で各々別の案を検討・承認)	PD1566の改訂版	AS AC
	河川流域委員会の創出(案):(現在下院で議論中)		DC

事業の実施　　E　創出
事業延長　　R　改定
AS　上院で承認　　*　発行
AC　下院で承認　　→　延伸
DC　下院で議論中