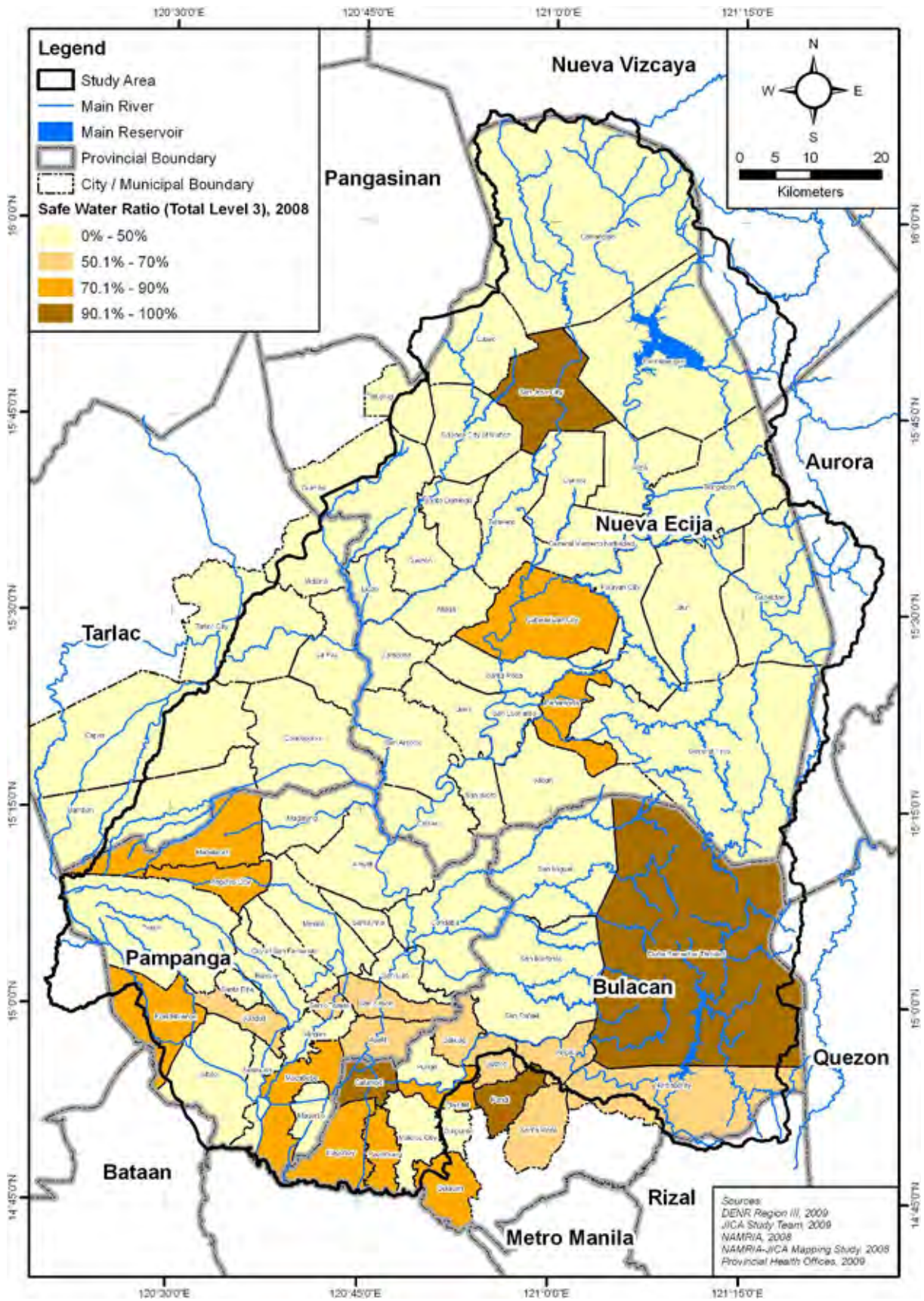
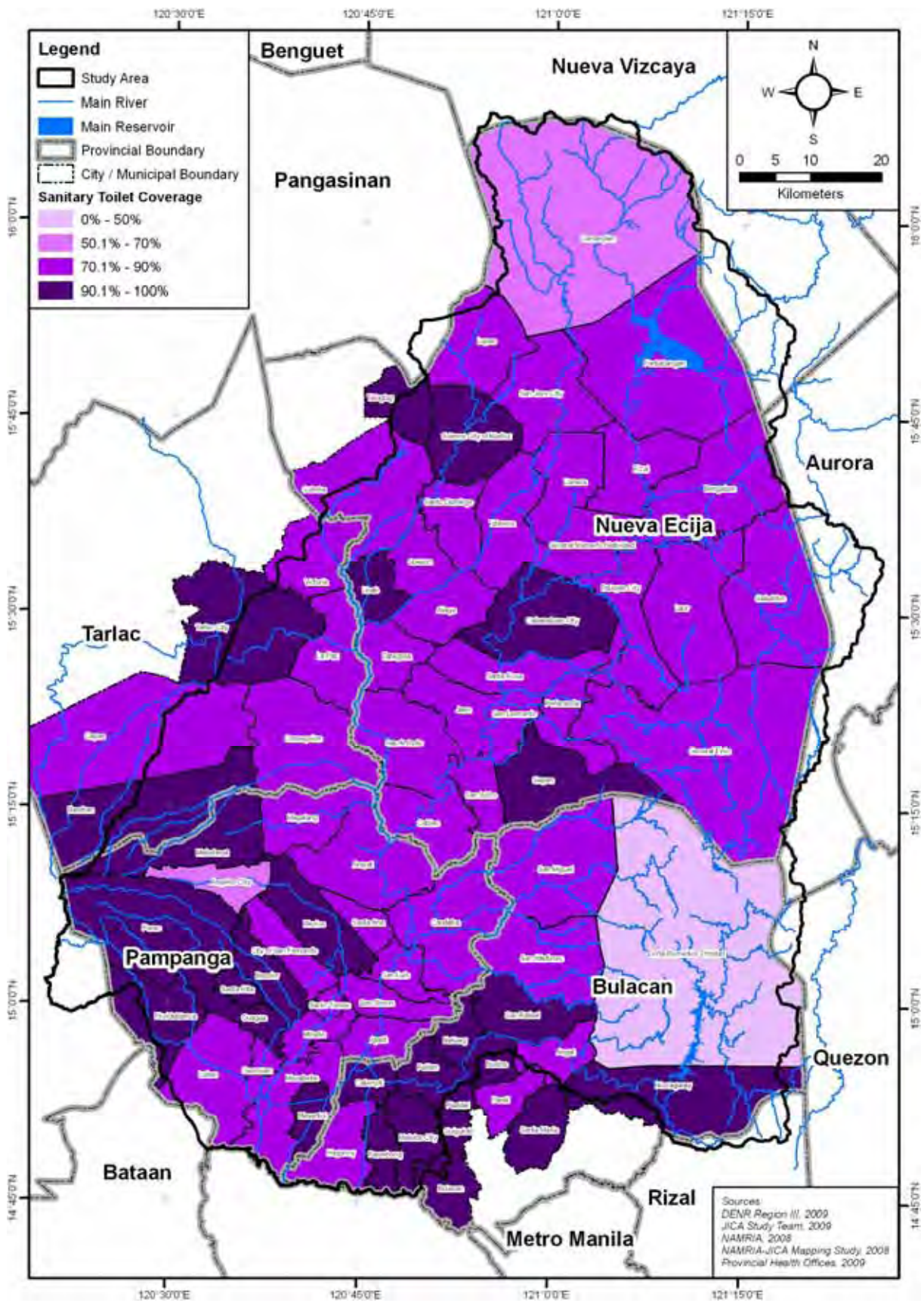


付図 4.3.1 現況の安全な水へのアクセス率

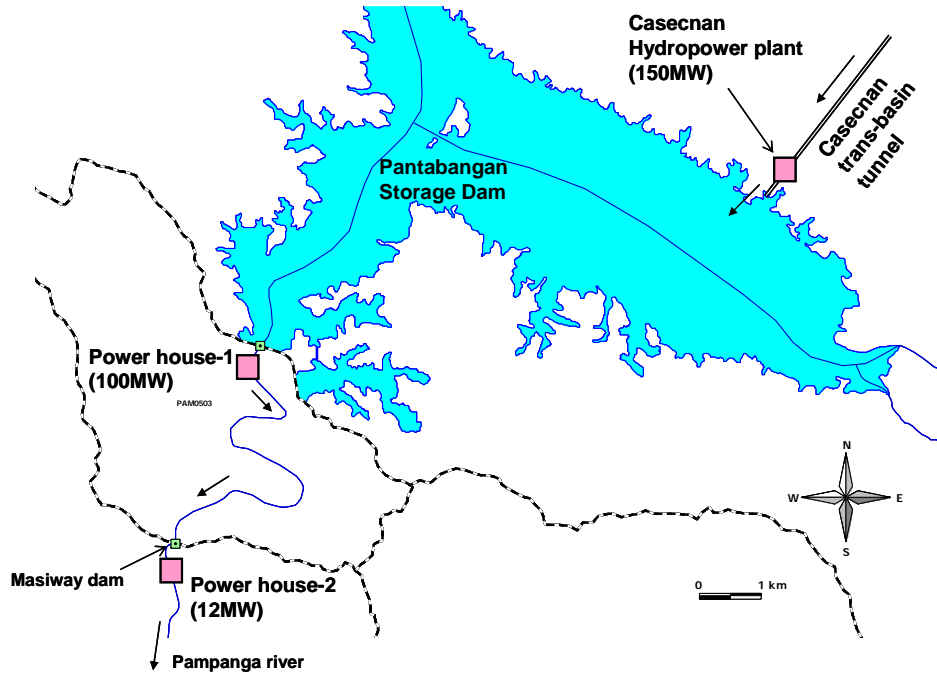
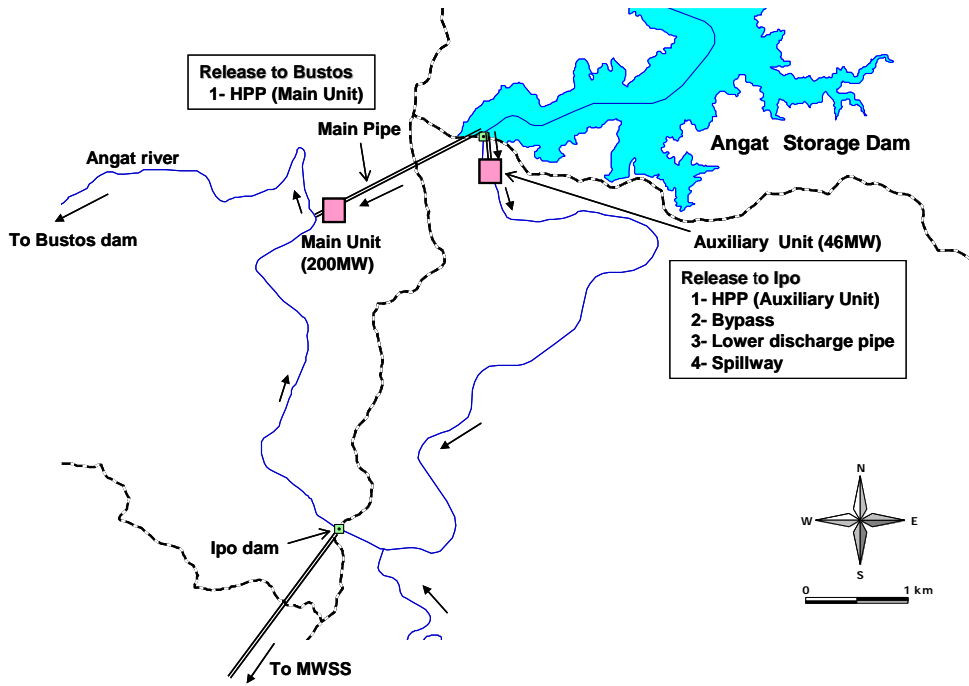


付図 4.3.2

現況のレベル3水供給サービスのカバー率

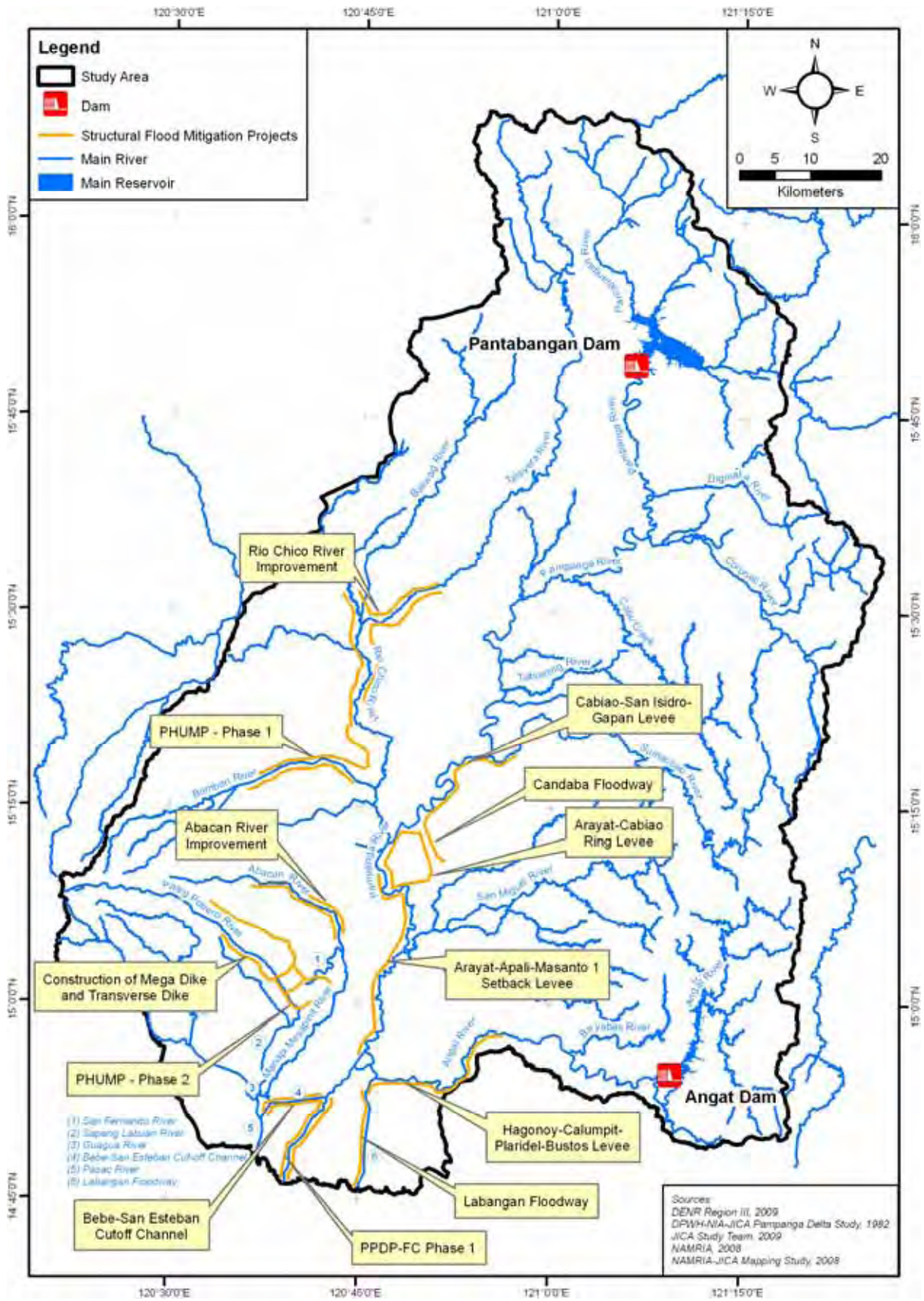


付図 4.3.3 現況の衛生トイレカバー率

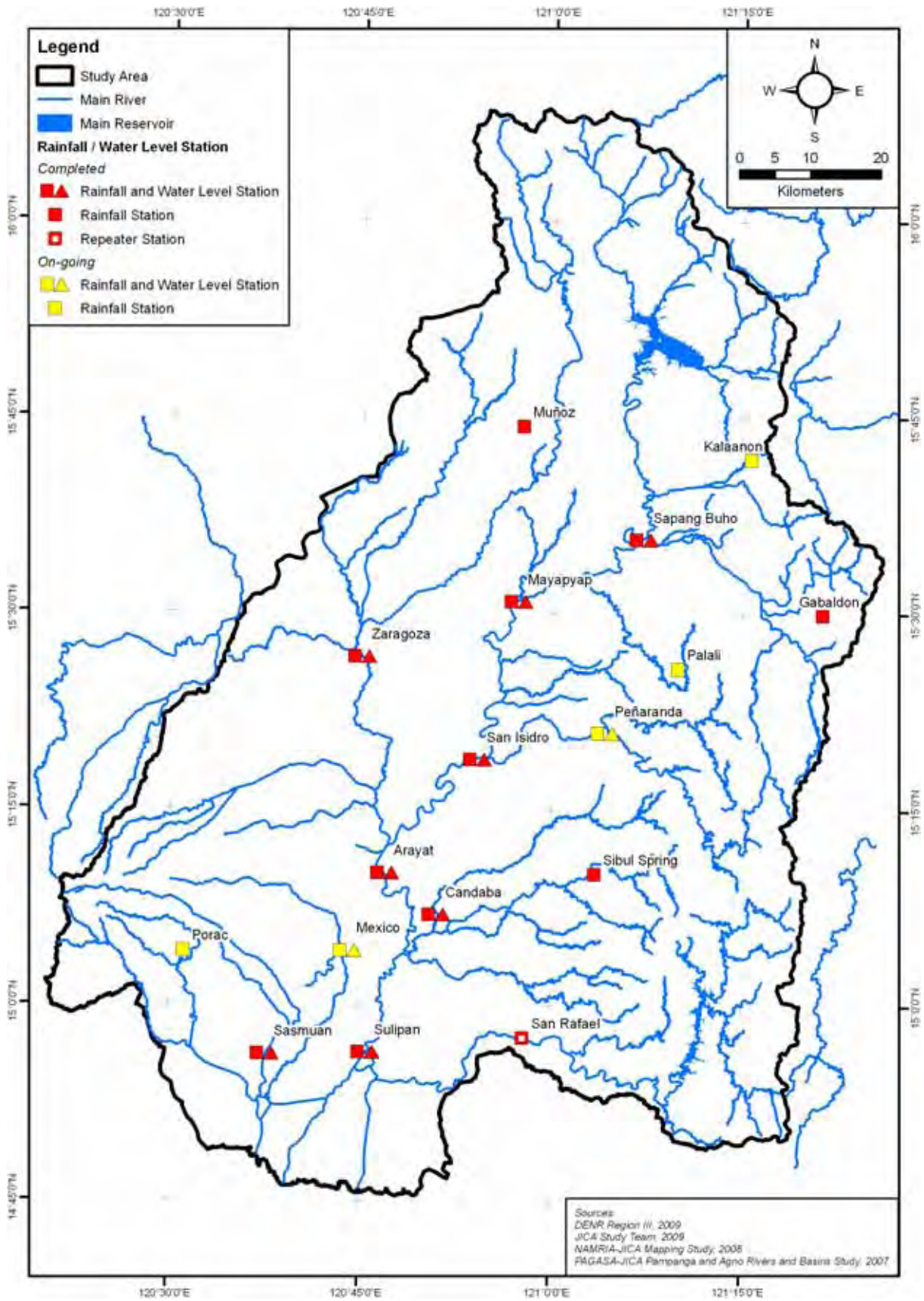


Source: JICA Study Team

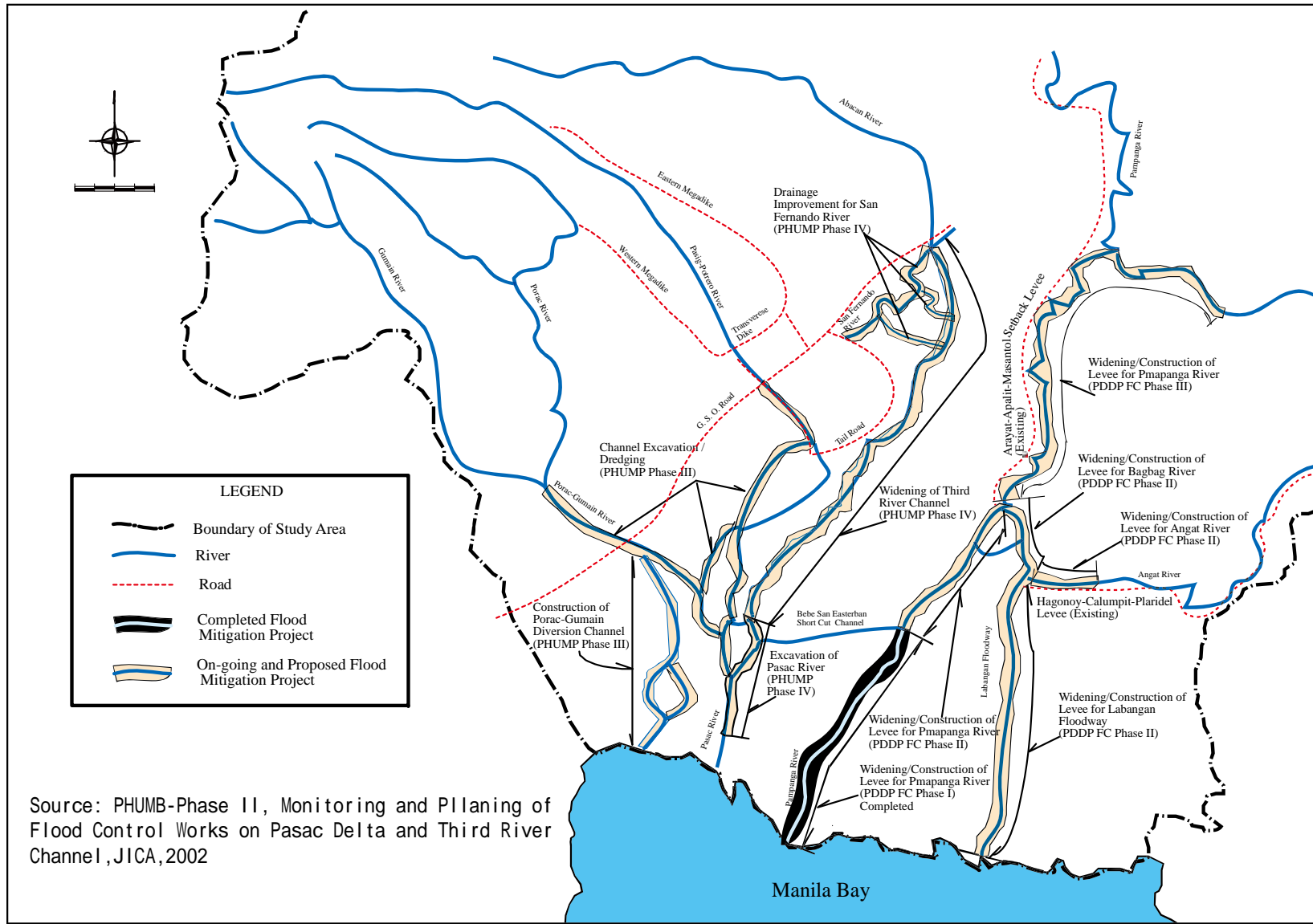
付図 4.4.1 調査地域内の水力発電所



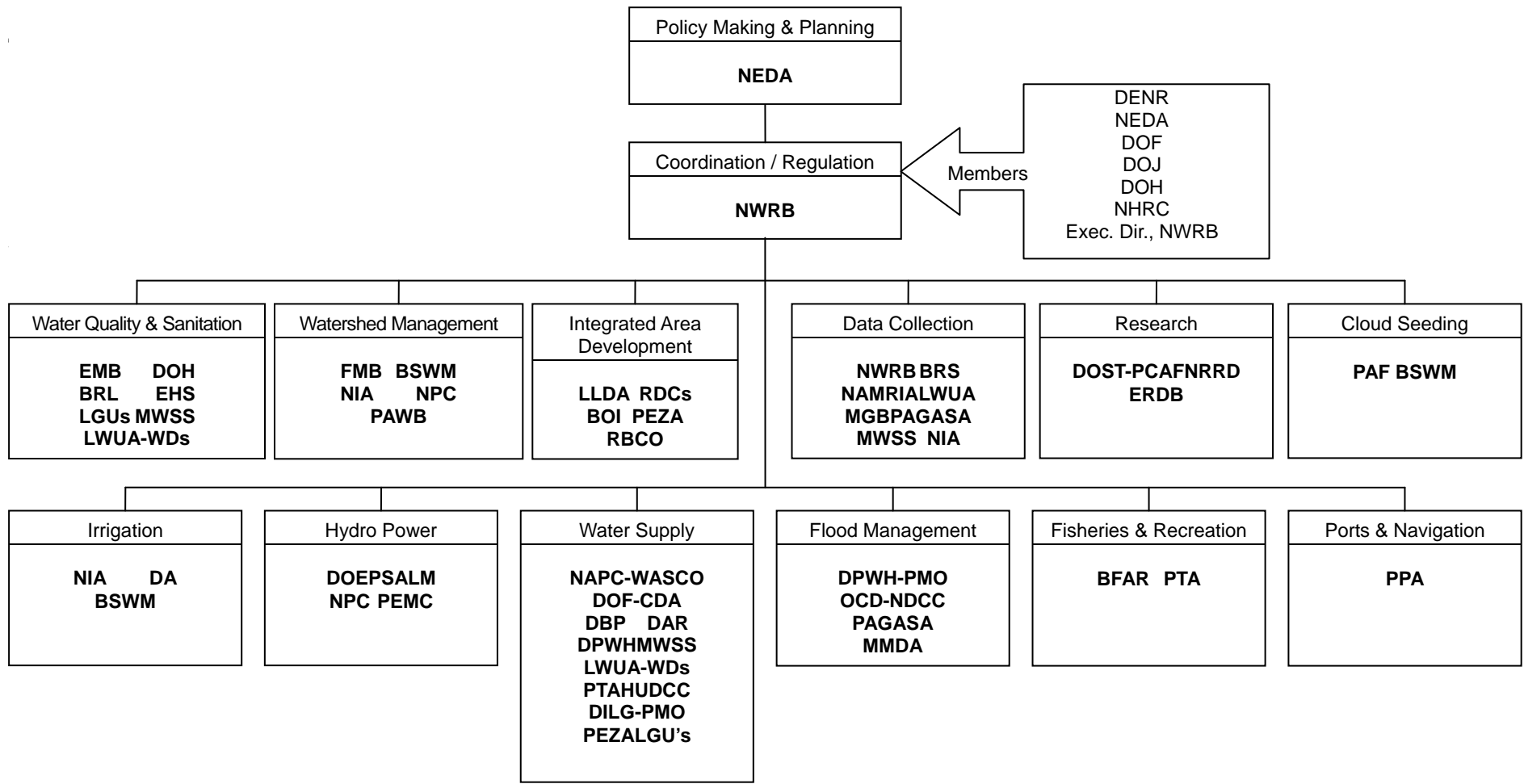
付図 4.5.1 完成済みの洪水防御および土砂災害防止事業



付図 4.5.2 洪水予警報システムにおける水位/降雨観測所および中継局位置図



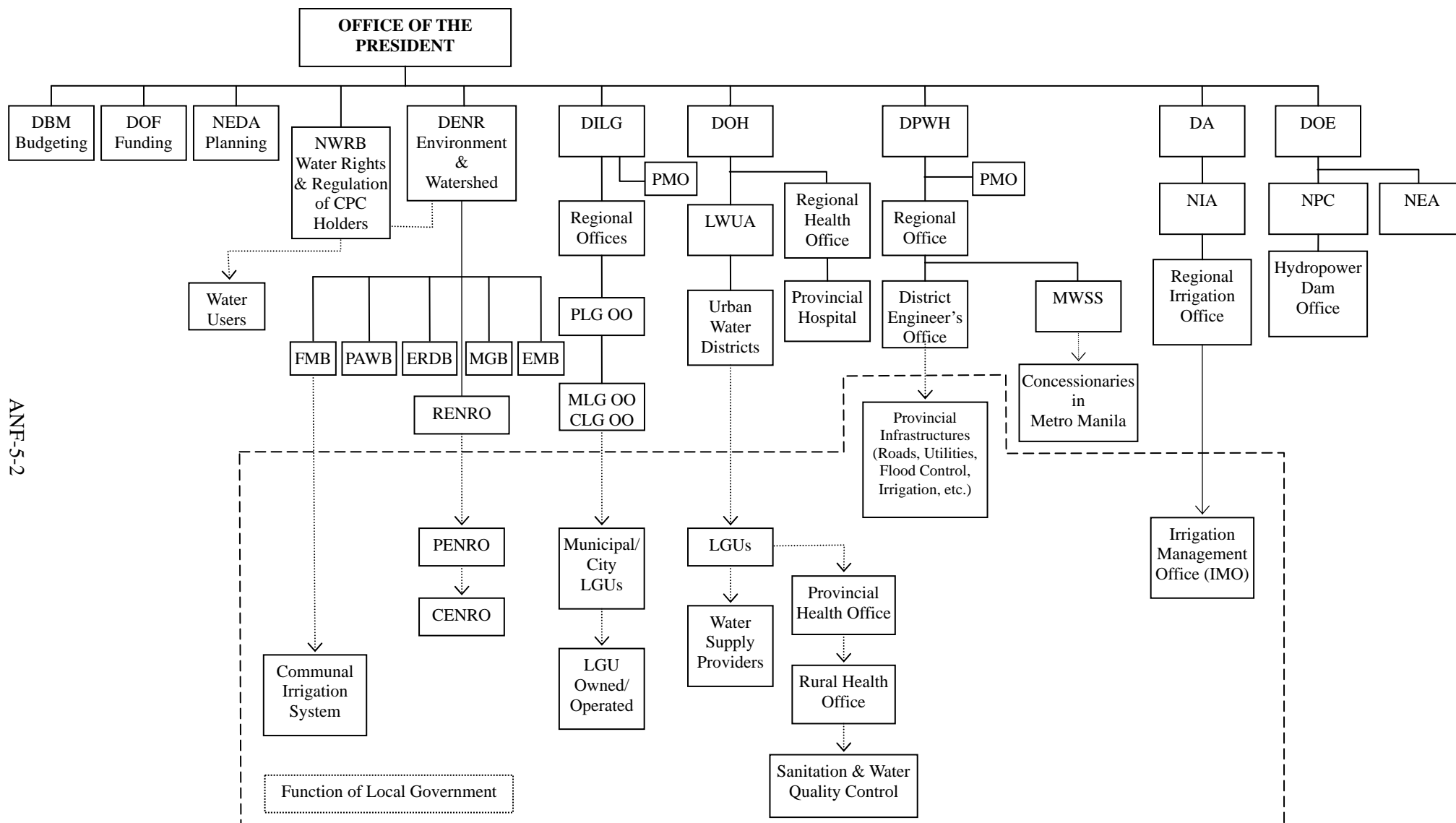
付図 4.5.3 実施中及び提案されている洪水対策事業



Source: Philippine Water Supply Sector Road Map, p.19, modified by JICA study

付図 5.2.1 水関連中央政府機関の機能図



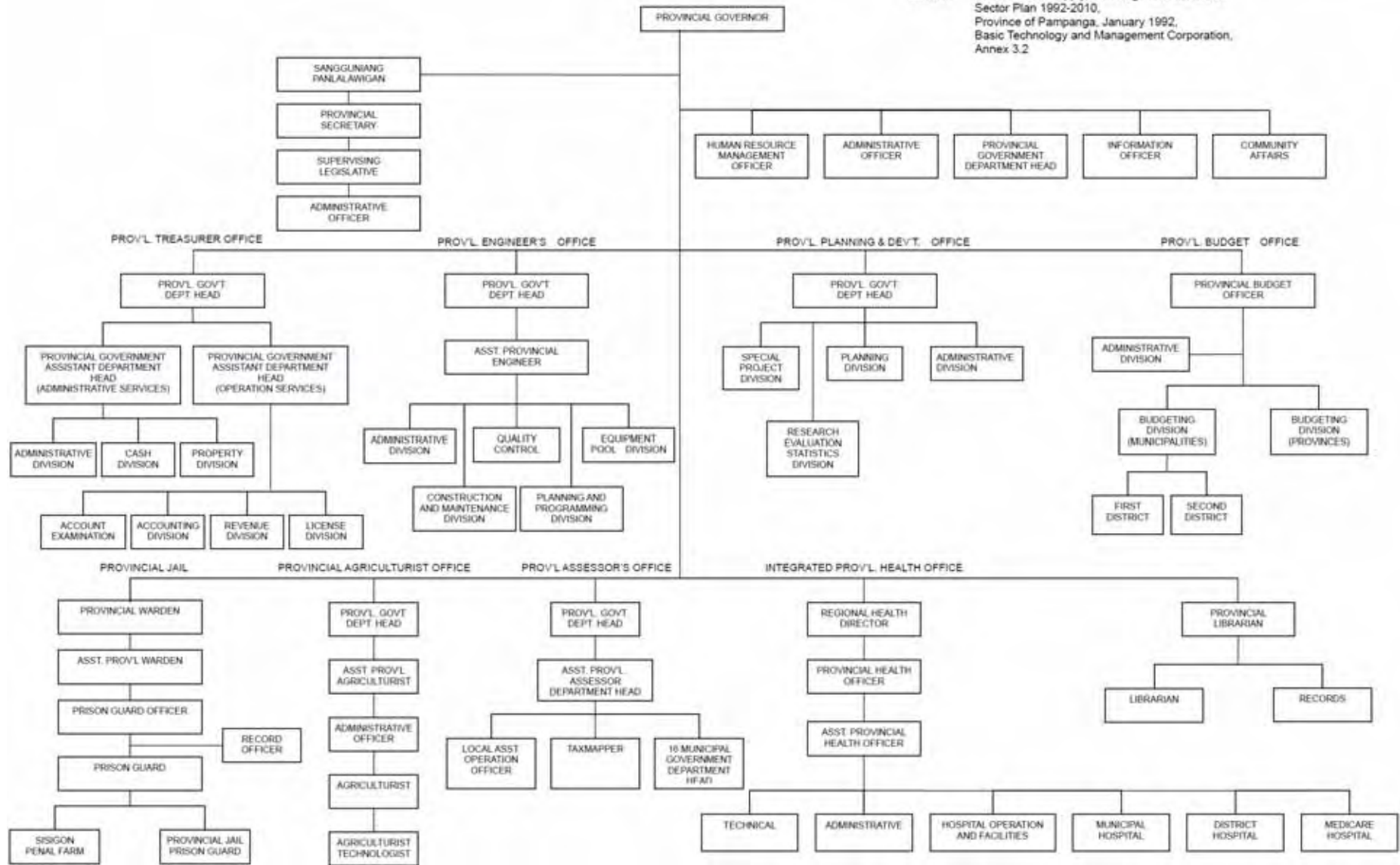


ANF-5-2

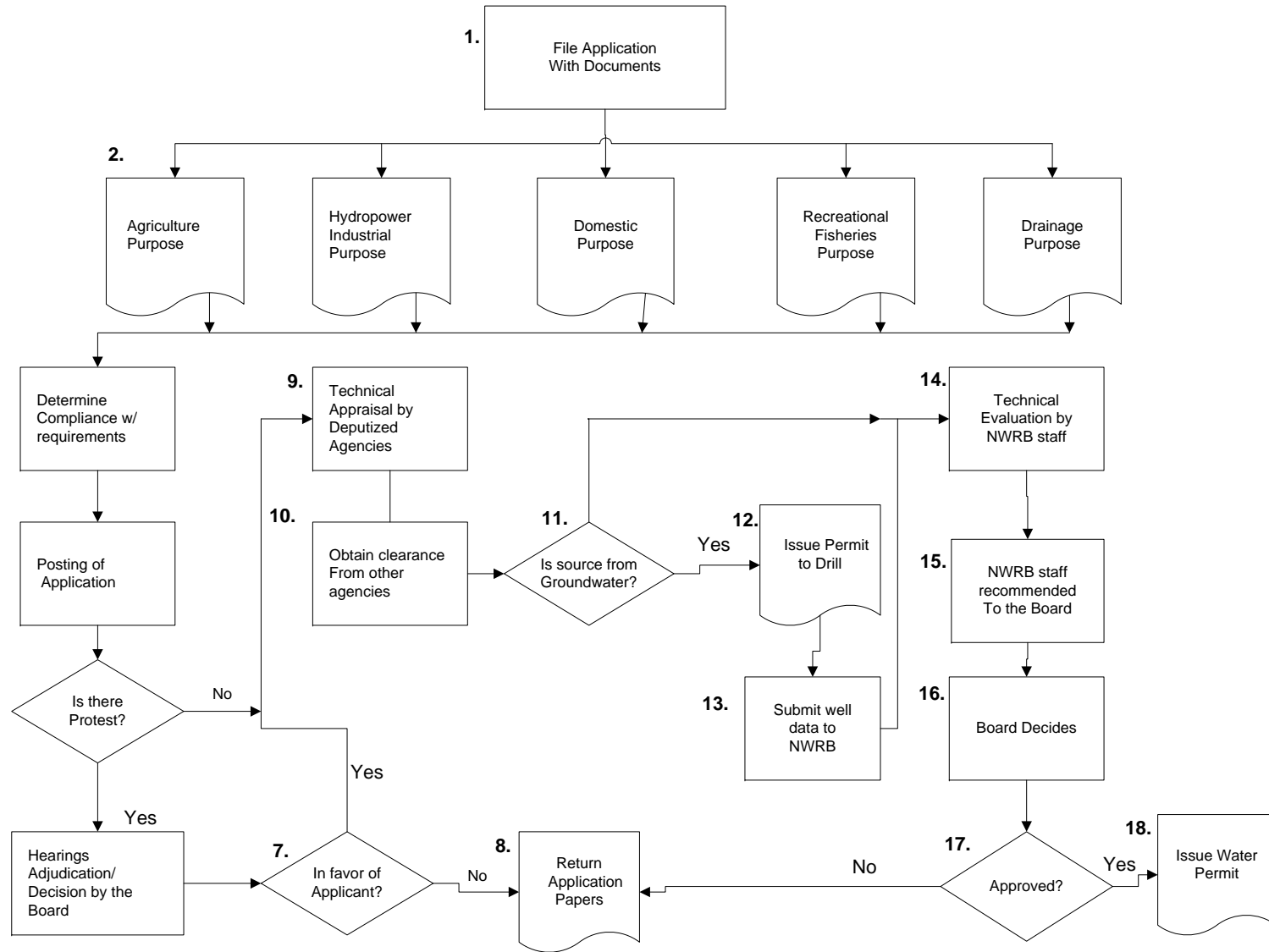
付図 5.2.2 水関連中央および地方政府機関の機能関係

出典：JICA 調査団

Source: DPWH Water Supply, Sewerage and Sanitation Sector Plan 1992-2010, Province of Pampanga, January 1992, Basic Technology and Management Corporation, Annex 3.2

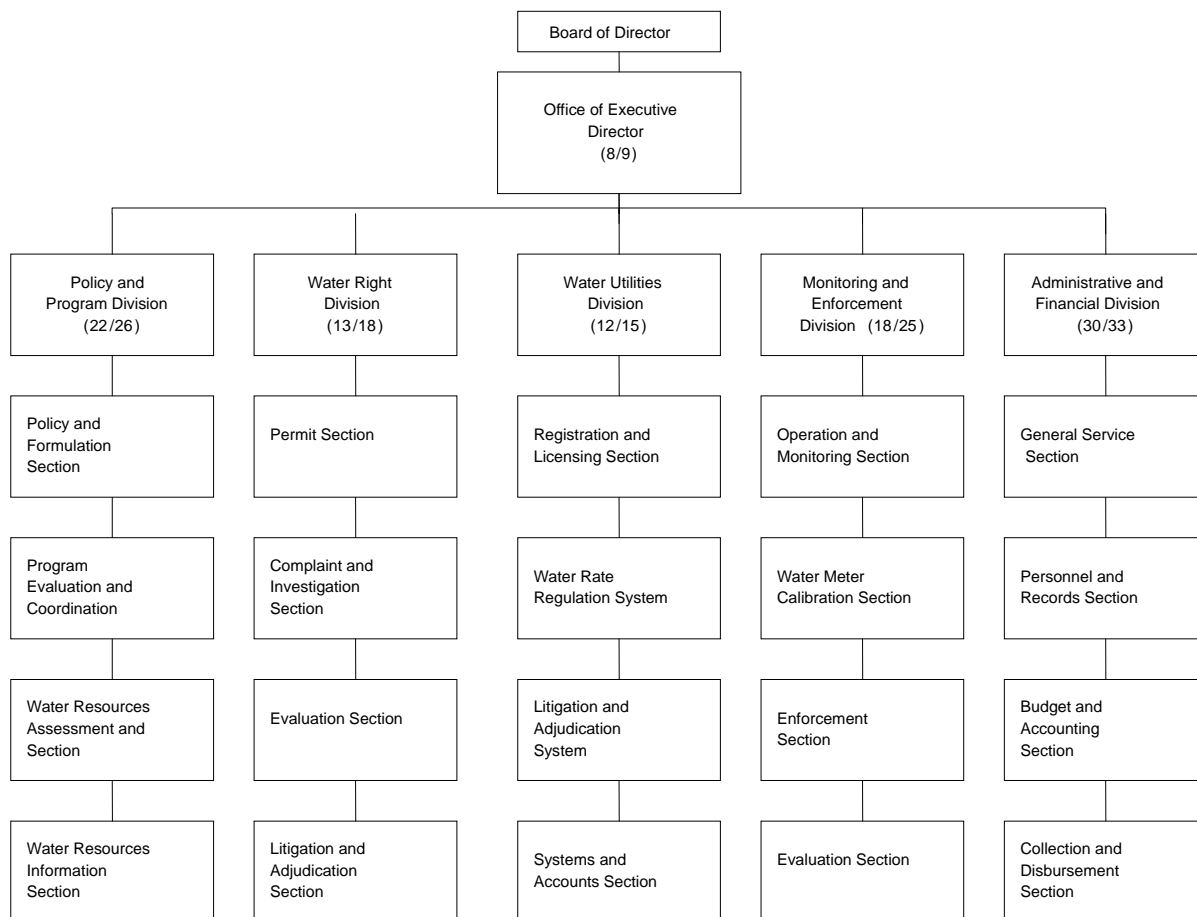


付図 5.2.3 Pampanga 州政府の組織図



付図 5.3.1 NWRB の水利用許可申請処理手続き

出典：NWRB

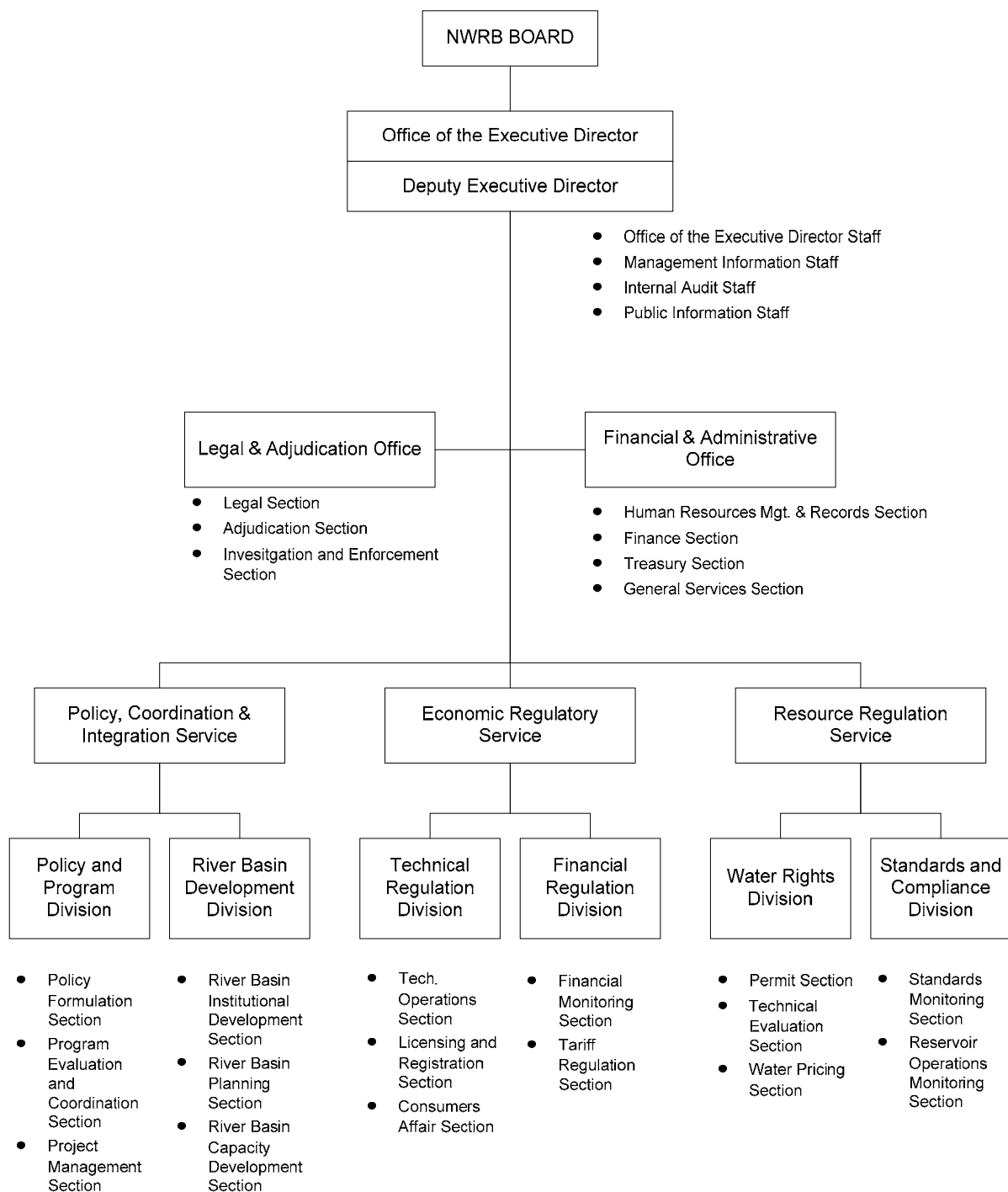


Note: Values in ( ) indicate staff number/position.

	Policy and Program	WaterRight	Water Utilities	Monitoring and Enforcement	Administrative and Financial
Engineer	10	4	-	11	-
Special investigator	-	5	-	-	-
Planning officer	1	-	-	-	-
Development management officer	-	-	-	2	-
Instrument technician	-	-	-	4	-
Information analyst	3	-	-	-	-
Statistician	1	-	-	-	-
Economist	3	-	-	-	-
Financial analyst	-	-	3	-	-
Regulation officer	-	-	7	-	-
Attorney	-	1	-	-	-
Administrative	4	3	2	1	30
Total (95+8=103)	22	13	12	18	30

付図 5.3.2 2009年3月時点におけるNWRBの組織図

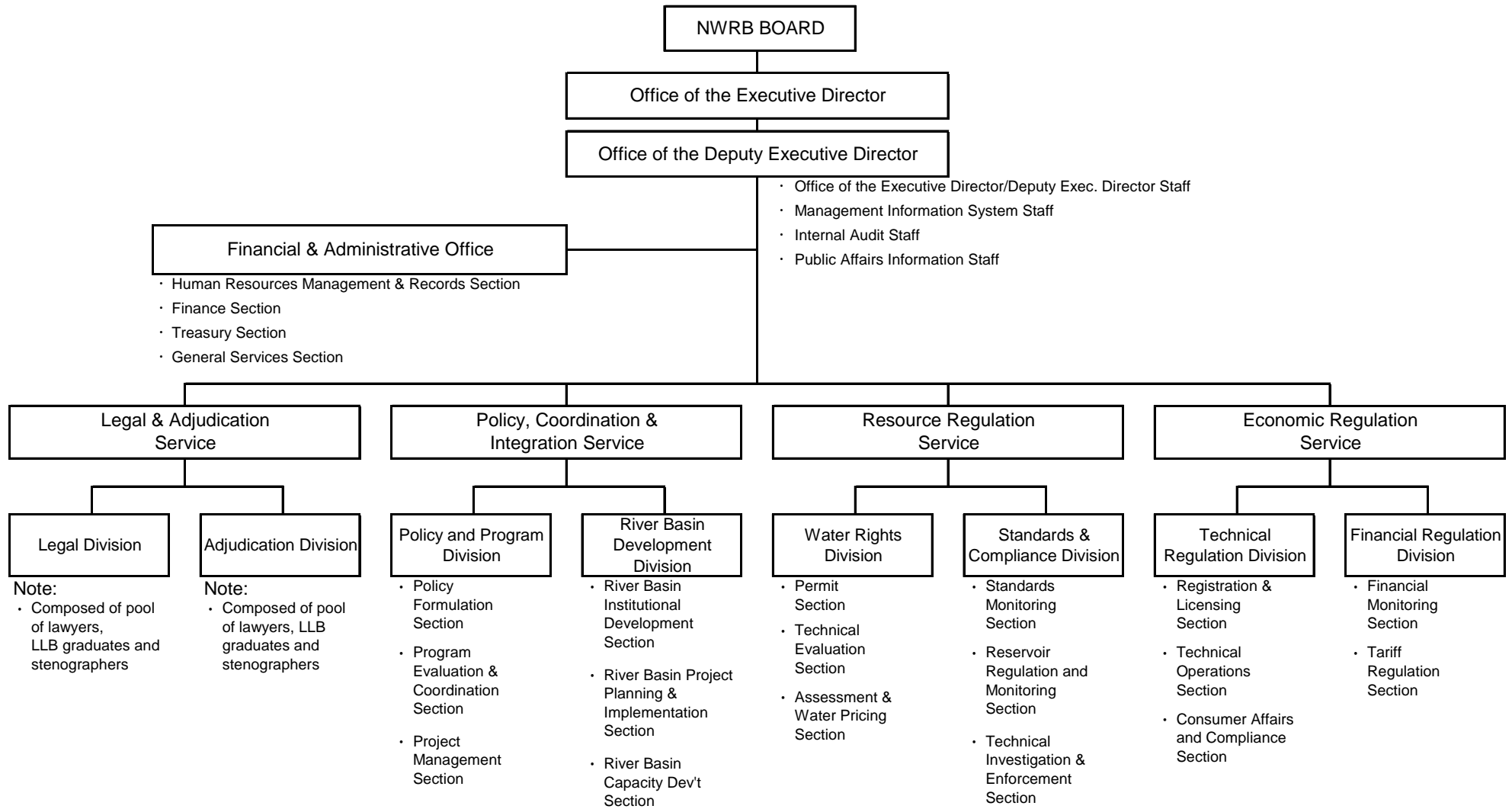
出典：NWRB



Source: Proposal to DBM, NWRB

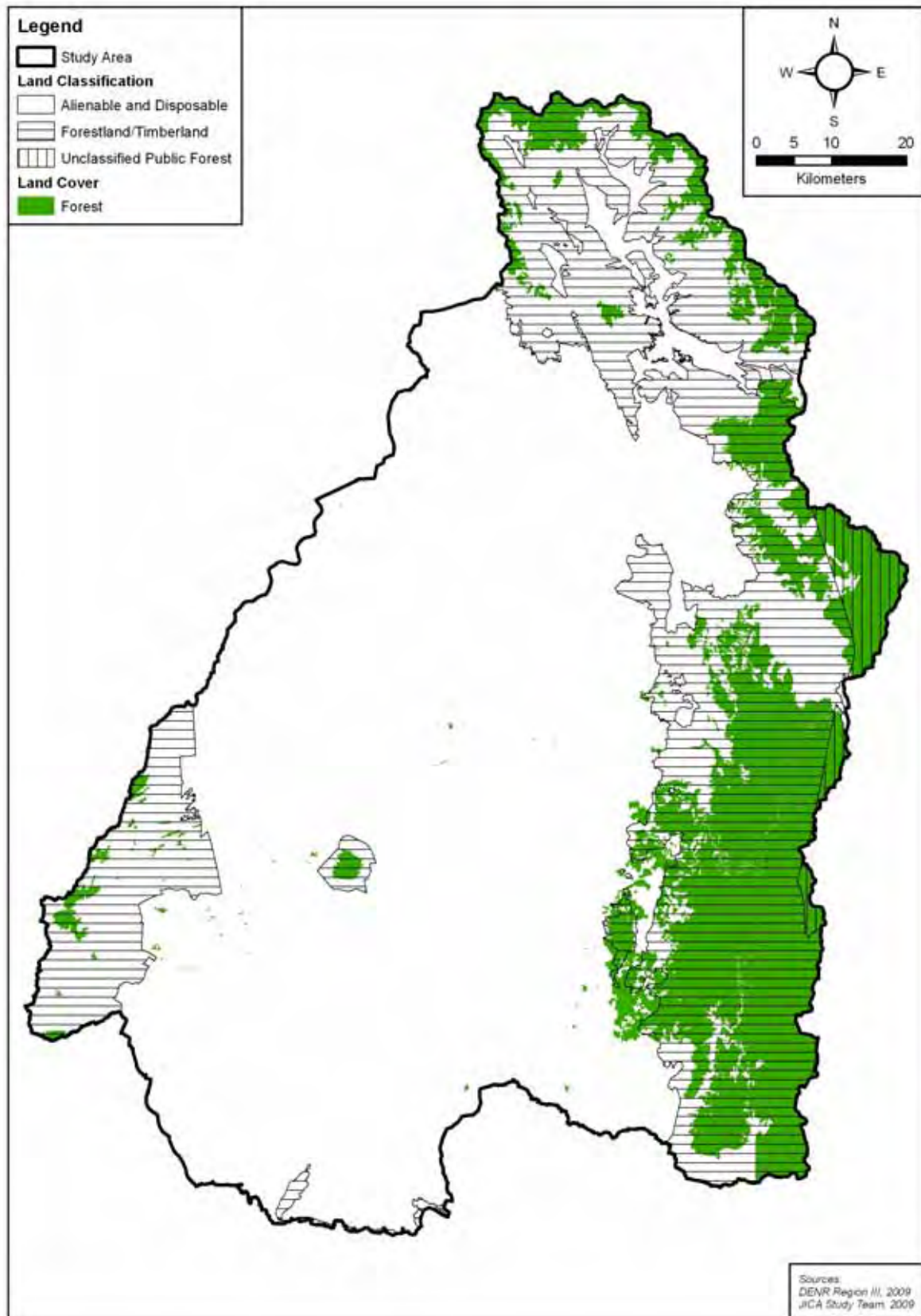
付図 5.3.3 2009年3月時点におけるNWRBの新組織図

ANF-5-7



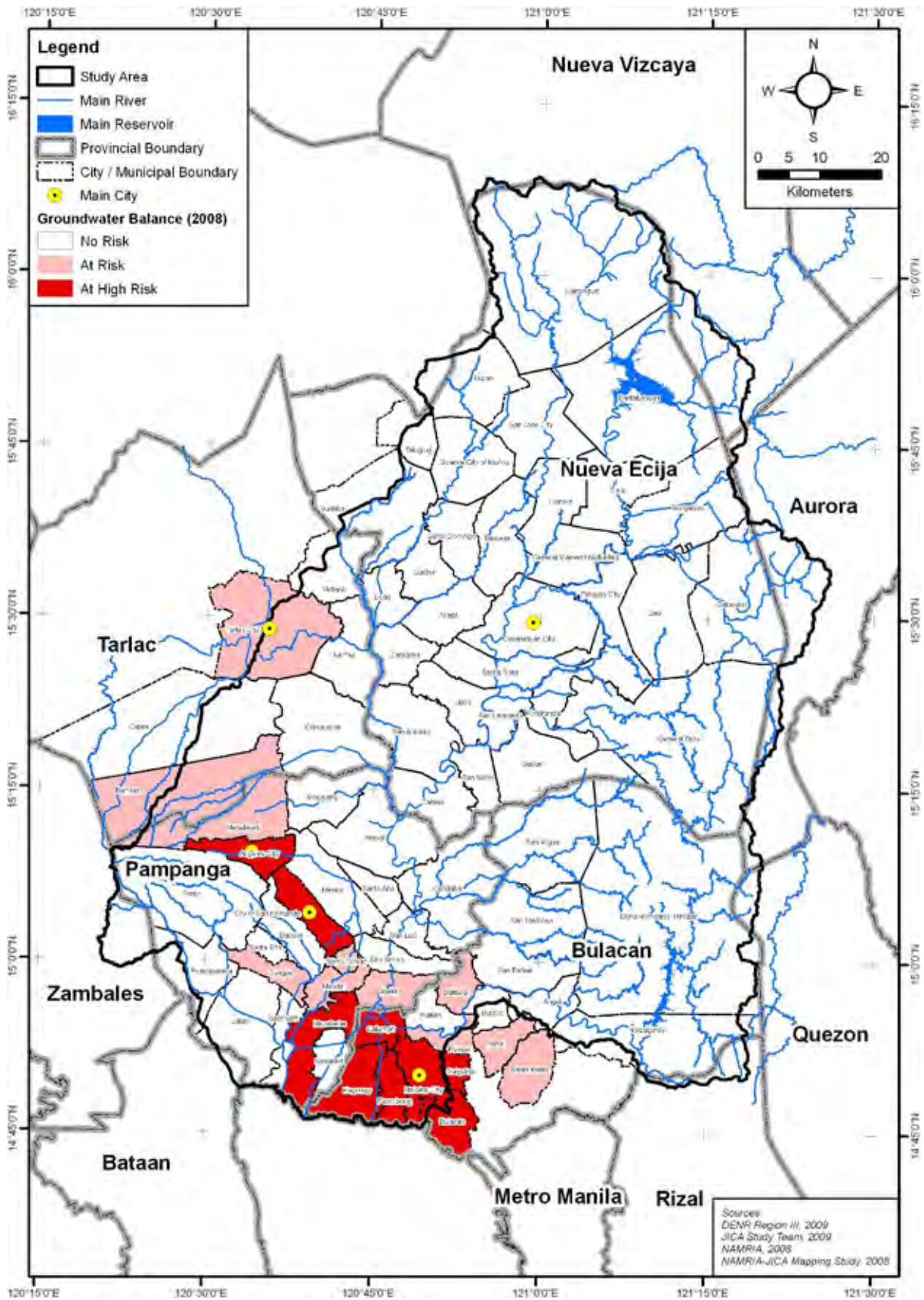
付図 5.3.4 提案された NWRB 組織図



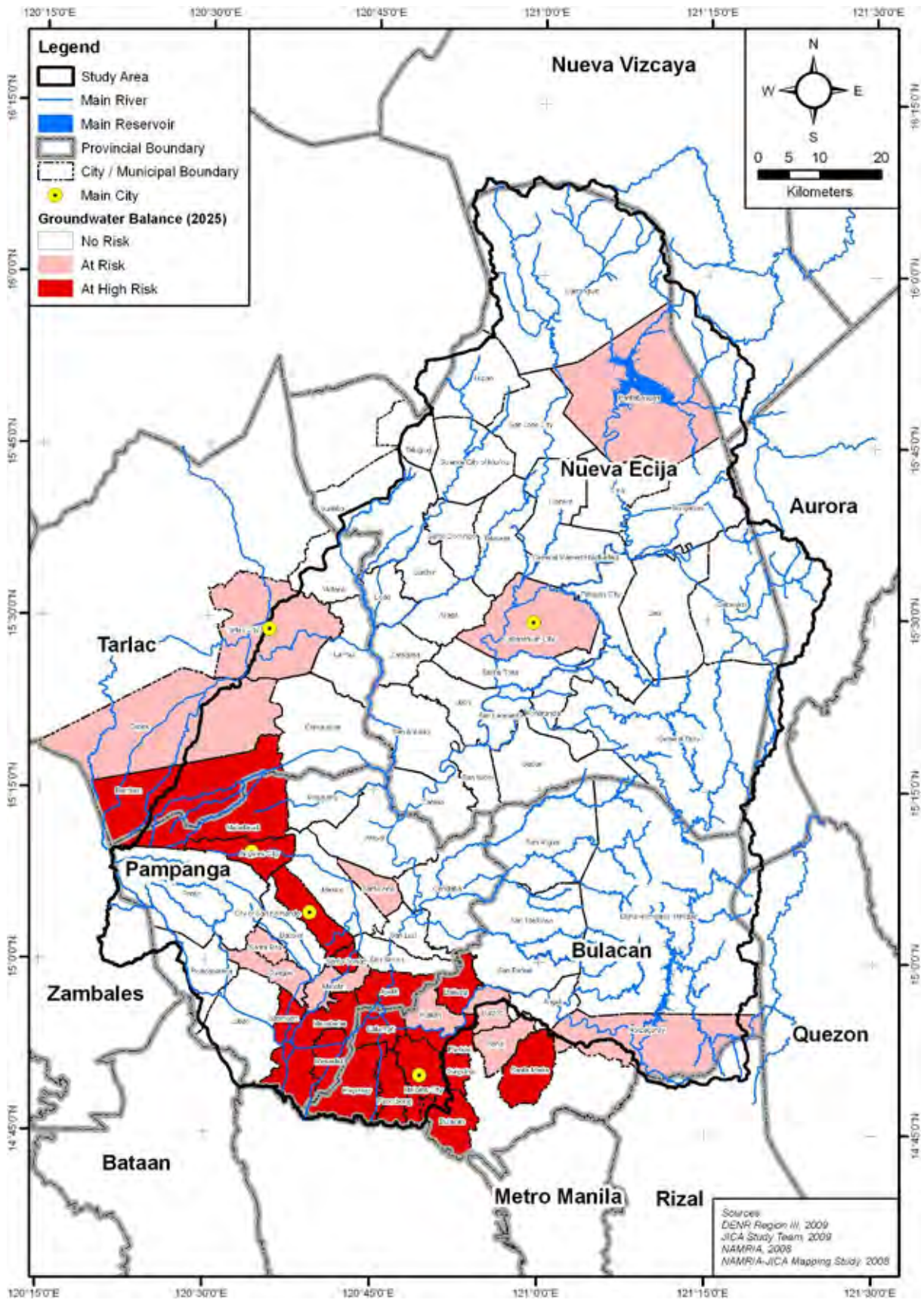


付図 6.5.1 森林区域に対する実際の森林分布状況 (2005 年現在)



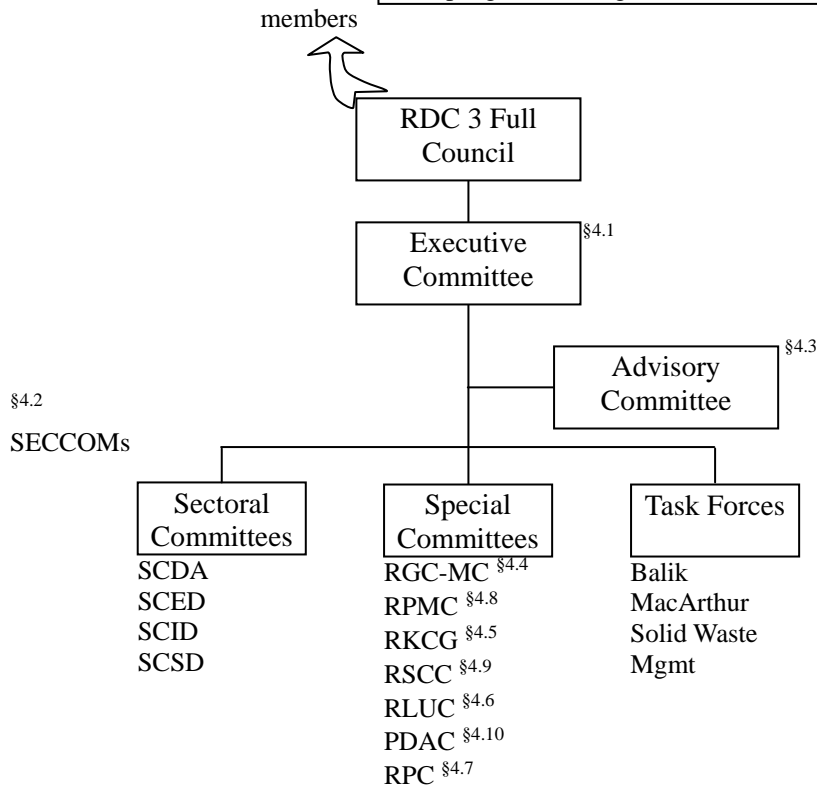
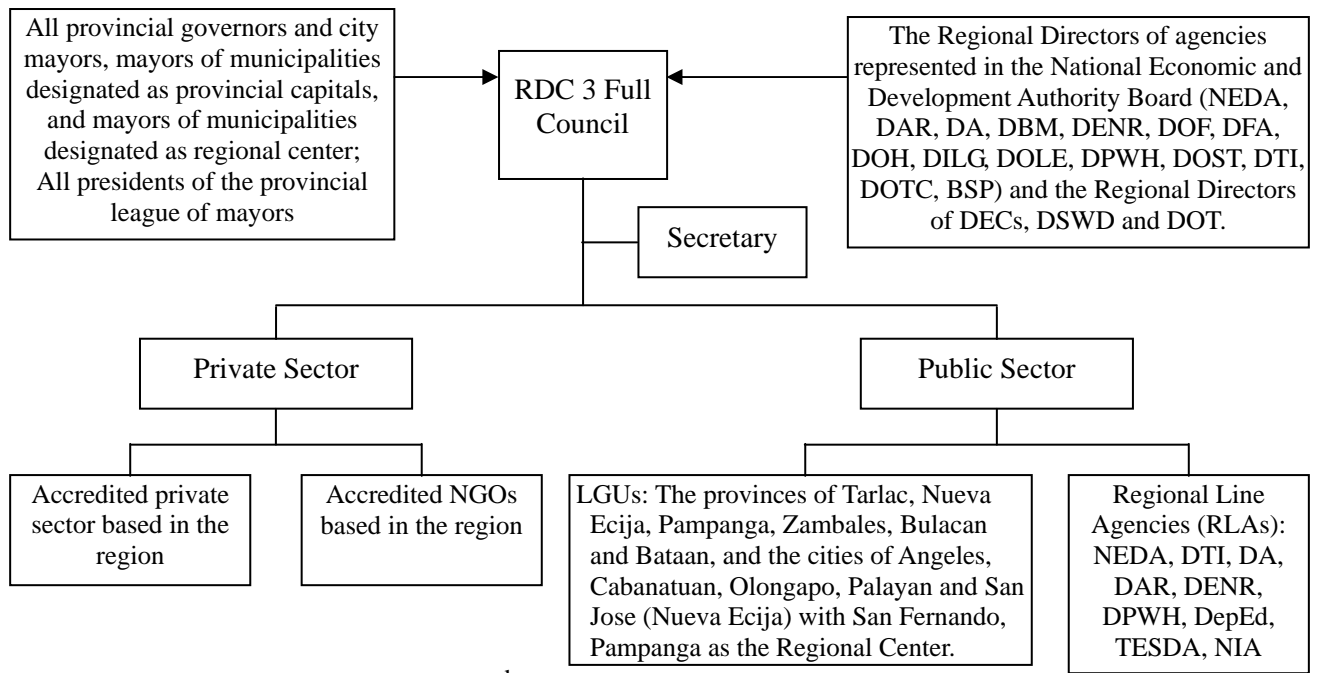


付図 6.7.1 現況(2008年)の地下水利用持続性の評価



付図 6.7.2 将来(2025年)の地下水利用持続性の評価



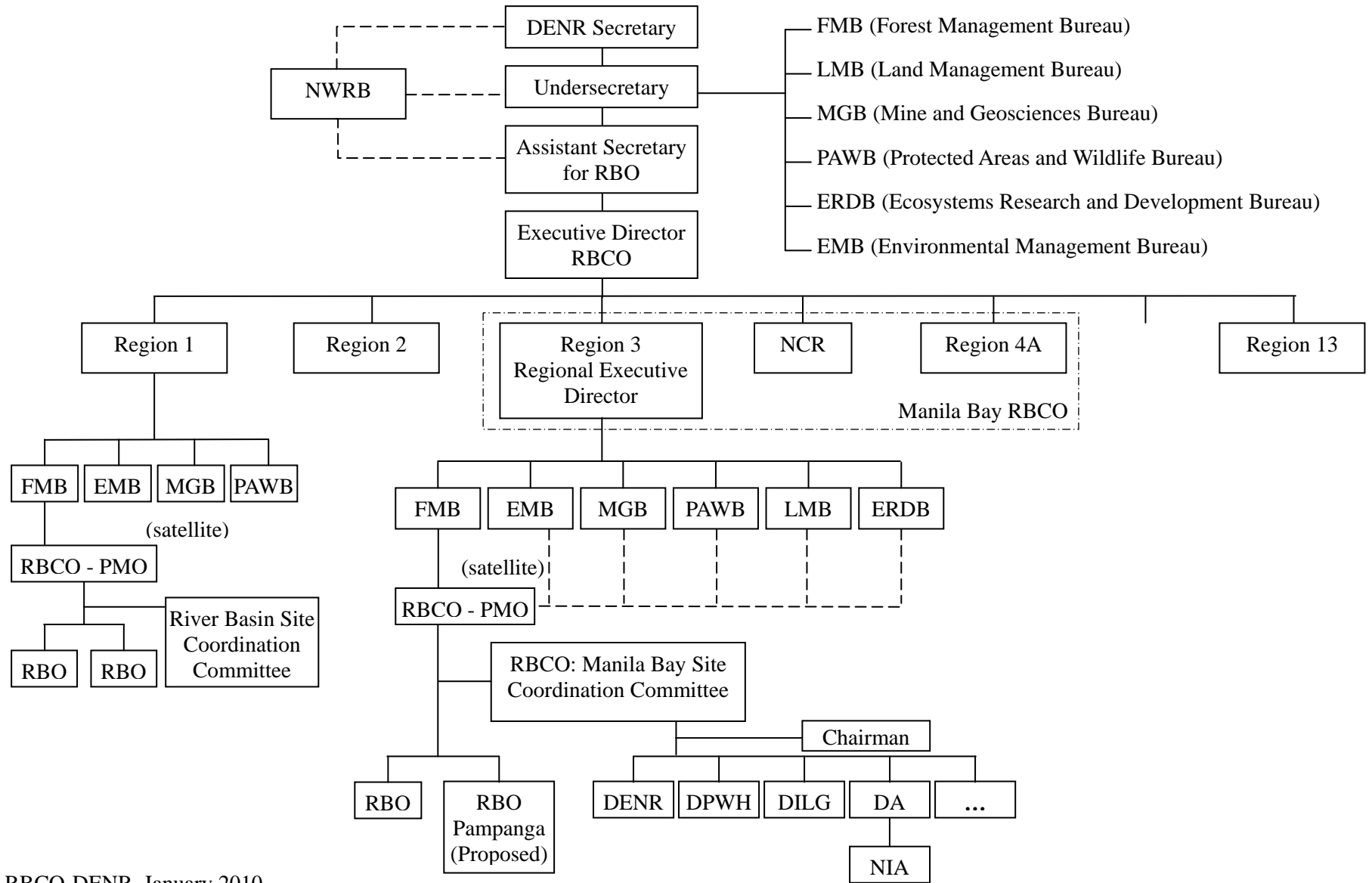


SC: Sectoral Committee  
 DA: Development Administration  
 ED: Economic Development  
 ID: Infrastructure Development  
 SD: Social Development

RGC-MC: Regional Government Center Management Committee  
 RKCG: Regional KALAH I Convergence Group  
 RLUC: Regional Land Use Committee  
 RPC: Regional Productivity Committee  
 RPMC: Regional Project Monitoring Committee  
 RSCC: Regional Statistical Coordination Committee  
 PDAC: Project Development Assistance Committee

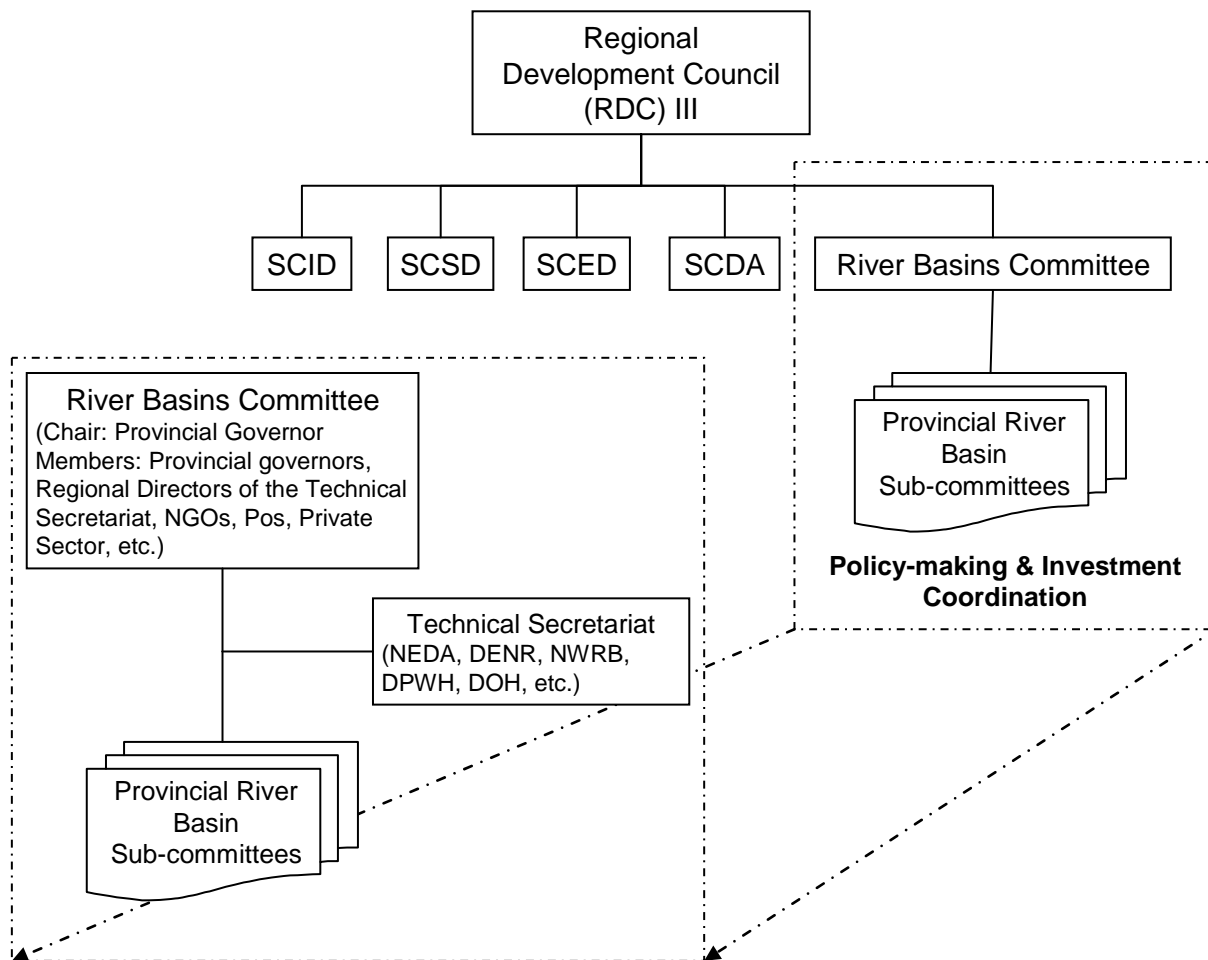
出典：Handbook of the Regional Development Council III (RDC III)  
 Central Luzon Region, Revised August 2006, p26 & pp. 1-25

付図 12.4.1 Region III 地域開発評議会(RDC)の組織構造



出典：RBCO-DENR, January 2010

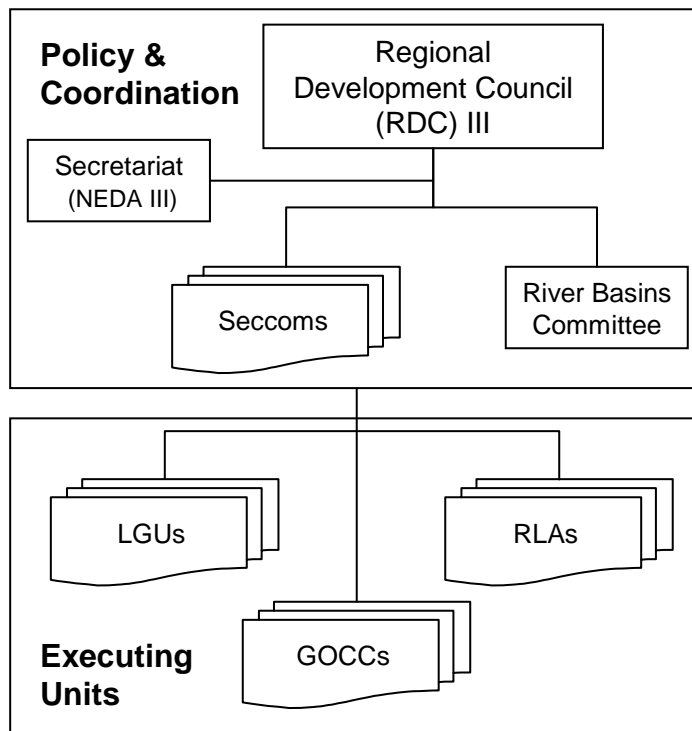
付図 12.4.2 RBCO 下の RBO およびサテライト RBCO、Manila 湾サイト調整委員会



The relationship of the RDC III – RBC vis-à-vis the regular frontline agencies

**Roles & Functions:**

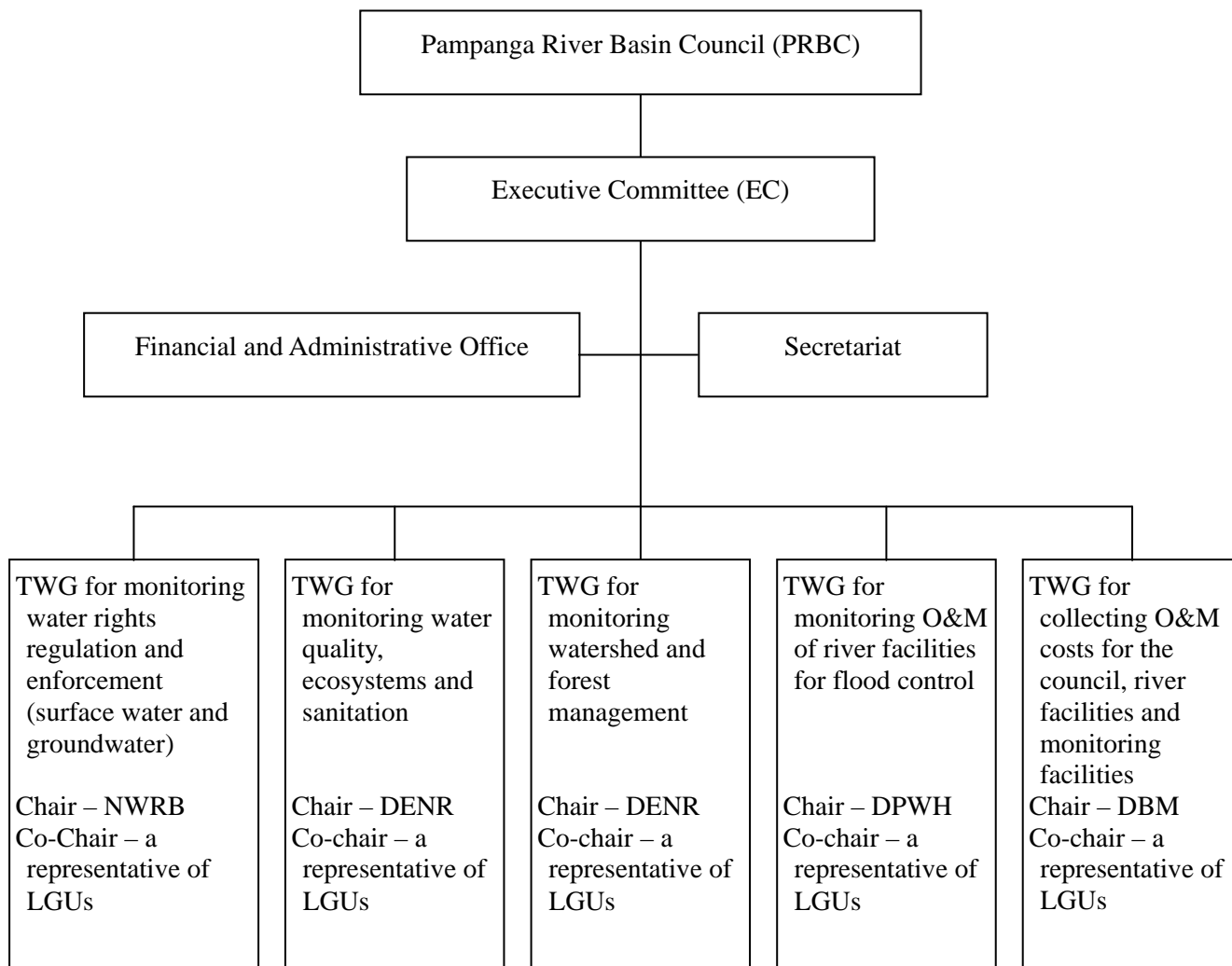
Policy coordination & Decision-making body in the region;  
 Formulation of development plans & Investment Programs; Project monitoring;  
 Budgeting & investment programming



**Roles & Functions:**

Formulation of agency plans and programs;  
 Implementation of plans and programs

付図 12.4.3 RegionIII 地域開発評議会(RDC)下の河川流域委員会

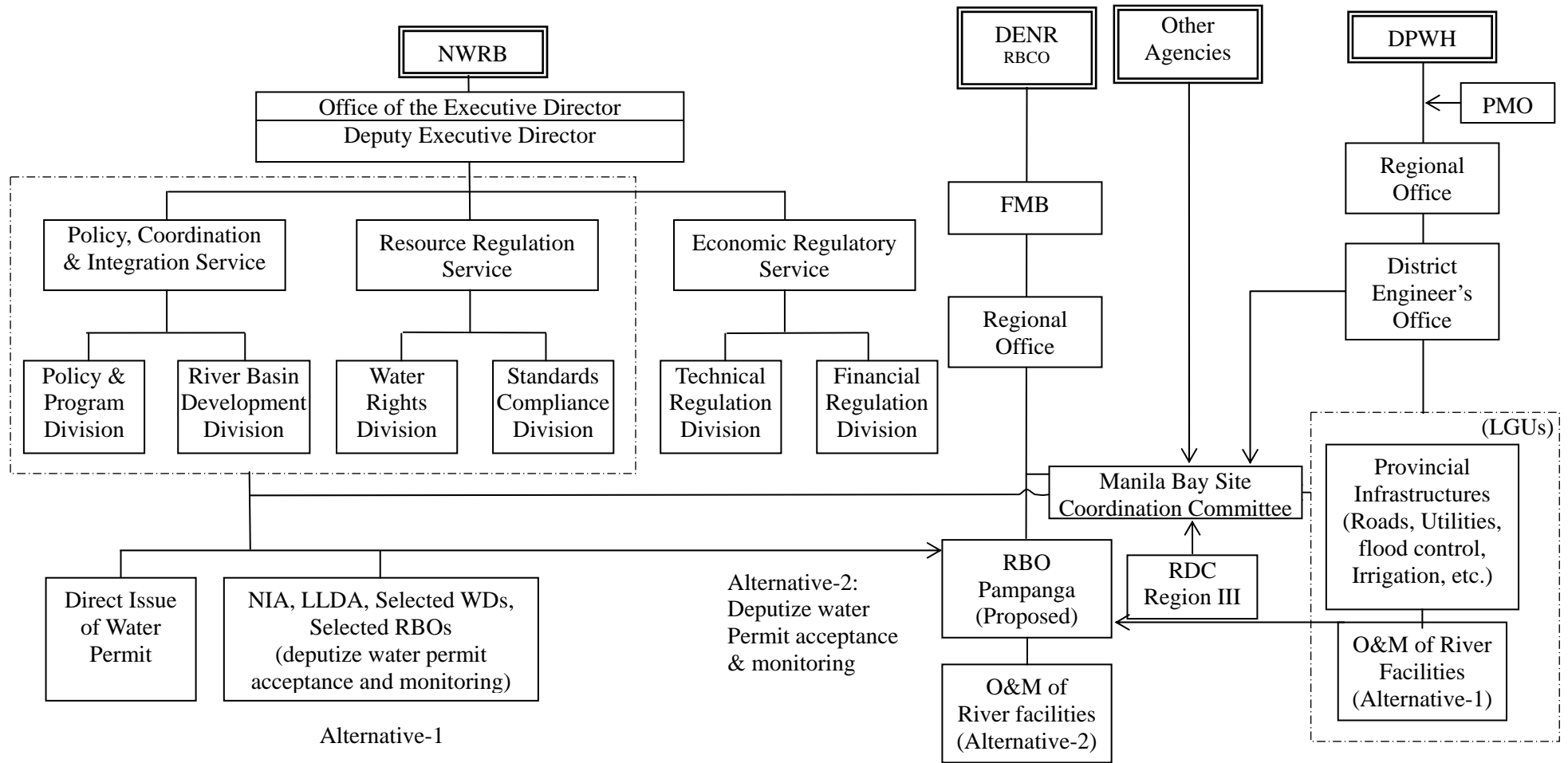


Note: PRBC and EC are multi-sectoral, led by the Chair, a representative of LGUs in Region 3.

A representative of PRBC or EC is elected by the member of PRBC and EC respectively

出典：JICA 調査団

付図 12.4.4 独立した河川流域評議会



出典：JICA 調査団

付図 12.4.5 NWRB の水利権監督の位置付け





添付資料



No.	資料名	署名日
1	実施細則 (I/A) 協議会議議事録	2008年3月14日
2	実施細則(I/A)	2008年3月24日
3	第1回ステアリングコミッティ会議議事録	2009年2月18日
4	第2回ステアリングコミッティ、テクニカルワーキンググループ合同会議議事録	2009年10月19日
5	第3回ステアリングコミッティ、テクニカルワーキンググループ合同会議議事録	2010年2月17日
6	第4回ステアリングコミッティ、テクニカルワーキンググループ合同会議議事録	2010年8月12日
7	第5回ステアリングコミッティ、テクニカルワーキンググループ合同会議議事録	2010年10月27日
8	第6回ステアリングコミッティ、テクニカルワーキンググループ合同会議議事録	2010年12月1日



## 添付資料 1

実施細則 (I/A) 協議会議議事録



**MINUTES OF MEETINGS**  
**ON**  
**IMPLEMENTATION ARRANGEMENT**  
**FOR**  
**THE STUDY ON INTEGRATED WATER RESOURCES MANAGEMENT**  
**FOR POVERTY ALLEVIATION AND ECONOMIC DEVELOPMENT**  
**IN THE PAMPANGA RIVER BASIN**  
**IN**  
**THE REPUBLIC OF THE PHILIPPINES**

**AGREED UPON BETWEEN**  
**NATIONAL WATER RESOURCES BOARD**  
**AND**  
**JAPAN INTERNATIONAL COOPERATION AGENCY**

**March 14<sup>th</sup>, 2008 at Manila**



---

**Mr. Ramon B. Alikpala**  
**Executive Director**  
**National Water Resources Board**



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**Mr. Shiono Hiroshi**  
**Leader**  
**Preparatory Study Team**  
**Japan International Cooperation Agency**



In response to the official request for development study of the Government of the Republic of the Philippines, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the preparatory study team, headed by Mr. Shiono Hiroshi, to Philippines from February 26 to March 20 in 2008 to discuss the Implementation Arrangement (hereinafter referred to as "I/A") for the Study on Integrated Water Resources Management for Poverty Alleviation and Economic Development in the Pampanga River Basin (hereinafter referred to as "the Study").

During its stay in Philippines, the preparatory study team carried out field surveys and held a series of discussions with the National Water Resources Board (hereinafter referred to as "NWRB"), and a joint meeting with other agencies concerned. The list of participants who attended the meetings is shown in Appendix-1.

The minutes of meetings have been prepared for the better understanding of I/A, which is given in Appendix-3, and discussed between NWRB and the preparatory study team (hereinafter referred to as "both sides").

The main items that were discussed and agreed by both sides are summarized as follows.

#### **1. Signing on I/A**

Both sides agreed that I/A should be signed by NWRB and JICA Philippines Office after the necessary preparation and approval for the Study. JICA Philippines Office will notify NWRB about the signing.

#### **2. Integrated Water Resources Management Plan**

Both sides confirmed that an Integrated Water Resources Management (hereinafter referred to as "IWRM") plan will be formulated by following approaches.

##### **(1) Utilization of existing data**

Existing data, which include proposed plans of projects/programs and their lessons learned, will be utilized to prepare an IWRM plan. NWRB mentioned supplemental survey will be necessary if the detailed data is not available. JICA will consider its implementation if the necessity arises.

##### **(2) Alternative provisions for the Study completion**

In the event that the discussion and consultations of certain issues covered in the Study is not concluded before the end of the Study, proposed alternatives and recommendations by NWRB and the JICA Study Team, will be included in the IWRM plan.

#### **3. Sectors**

Both sides confirmed that the Study includes following sectors.

- (1) Agriculture (irrigation, livestock, fishery, etc.)
- (2) Urban and rural water supply
- (3) Sewerage and sanitation
- (4) Hydropower generation
- (5) Water related disasters
- (6) Environmental management (forestry, water quality, riparian environment conservation, etc.)
- (7) Regional development (land use, tourism, etc.)

#### **4. Study Implementation Structure**

Both sides agreed that NWRB sets up a Steering Committee and a Technical Working Group (hereinafter referred to as "TWG") for the Study. These will consist of the representatives of the relevant organizations. The tentative list is shown in Appendix-2. The official list confirmed by NWRB will be submitted to JICA Philippines Office before the commencement of the Study. If the mandates of the above mentioned relevant organizations are changed, the composition of



(1)



membership may be revised as necessary.

(1) Steering Committee

A Steering Committee will be organized to provide guidance and approve the output of the Study under the chairmanship of NWRB.

(2) TWG

TWG under the chairmanship of NWRB will be organized to collaborate with the JICA Study Team for the formulation of an IWRM plan.

## 5. Counterpart Personnel

The preparatory study team requested NWRB to assign a counterpart team to the JICA Study Team. NWRB agreed to appoint personnel before the commencement of the Study and assign them in a timely manner. NWRB will be responsible for providing the counterpart personnel. Tentative expertise of the members of the JICA Study Team are as follows:

(1) Team Leader

(2) Water Resources Management

(3) Hydrology

(4) River Management

(5) Flood Control

(6) Hydrogeology

(7) Irrigation

(8) Water Supply and Sewerage

(9) Sociology

(10) Economics

(11) Laws and Institution

(12) Environment

## 6. Allocation of additional staff for the Study

The preparatory study team requested NWRB to allocate additional staff necessary for the implementation of the Study.

## 7. Feasibility Study

Both sides agreed that the feasibility study requested in the initial proposal be excluded in the Study.

## 8. Environmental and Social Considerations

The preparatory study team explained the JICA's Guidelines for Environmental and Social Considerations, and that it will be applied to the Study. NWRB understood the policy of the JICA's Guidelines.

## 9. Counterpart Training in Japan

NWRB requested that counterpart personnel should take advantage of training in Japan related to the Study to promote effective technology transfer. The preparatory study team agreed to convey this request to JICA headquarters.

## 10. Effective use of the output of the Study

(1) Approval of the IWRM plan

Both sides confirmed that the IWRM plan as the output of the Study should be utilized effectively in the Philippines, and shall make their best effort to get the IWRM plan officially approved by the Board of NWRB and the Regional Development Council of Region III.

(2) Utilizing experiences and lessons learned in the other river basins

NWRB explained that it shall formulate IWRM plans in other major river basins adapting



experiences and lessons learned in the Study.

(3) River basin organization

NWRB recommended that a river basin organization should be organized in line with the preparation of the Study. Both sides agreed that the creation of the river basin organization will be in the best interest of the Study.

**11. Other confirmation**

(1) Data collection

NWRB agreed to provide all the available data in NWRB and assist for the JICA Study Team to collect information outside of NWRB.

(2) Car arrangement

The preparatory study team requested NWRB to arrange necessary cars for the Study. NWRB explained its difficulties.

(3) Office space

Both sides confirmed that the office space will be arranged by NWRB for the use of the JICA Study Team.



List of Participants

**Philippines Side**

National Water Resources Board

Mr. Ramon B. Alikpala, Executive Director  
Mr. Nathaniel C. Santos, Deputy Executive Director  
Ms. Isidra D. Penaranda, Officer in Charge, Policy and Program Division  
Mr. Francis B. Hilarie, Economist III  
Ms. Josephine R. Billones, Engineer II, Policy and Program Division

Department of Environment and Natural Resources

Mr. Arthur C. Salazar, Chief, Forest Resources Department Division, Region III  
Mr. Cesar P. Odi, MSF, Forester, River Basin Control Office

National Irrigation Administration

Mr. Anin L. Manuel, Sr., Senior Engineer A-UPRIIS  
Mr. Leonardo S. Gonzalez, Division Manager, Region III

Metropolitan Waterworks and Sewerage System

Ms. Evangeline Dacanay, PMO-A, Central Office

Department of Public Work and Highway

Ms. Arlette C. Guzman, Engineer II, Planning of Design Division-Region III

National Power Corporation-Angat Hydroelectric Power Plant

Mr. E.M. Esclanda, Division Manager-OPTNS

Philippine Atmospheric, Geophysical and Astronomical Services Administration

Ms. Rosalie C. Pagulayan, Weather Specialist I (Flood Forecasting and Warning Section)

**Japanese Side**

The Preparatory Study Team, JICA

Mr. Hiroshi SHIONO, Leader  
Mr. Kenji NAGATA, River Basin Management  
Ms. Yoko HATTORI, Study Planning  
Mr. Rokuro KOBAYASHI, Water Resources Development and Management  
Mr. Hiroyuki OHI, Institution and Organization Systems/Environmental and Social Considerations

JICA Philippine Office

Mr. Makoto IWASE, Assistant Resident Representative  
Ms. Minnie M. Dacanay, In-House Consultant, Planning & Coordination Section

## Members of the Implementation Structure for the Study

*Steering Committee*

<b>Agency</b>	<b>Position</b>	<b>Name</b>
1. National Water Resources Board (NWRB)	Chairman	<i>NWRB Executive Director</i>
2. Department of Environment and Natural Resources (DENR)	Member	DENR Representative
3. National Economic and Development Authority (NEDA)	Member	Director, Infrastructure Staff NEDA Central Office
4. Department of Public Works and Highways (DPWH)	Member	Director, Planning Service
5. Department of Justice	Member	Atty. Ruben Fondevilla
6. Department of Finance	Member	Exec. Dir. Helen Habulan
7. National Hydraulic and Research Center	Member	Dir. Leonardo Q. Liongson
8. Department of Health	Member	Director, EHS
9. Provincial Government of Pampanga	Member	Governor
10. Provincial Government of Nueva Ecija	Member	Governor
11. Provincial Government of Bulacan	Member	Governor
12. Department of Agriculture/National Irrigation Administration	Member	Representative
13. Presidential Adviser for Central Luzon	Member	Representative
14. Philippine Atmospheric, Geophysical and Astronomical Services Administration	Member	Representative
15. Department of Interior and Local Government	Member	Representative




**Technical Working Group (TWG)**

<b>Agency</b>	<b>Position</b>	<b>Name</b>
1. National Water Resources Board (NWRB)	Chairman Vice-Chairman	
2. National Economic and Development Authority (NEDA) Central Office	Member	
3. Department of Public Works and Highways (DPWH)	Member	DPWH Central Office Representative
4. National Irrigation Administration (NIA)	Member	NIA Central Office Representative
5. National Economic and Development Authority (Region 3)	Member	Representative NEDA Region 3
6. Department of Public Works and Highways (DPWH) Region 3	Member	Representative DPWH Region 3
7. Department of Environment and Natural Resources –Region 3	Member	Representative DENR Region 3
8. DENR -Environmental Management Bureau	Member	Representative
9. DENR -Forest Management Bureau	Member	Representative
10. DENR - Parks and Wildlife Bureau	Member	Representative
11. Provincial Government of Tarlac	Member	Representative PPDO, Tarlac
12. Provincial Government of Pampanga	Member	Representative PPDO, Pampanga
13. Provincial Government of Nueva Ecija	Member	Representative PPDO, Nueva Ecija
14. Provincial Government of Bulacan	Member	Representative PPDO, Bulacan
15. National Irrigation Administration	Member	Representative NIA Region 3
16. Upper Pampanga River Integrated Irrigation Systems - NIA	Member	UP-RIIS Representative
17. River Basin Control Office	Member	Representative
18. Philippine Atmospheric, Geophysical and Astronomical Services Administration	Member	Representative
19. Metropolitan Waterworks and Sewerage System	Member	Representative
20. National Power Corporation	Member	Representative
21. Central Luzon Water District Association	Member	Representative
22. Bureau of Soil and Water Management	Member	Representative
23. National Commission on Indigenous People	Member	Representative
24. Philippine Institute of Volcanology and Seismology (PHIVOLCS)	Member	Representative

13

**IMPLEMENTATION ARRANGEMENT**  
**FOR**  
**THE STUDY**  
**ON**  
**INTEGRATED WATER RESOURCES MANAGEMENT**  
**FOR POVERTY ALLEVIATION AND ECONOMIC DEVELOPMENT**  
**IN THE PAMPANGA RIVER BASIN**  
**IN**  
**THE REPUBLIC OF THE PHILIPPINES**  
**AGREED UPON BETWEEN**  
**NATIONAL WATER RESOURCES BOARD**  
**AND**  
**JAPAN INTERNATIONAL COOPERATION AGENCY**

**,in Manila**

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**Mr. Ramon B. Alikpala**  
**Executive Director**  
**National Water Resources Board**



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**Mr. Norio MATUDA**  
**Resident Representative**  
**Japan International Cooperation Agency**  
**Philippine Office**



## **I. INTRODUCTION**

In response to the request of the Government of the Republic of the Philippines, the Government of Japan decided to conduct “the Study on Integrated Water Resources Management for Poverty Alleviation and Economic Development in the Pampanga River Basin” (hereinafter referred to as “the Study”).

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as “JICA”), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, will undertake the Study in accordance with the relevant laws and regulations enforced in Japan, in close cooperation with National Water Resources Board (hereinafter referred to as “NWRB”) and relevant organizations.

The present document set forth the Implementation Arrangement with regard to the Study and will be valid after the notification of approval by the JICA headquarters through the JICA Philippines office to NWRB.

## **II. Objectives of the Study**

The Study has the following objectives:

- (1) To formulate an Integrated Water Resources Management (hereinafter referred to as “IWRM”) plan for the Pampanga River Basin in coordination with relevant organizations.
- (2) To transfer relevant skills and technologies on IWRM to personnel of NWRB as well as relevant organizations.

## **III. Study Area**

The Study area is the Pampanga River Basin (hereinafter referred to as “the Basin”) as shown in the Annex 1, with the catchment area of 10,540 km<sup>2</sup>. It consists of major parts of the provinces of Nueva Ecija, Pampanga, Bulacan, and portions of Tarlac and Aurora. In addition, beneficiaries’ areas outside of the Basin such as Metro Manila will be considered.

## **IV. Target Year**

The target year of an IWRM plan shall be the year of 2025.



## **V. Scope of the Study**

The Study is divided into two phases:

- (1) Phase I: Basic Study
- (2) Phase II: Formulation of an IWRM Plan

Each phase shall contain the following study items:

### **Phase I: Basic Study**

#### **I-1 Collection of existing data and information**

- (1) Socio-economic profile
  - Socio-economic conditions (administrative division, population, economic activities, etc.)
  - Socio-economic development plans and other development policies/plans
  - History of investment to the water sector
- (2) Natural conditions and its monitoring system
  - Natural conditions (topography, geology, hydrogeology, meteorology, hydrology, natural environment, water quality, land use, coastal issues, etc.)
  - Meteorological and hydrological monitoring system including water quality
  - Topographical maps, hydro-geological maps, land use maps, etc.
- (3) Water utilization
  - Present water use, facilities, problems and issues
    - by sector: agriculture, domestic water, industrial water, hydropower generation, environmental water, etc.
    - by water resources: rainwater, surface water, groundwater, spring, etc.
  - Agriculture: farm product, water users' association, irrigation system, farmer's water use and consciousness on water issues
  - Urban and rural water supply: services, facilities, water supply volume, organization, operation and maintenance, financial conditions, etc.
  - Sewerage and sanitation: facilities, water volume treated, water born diseases, organization, operation and maintenance, financial conditions, etc.
  - Hydropower generation: services, facilities, water use volume, organization, operation and maintenance, financial conditions, etc.
- (4) Water related disasters (flood and sediment disasters, drought, land subsidence, etc.): location, water and sediment discharge, damages, casualties, causes, warning system, etc.
- (5) Laws and regulations

- Laws and regulations related to water
  - Legal and institutional framework for planning, approving, implementing and monitoring of water-related projects/programs
- (6) Existing database related to water resources relevant to the Study

### **I-2 Collection of existing plans of water-related projects/programs**

Existing plans of water-related projects/programs for the following sub-sectors shall be collected.

- Agriculture (irrigation, livestock, fishery, etc.)
- Urban and rural water supply
- Sewerage and sanitation
- Hydropower generation
- Water related disasters
- Environmental management (forestry, water quality, riparian environment conservation, coastal management, etc.)
- Regional development (land use, tourism, etc.)

### **I-3 Field observations**

To confirm the above data and information gathered, field observation shall be conducted.

### **I-4 Analysis**

Based on the existing data and information gathered, the following analyses shall be conducted.

- (1) Water demand projection (agriculture, urban/rural and industrial water supply and hydropower generation) considering possibility of water demand management
- (2) Estimate of water resources potential based on rainfall/run-off analysis and groundwater analysis
- (3) Water quality analysis
- (4) Flood and sediment disaster analysis
- (5) Social and economic impact analysis

### **I-5 Review and evaluation of proposed projects/programs related to water**

The proposed projects/programs related to water are to be reviewed and evaluated from the following aspects:

- Viability (technical, economic and financial aspects)
- Equity and rationality



- Water resource availability in quantity and quality
- Environmental and social impacts
- Duplication with other projects/programs
- Potential conflict
- Necessity of coordination
- Others if any

#### **I-6 Arrangement of collected data and information into a database**

The collected data and information through the Basic Study shall be arranged and compiled into a database, taking into account the National Water Information Network and other database in NWRB.

### **Phase II: Formulation of an IWRM Plan**

#### **II-1 Identification of problems and issues in the Basin from the IWRM context**

Water-related problems/issues in the Basin shall be identified and clarified based on the results of review and evaluation of existing projects/programs, stakeholder consultation and overall findings of the Study.

#### **II-2 Setup of policy guidelines for an IWRM plan in the Basin**

In accordance with the Water Code, the National IWRM plan framework, as well as the natural, social and economic characteristics and existing projects/programs in the Basin, policy guidelines for an IWRM plan shall be formulated.

#### **II-3 Conceptual plan of additional projects/programs**

In case that the existing projects/programs are not sufficient to realize an appropriate IWRM in the Basin, the concept of additional projects/programs shall be proposed according to the policy guidelines. Existing projects/programs may also be modified. In this connection, supplemental analysis shall be conducted, if necessary.

#### **II-4 Preparation of alternatives of an IWRM plan**

Alternatives of an IWRM plan shall be prepared taking into consideration the policy guidelines.

#### **II-5 Formulation of an IWRM plan**

The alternatives of an IWRM plan shall be evaluated and compared based on the policy guidelines as well as in consultation with the stakeholders. An IWRM plan,

which includes structural and non-structural measures of the following plans, shall be formulated.

- Sectors/areas/projects coordination plan
- Water demand management plan
- Water resources development and management plan
- Urban and rural water supply plan
- Sewerage and sanitation plan
- Hydro-power generation plan
- Flood and sediment control plan
- Basin environment management plan
- Operation and maintenance plan
- Other plans if necessary

#### **II-6 Plan for legal and institutional framework**

Legal and institutional framework for planning, implementing and monitoring of the projects/programs in the IWRM plan for the Basin, shall be proposed. This may include the creation of River Basin Organization for the Basin.

#### **II-7 Prioritization of the projects/programs in the IWRM plan**

The projects/programs proposed in the IWRM plan shall be prioritized based on certain standards agreed among the stakeholders.

#### **II-8 Scheduling of the IWRM investment plan**

Based on the capacity of investment for the Basin and the sub-sectors, the projects/programs proposed in the IWRM plan shall be compiled into an investment plan.

#### **II-9 Stakeholders' meetings and consultations**

During the course of the phase I and II of the Study, stakeholders' meetings and consultations shall be held several times when necessary to build consensus under the leadership of NWRB, assisted by the JICA Study Team.

#### **II-10 Workshops and seminars**

During the course of the phase I and II of the Study, workshops and seminars will be conducted for counterpart personnel and stakeholders to build consensus of IWRM concept and better understanding of the Study.



## **VI. Schedule of the Study**

The Study will be carried out according to the table below:

Item	Time (month)																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Implementation																								
Work in the Philippines	■												■											
Work in Japan	□												□											
Report	▲			▲			▲			▲						▲			▲					
	IC/R			P/R1						IT/R			P/R2						DF/R			FR		
Phase of the study	Phase1												Phase2											

IC/R: Inception Report

IT/R: Interim Report

P/R1: Progress Report (1)

P/R2: Progress Report (2)

DF/R: Draft Final Report

F/R: Final Report

## **VII. Reports**

JICA shall prepare the following reports in English and submit them to the Government of Philippines through NWRB.

### 1. Inception Report:

Thirty (30) hard copies and ten (10) soft copies at the commencement of the work in the Philippines (This report contains the schedule and methodology of the Study.)

### 2. Progress Report (1):

Thirty (30) hard copies and ten (10) soft copies

### 3. Interim Report:

Thirty (30) hard copies and ten (10) soft copies at the end of the first phase

### 4. Progress Report (2):

Thirty (30) hard copies and ten (10) soft copies

### 5. Draft Final Report

Thirty (30) hard copies and ten (10) soft copies about two months before completing the Final Report

NWRB with the other relevant organizations shall submit its comments within one (1) month after receipt of the Draft Final Report.

### 6. Final Report:

Thirty (30) hard copies and ten (10) soft copies after JICA's receipt of the comments on the Draft Final Report

## **VIII. Undertakings of the Government of the Philippines**

1. The Government of the Philippines shall take necessary measures to facilitate the



smooth conduct of the Study;

- (1) To permit the members of the JICA Study Team to enter, leave and sojourn in the Philippines for the duration of their assignments therein and exempt them from foreign registration requirements and consular fees;
  - (2) To exempt the members of the JICA Study Team from taxes, duties and any other charges on equipment, machinery and other material brought into the Philippines for the implementation of the Study;
  - (3) To exempt the members of the JICA Study Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the JICA Study Team for their services in connection with the implementation of the Study;
  - (4) To provide necessary facilities to the JICA Study Team for the remittance as well as utilization of the funds introduced into the Philippines from Japan in connection with the implementation of the Study;
2. The Government of the Philippines shall be responsible for dealing with claims which may be brought by third parties against the members of the JICA Study Team and shall hold them harmless in receipt of claims and liabilities arising in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims or liabilities arise from gross negligence or willful misconduct of the above mentioned members.
3. NWRB shall, at its own expense, provide the JICA Study Team with the following, in cooperation with other organizations concerned:
- (1) Security-related information on as well as measures to ensure the safety of the JICA Study Team;
  - (2) Information on as well as support in obtaining medical service;
  - (3) Available data (including maps and photographs) and information related to the Study;
  - (4) Counterpart personnel;
  - (5) Suitable office space with necessary equipment; and
  - (6) Credentials or identification cards.

#### **IX. Undertakings of JICA**

For the implementation of the Study, JICA shall take the following measures:

- (1) to dispatch, at its own expense, the JICA Study Team to the Philippines
- (2) to perform technology transfer to the Philippines counterpart personnel in the

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course of the Study

**X. Others**

JICA and NWRB will consult with each other in respect of any matter that may arise from or in connection with the Study.





Study Area (Pampanga River Basin)

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## 添付資料 2

実施細則(I/A)



**IMPLEMENTATION ARRANGEMENT  
FOR  
THE STUDY  
ON  
INTEGRATED WATER RESOURCES MANAGEMENT  
FOR POVERTY ALLEVIATION AND ECONOMIC DEVELOPMENT  
IN THE PAMPANGA RIVER BASIN  
IN  
THE REPUBLIC OF THE PHILIPPINES  
AGREED UPON BETWEEN  
NATIONAL WATER RESOURCES BOARD  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY**

24th November 2008, in Manila



**Mr. Ramon B. Alikpala  
Executive Director  
National Water Resources Board**



**Mr. Norio MATSUDA  
Chief Representative  
Japan International Cooperation Agency  
Philippine Office**

## **I. INTRODUCTION**

In response to the request of the Government of the Republic of the Philippines, the Government of Japan decided to conduct the "Study on Integrated Water Resources Management for Poverty Alleviation and Economic Development in the Pampanga River Basin" (hereinafter referred to as "the Study").

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of Technical Cooperation Programs of the Government of Japan, will undertake the Study in accordance with the relevant laws and regulations enforced in Japan, in close cooperation with National Water Resources Board (hereinafter referred to as "NWRB") and relevant organizations.

This document sets forth the Implementation Arrangement with regard to the Study and will be valid after the notification of approval by the JICA headquarters through the JICA Philippines office to NWRB.

## **II. Objectives of the Study**

The Study has the following objectives:

- (1) To formulate an Integrated Water Resources Management (hereinafter referred to as "IWRM") plan for the Pampanga River Basin in coordination with other concerned organizations.
- (2) To transfer relevant skills and technologies on IWRM to personnel of NWRB as well as other concerned organizations.

## **III. Study Area**

The Study area is the Pampanga River Basin (hereinafter referred to as "the Basin") as shown in the Annex 1, with the catchment area of 10,540 km<sup>2</sup>. It consists of major parts of the provinces of Nueva Ecija, Pampanga, Bulacan, and portions of Tarlac and Aurora. In addition, other beneficiary areas outside of the Basin such as Metro Manila will also be considered.

## **IV. Target Year**

The target year of an IWRM plan shall be the year of 2025.



## **V. Scope of the Study**

The Study is divided into two phases:

- (1) Phase I: Basic Study
- (2) Phase II: Formulation of an IWRM Plan

Each phase shall contain the following study items:

### **Phase I: Basic Study**

#### **I-1 Collection of existing data and information**

- (1) Socio-economic profile
  - Socio-economic conditions (administrative division, population, economic activities, etc.)
  - Socio-economic development plans and other development policies/plans
  - History of investment to the water sector
- (2) Natural conditions and its monitoring system
  - Natural conditions (topography, geology, hydrogeology, meteorology, hydrology, natural environment, water quality, land use, coastal issues, etc.)
  - Meteorological and hydrological monitoring system including water quality
  - Topographical maps, hydro-geological maps, land use maps, etc.
- (3) Water utilization
  - Present water use, facilities, problems and issues
    - by sector: agriculture, domestic water, industrial water, hydropower generation, environmental water, etc.
    - by water resources: rainwater, surface water, groundwater, spring, etc.
  - Agriculture: farm products, water users' associations, irrigation systems, farmer's water uses and consciousness on water issues
  - Urban and rural water supply: services, facilities, water supply volume, organization, operation and maintenance, financial conditions, etc.
  - Sewerage and sanitation: facilities, water volume treated, water borne diseases, organization, operation and maintenance, financial conditions, etc.
  - Hydropower generation: services, facilities, water use volume, organization, operation and maintenance, financial conditions, etc.
- (4) Water-related disasters (floods and sediment disasters, drought, land subsidence, etc.): location, water and sediment discharge, damages, casualties, causes, warning system, etc.
- (5) Laws and regulations

- In relation to water
  - Legal and institutional framework for planning, approving, implementing and monitoring of water-related projects/programs
- (6) Existing database on water resources relevant to the Study

### **I-2 Collection of existing plans of water-related projects/programs**

Existing plans of water-related projects/programs for the following sub-sectors shall be collected;

- Agriculture (irrigation, livestock, fishery, etc.)
- Urban and rural water supply
- Sewerage and sanitation
- Hydropower generation
- Water related disasters
- Environmental management (forestry, water quality, riparian environment conservation, coastal management, etc.)
- Regional development (land use, tourism, etc.)

### **I-3 Field observations**

To confirm the above data and information gathered, field observation shall be conducted.

### **I-4 Analysis**

Based on the existing data and information gathered, the following analyses shall be conducted.

- (1) Water demand projection (agriculture, urban/rural and industrial water supply and hydropower generation) considering possibility of water demand management
- (2) Estimate of water resources potential based on rainfall/run-off analysis and groundwater analysis
- (3) Water quality analysis
- (4) Flood and sediment disaster analysis
- (5) Social and economic impact analysis

### **I-5 Review and evaluation of proposed projects/programs related to water**

The proposed projects/programs related to water are to be reviewed and evaluated from the following aspects:

- Viability (technical, economic and financial aspects)
- Equity and rationality

- Water resource availability in quantity and quality
- Environmental and social impacts
- Duplication with other projects/programs
- Potential conflict
- Necessity of coordination
- Others if any

#### **I-6 Arrangement of collected data and information into a database**

The collected data and information through the Basic Study shall be arranged and compiled into a database, taking into account the National Water Information Network and other database in NWRB.

### **Phase II: Formulation of an IWRM Plan**

#### **II-1 Identification of problems and issues in the Basin from the IWRM context**

Water-related problems/issues in the Basin shall be identified and clarified based on the results of review and evaluation of existing projects/programs, stakeholder consultation and overall findings of the Study.

#### **II-2 Setup of policy guidelines for an IWRM plan in the Basin**

In accordance with the Water Code, the National IWRM plan framework, as well as the natural, social and economic characteristics and existing projects/programs in the Basin, policy guidelines for an IWRM plan shall be formulated.

#### **II-3 Conceptual plan of additional projects/programs**

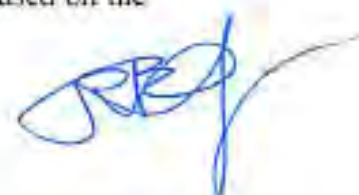
In case that the existing projects/programs are not sufficient to realize an appropriate IWRM in the Basin, the concept of additional projects/programs shall be proposed according to the policy guidelines. Existing projects/programs may also be modified. In this connection, supplemental analysis shall be conducted, if necessary.

#### **II-4 Preparation of alternatives for the IWRM plan**

Alternatives for the IWRM plan shall be prepared using existing plans of related organizations and the conceptual plans to be proposed by the Study Team, taking into consideration the policy guidelines.

#### **II-5 Formulation for the IWRM plan**

The alternatives for the IWRM plan shall be evaluated and compared based on the

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policy guidelines as well as in consultation with the stakeholders. An IWRM plan, which includes structural and non-structural measures, shall be formulated, using the following plans;

- Sectors/areas/projects coordination plan
- Water demand management plan
- Water resources development and management plan
- Urban and rural water supply plan
- Sewerage and sanitation plan
- Hydro-power generation plan
- Flood and sediment control plan
- Basin environment management plan
- Operation and maintenance plan
- Other plans if necessary

#### **II-6 Plan for legal and institutional framework**

The Legal and Institutional Framework for planning, implementing and monitoring of projects/programs in the IWRM plan for the Basin, shall be proposed. This may include the creation of a River Basin Organization.

#### **II-7 Prioritization of projects/programs in the IWRM plan**

The projects/programs proposed in the IWRM plan shall be prioritized based on certain standards agreed among the stakeholders.

#### **II-8 Scheduling of the IWRM investment plan**

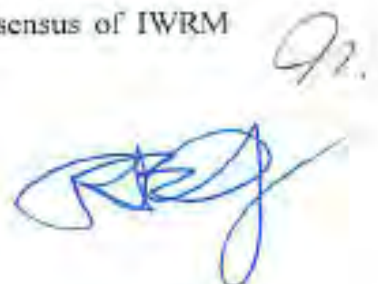
Based on the capacity of investment for the Basin and the sub-sectors, the projects/programs proposed in the IWRM plan shall be compiled into an investment plan.

#### **II-9 Stakeholders' meetings and consultations**

During the course of phases I and II of the Study, stakeholders' meetings and consultations shall be held several times when necessary to build consensus under the leadership of NWRB and assisted by the JICA Study Team.

#### **II-10 Workshops and seminars**

During the course of phases I and II of the Study, workshops and seminars will be conducted for counterpart personnel and stakeholders to build consensus of IWRM concept and better understanding of the Study.



## VI. Schedule of the Study

The Study will be carried out according to the table below:

Item \ Time	(month)																								
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Work in the Philippines	■												■												
Work in Japan	□											□													
Report	▲						▲						▲												
	IC/R						P/R1						IT/R												
Phase of the study	Phase1												Phase2												

IC/R: Inception Report

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DF/R: Draft Final Report

IT/R: Interim Report

P/R2: Progress Report (2)

F/R: Final Report

## VII. Reports

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### 3. Interim Report:

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### 4. Progress Report (2):

Thirty (30) hard copies and ten (10) soft copies

### 5. Draft Final Report

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NWRB with the other relevant organizations shall submit its comments within one (1) month after receipt of the Draft Final Report.

### 6. Final Report:

Thirty (30) hard copies and ten (10) soft copies after JICA's receipt of the comments on the Draft Final Report

### **VIII. Undertakings of the Government of the Philippines**

1. To facilitate the smooth conduct of the Study, the Government of the Philippines shall undertake the following measures:
  - (1) To permit the members of the JICA Study Team to enter, leave and sojourn in the Philippines for the duration of their assignments therein and to assume any foreign registration requirements and consular fees;
  - (2) To assume all taxes, duties and other fiscal levies which may be imposed on equipment, machinery and other material brought into the Philippines for the implementation of the Study;
  - (3) To assume all taxes, duties and other fiscal levies which may be imposed on or in connection with any emoluments or allowances paid to the members of the JICA Study Team for their services in connection with the implementation of the Study;
  - (4) To provide necessary facilities to the JICA Study Team for the remittance as well as utilization of the funds introduced into the Philippines from Japan in connection with the implementation of the Study;
2. The Government of the Philippines, through its implementing agency, shall bear claims, if any arises, against the members of the JICA Study Team, resulting from or occurring in the course of the performance of their duties, except when, after consultation between the implementing agency mentioned above and JICA, it is established that such claims arise from gross negligence or willful misconducts on the part of the members of the JICA Study Team.
3. NWRB shall, at its own expense, provide the JICA Study Team with the following, in cooperation with other organizations concerned:
  - (1) Security-related information on as well as measures to ensure the safety of the JICA Study Team;
  - (2) Information on as well as support in obtaining medical service;
  - (3) Available data (including maps and photographs) and information related to the Study;
  - (4) Counterpart personnel;
  - (5) Suitable office space with necessary equipment; and
  - (6) Credentials or identification cards.

### **IX. Undertakings of JICA**

For the implementation of the Study, JICA shall take the following measures:

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- (1) to dispatch, at its own expense, the JICA Study Team to the Philippines
- (2) to perform technology transfer to the Philippines counterpart personnel in the course of the Study

**X. Others**

JICA and NWRB will consult with each other in respect of any matter that may arise from or in connection with the Study.

A handwritten signature in blue ink, consisting of a stylized, cursive name followed by a period.



Study Area (Pampanga River Basin)

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## 添付資料 3

第1回ステアリングコミッティ会議議事録




**MINUTES OF FIRST STEERING COMMITTEE MEETING  
ON  
THE INCEPTION REPORT  
FOR  
THE STUDY  
ON  
INTEGRATED WATER RESOURCES MANAGEMENT  
FOR POVERTY ALLEVIATION AND  
ECONOMIC DEVELOPMENT  
IN THE PAMPANGA RIVER BASIN  
IN  
THE REPUBLIC OF THE PHILIPPINES**

**AGREED UPON BETWEEN  
NATIONAL WATER RESOURCES BOARD  
AND  
STUDY TEAM OF  
JAPAN INTERNATIONAL COORPORATION AGENCY**

**February 18<sup>th</sup>, 2009 at Quezon City**

  
\_\_\_\_\_  
**MAKIKO OTOGAWA**  
Study Team Leader  
Japan International Cooperation Agency

  
\_\_\_\_\_  
**RAMON B. ALK PALA**  
Executive Director  
National Water Resources Board  
(Chairman of Steering Committee)

**WITNESSED BY:**

  
\_\_\_\_\_  
**KENJI NAGATA**  
Leader of Monitoring Mission  
Japan International Cooperation Agency



In accordance with the Implementation Arrangement for "The Study on Integrated Water Resources Management for Poverty Alleviation and Economic Development in the Pampanga River Basin"(hereinafter referred to as "the Study") agreed upon between National Water Resources Board (hereinafter referred to as "NWRB") and Japan International Cooperation Agency (hereinafter referred to as "JICA") on November 24, 2008, JICA dispatched the Study Team headed by Mr. Makihiko Otagawa for the commencement of the Study.

The meeting of the Steering Committee (hereinafter referred to as "SC") was held on February 17, 2009, 9:00 a.m. – 11:00 a.m. at the Meeting Room of NWRB to discuss the contents of the Inception Report and the necessary items for the smooth implementation of Study. The meeting was chaired by Mr. Nathaniel C. Santos, Deputy Executive Director, NWRB. The list of the participants to the meeting is shown in Annex.

At the start of the meeting, the Study Team officially submitted thirty (30) hard copies and ten (10) soft copies of the Inception Report in accordance with the Implementation Arrangement for the Study.

Mr. Nathaniel C. Santos made opening remarks emphasizing the Pampanga river basin as the one of the most important river basins in the Philippines, the existing problems in the basin such as the frequent water-related disasters and the conflict among water users, which were pointed out in the Central Luzon Water Summit, and the necessity of the implementation of the Study in order to cope with the problems. Mr. Kenji Nagata, Senior Advisor of Water Resources, JICA also made opening remarks that cooperation with the related agencies is indispensable for successful implementation of the Study. He also stated that the Study is challenging not only for the improvement of the water management in the Pampanga river basin but also for being one of good examples for execution of the Integrated Water Resources Management (herein referred to as the "IWRM").

The contents of the Inception Report were explained briefly by Mr. Makihiko Otagawa, Leader of the Study Team, and were accepted by the SC with some comments and suggestions. The major comments and suggestions given in the meeting are as follows:

- (1) The SC agreed the following items:
  - The SC will take a role to deliberate and approve the plans, methodologies, schedules and all other proposals made by the Study Team in the course of the Study.
  - The Technical Working Group (herein referred to as the "TWG") will be responsible to furnish the necessary data/information to the Study Team and further undertake the technical supports for the Study Team. The SC also agreed that the members of TWG would attend the meetings of the SC.
  - Difficulties are foreseeable in holding the stakeholder meeting as well as all other coordinating works with the relevant agencies during a period from April to July 2010 due to the general election scheduled in May 2010. The Study Team will re-examine the study schedule, and show the revised schedule to NWRB after approval of JICA.
- (2) The members of the SC gave the following comments, and the Study Team will incorporate them into the Study:
  - Ms. Araceli C. Ordina, DENR suggested that the good governance of the water resources management should be examined as one of the targets outcomes of the proposed IWRM Plan.
  - Mr. Eugene Diaz, RBCO-DENR suggested that the members of the SC at the director levels shall attend the SC meeting as the decision makers. He also commented that the LGUs, who are affected by the inter-basin transfer, should be included as the stakeholders.

- Mr. Ricardo C. Medina, Provincial Gov. of Bulacan suggested that the irrigator's association (farmer's water use association) and the fishery/aquatic resources council should be included in the members of the TWG.
- (3) At the end of the meeting, Mr. Santos requested the members of SC to submit the further written comments and suggestions on the Inception Report to NWRB so as to transmit them to the Study Team.

With no other matters for discussion, the meeting was adjourned by Mr. Santos at 11:00 am.

**The Study on Integrated Water Resources Management for Poverty Alleviation and  
Economic Development in the Pampanga River Basin**  
**First Steering Committee Meeting**  
*Meeting Room, NWRB Quezon City*  
*February 17, 2009*

**Attendance Sheet**

NAME	POSITION	OFFICE	CONTACT NO.
1. Mr. Nathaniel C. Santos	Deputy Exec. Director	NWRB	(02) 920-2693
2. Mr. Edgar Basilio	Senior Economic Development Specialist	NEDA Central Office	(02) 631-3724
3. Mr. Agustin Mendoza	Supervising Economic Development Specialist	NEDA Region III	(02) 961-3902
4. Mr. Marciano M. Franco	Chief Economic Development Specialist	NEDA Region III	(02) 961-3902
5. Ms. Araceli C. Oredina	Development Management Officer IV	DENR	(02) 961-3902
6. Mr. Arthur dela Cruz		NIA	(02) 928-4130
7. Mr. Orlando M. Casio	Engineer III, DPWH-PS	DPWH	(02) 3304-3069
8. Mr. Atty. Ruben Fondevilla	Assistant Chief State Counsel	DOJ	(02) 524-9315
9. Mr. Eugene Diaz	Civil Engineer / Sanitary Engineer	RBCO-DENR	(02) 924-2540
10. Ms. Rosalie Pagulayan		PAGASA	(02) 929-4065
11. Ms. Rosalia G. Adonis	Environmental and Natural Resources Officer, Pampanga	Provincial Government of Pampanga	(045)861-3606
12. Mr. Ricardo C. Medina, Jr.	Environmental and Natural Resources Officer, Bulacan	Provincial Government of Bulacan	(044) 791-8163
13. Mr. Elmer C. Alcanar	Provincial Development Officer II	Provincial Government of Bulacan	(044) 791-0901
14. Ms. Susan P. Abaño	Engineer IV	NWRB	(02) 920-2724
15. Ms. Felisa M. Manlulu	Information Officer IV	NWRB	(02) 920-2724
16. Ms. Josephine R. Billones	Engineer II	NWRB	(02) 920-2724
17. Mr. Francis B. Hilarie	Economist III	NWRB	(02) 920-2724
18. Ms. Florimel R. Balbedina	Economist III	NWRB	(02) 920-2724
19. Mr. Kenji NAGATA	Senior Advisor	JICA Headquarters	
20. Ms. Yoko HATTORI	Program Officer	JICA Headquarters	
21. Mr. Naoto KUWAE	Representative	JICA Philippines Office	(02) 889-7119
22. Ms. Minnie Dacanay	In-house Consultant	JICA Philippines Office	(02) 889-7119
23. Mr. Makihiko OTOGAWA	Team Leader / IWRM	JICA Study Team	0917-492-0023
24. Mr. Tadanori KITAMURA	Deputy Team Leader/ Water Resources Development and Management Planning	JICA Study Team	0927-794-0820
25. Mr. Yukihiro MIZUTANI	Institution, Organization /Consensus Building	JICA Study Team	0927-793-0420




## 添付資料 4

第2回ステアリングコミッティ、テクニカルワーキンググループ

合同会議議事録




**MINUTES OF JOINT STEERING COMMITTEE AND  
TECHNICAL WORKING GROUP MEETING  
ON  
PROGRESS REPORT 1  
FOR  
THE STUDY  
ON  
INTEGRATED WATER RESOURCES MANAGEMENT  
FOR POVERTY ALLEVIATION AND  
ECONOMIC DEVELOPMENT  
IN THE PAMPANGA RIVER BASIN  
IN  
THE REPUBLIC OF THE PHILIPPINES**

**AGREED UPON BETWEEN  
NATIONAL WATER RESOURCES BOARD  
AND  
STUDY TEAM OF  
JAPAN INTERNATIONAL COORPORATION AGENCY**

October 19<sup>th</sup>, 2009 at Quezon City

  
MAKIHIKO OTOGAWA  
Study Team Leader  
Japan International Cooperation Agency

  
RAMON B. ALIKPALA  
Executive Director  
National Water Resources Board  
(Chairman of Steering Committee)

In accordance with the Implementation Arrangement for "the Study on Integrated Water Resources Management for Poverty Alleviation and Economic Development in the Pampanga River Basin" (hereinafter referred to as "the Study") agreed upon between National Water Resources Board (hereinafter referred to as "NWRB") and Japan International Cooperation Agency (hereinafter referred to as "JICA") on November 24, 2008, the Study Team officially submitted thirty (30) hard copies and ten (10) soft copies of Progress Report 1 to NWRB on September 02, 2009.

In order to discuss the contents of the above Progress Report 1, the joint meeting of the Steering Committee (hereinafter referred to as "SC") and Technical Working Group (hereinafter referred to as "TWG") was held on October 06, 2009, 9:30 a.m. – 11:30 a.m. at Social Action Center of Pampanga, San Fernando City. The meeting was chaired by Atty. Nathaniel C. Santos, Deputy Executive Director, NWRB. The list of the participants to the meeting is shown in Annex.

Atty. Nathaniel C. Santos, in his opening remarks, highlighted the importance of integrated water resources management in the light of the disasters in the country brought about by two typhoons during the past several days. He expressed appreciation to JICA and to the Study Team for the conduct of the Study. For the benefit of the NWRB Board members who are part of the Steering Committee and failed to attend the meeting, he requested that the Study Team makes a separate presentation of the Progress Report 1 in the NWRB Board meeting scheduled on October 21, 2009.

Mr. Norio Matsuda, Chief Representative of JICA, gave a short message expressing his sympathy for the victims of floods and landslides brought about by typhoon Ondoy. He mentioned that the considerable flood inundation in Metro Manila and Bulacan was due to heavy rains and environmental degradation, and the Study is indeed very timely and relevant. In the light of the recent catastrophe, he hoped that ideas and efforts will be concerted in the Study for better management of Pampanga river basin that will benefit surrounding communities. On behalf of JICA, he expected that the Government of the Philippines will be able to utilize the results of the Study in formulating policies and planning projects for Pampanga river basin.

The contents of the Progress Report 1 were briefly explained by Mr. Makihiko Otagawa, Team Leader for the Study, and they were accepted by the members of the SC and the TWG with some issues, concerns, observations and recommendations, the major parts of which are as described below:

- (1) Mr. Hilton Hernando, Senior Weather Specialist of Pampanga River Basin Flood Forecasting and Warning Center, PAGASA noted that if water releases from dams during typhoons as seen in the recent occurrences at Angat and Pantabangan dams were properly managed, the issues on water shortage could be hopefully alleviated.
- (2) Dir. Vicente Tuddao, Jr., Executive Director of RBCO inquired about the institutional arrangements for management of Pampanga river basin and the involvement of the LGUs in the management of the water resources. Mr. Otagawa replied that there is no definite proposals yet on this matter;

Dir. Tuddao also commented that the estuary management is deemed to have been left behind in the Study. Mr. Otagawa explained that the necessary river maintenance flow had been preliminarily examined as a point of consideration on the estuary management, and the same time, the further study on the matter is still being made.

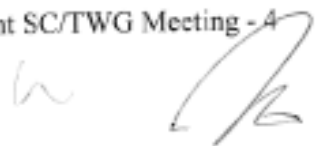
Dir. Tuddao further commented that the Study Team's recommendations on usage of the Candaba swamp for flood mitigation would be a good option and should continue working on. Mr. Otagawa explained that the important preconditions on the use of the swamp for flood mitigation would be addressed, namely, the preservation of the swamp as the habitat of the migratory birds during the rainy season and adaptation of the appropriate design scale for the flood mitigation that could require less house relocations.

Dir. Tuddao finally proposed the technical assistance of JICA for crafting of a river law as an offshoot for the study in order to address the uncontrolled proliferation of informal settlers along creeks and rivers that contributes to flooding.

- (3) Mr. Minoru Kamoto, JICA River Management Adviser commented the following points:
- It is necessary to elaborate the relationship between the rule curve for reservoir operation of Angat Dam and the recorded frequency of shortage in water supply released from Angat Dam, because the frequency of water shortages could be variable depending on the contents of the rule curve not directly reflecting the actual natural phenomenon.
  - The previous river channel improvement in Pampanga Delta Development Project-Flood Component brought out the serious problems in relocating the residents. Taking such unfavorable precedents into account, the appropriate relocation plan should be carefully examined in the project planning stage and timely executed,
  - There exist the trans-basin water conveyance systems from Quezon Province and Cagayan Province to Angat and Pantabangan Dam Reservoirs in the Study Area. The serious flood damage often occur in both of Quezon and Cagayan Province, and therefore, the said existing conveyance systems should not only function as the water supply facility but also contribute to flood mitigation in the provinces.
  - Many people said the excessive release of discharge from Angat Dam had caused the serious flooding even along Meycauayan River during the recent Typhoon Ondoy. However, Angat dam is not located within the catchment area of Meycauayan River, and therefore, it is virtually difficult to relate the flood damage of the river to the release of discharge from Angat dam. The Study Team is requested to clarify the actual conditions affected by the discharge released from Angat Dam.
  - The river sand/gravel quarrying in the downstream channel of Angat River from Bustos Dam is deemed to cause serious damage to the structure of the dam. The construction works of river structures such as bridges as seen in Pasig-Marikina River could also possibly bring out the adverse effect to the river morphologies. From this point of view, the river law as proposed by Dir. Tudao should prescribe the necessary control of river mining and constructions works to preserve the river environments.
- (4) Mr. Mario Collado, Engineer V of Bureau of Soil and Water Management (BSWM), Department of Agriculture suggested consideration on storage and recharging of the excessive basin runoff discharge into the aquifers in Pampanga and Bulacan areas for effective use of groundwater. Mr. Otagawa responded that groundwater recharging is rather difficult and does not address the serious salinity intrusion to the groundwater. The shortage of the groundwater for the present and future potential water demand cannot also be addressed solely by recharging, so the Study will look into alternative water sources from surface water.
- Mr. Collado also suggested that the watershed should be divided into upstream, middle-stream and downstream since the small water impounding management (SWIM) project or small farm reservoirs are best constructed at middle-stream, effectively contributing to recharging of groundwater.
- (5) Mr. Gemiliano V. Ferrer, Provincial Planning Development Coordinator of Nueva Ecija recommended the projects for SWIM rather than the projects for storage dam as a solution not only to increase recharge of the groundwater but also to improve the environmental and micro-climatic condition. Mr. Otagawa informed that the Study has included the development of SWIM projects although it was not mentioned in his presentation;
- (6) Ms. Candida P. Cabinta, Development Management Officer V of NCIP proposed that the indigenous people (IP), who reside in Pampanga river basin, should be involved in the activities of the Study even in the planning stage in order for them to be able to actively participate in the watershed management and to have incentives as the owner of the territory. Mr. Kitamura informed that the Study Team has the list of IPs but data is needed on its geographical locations for incorporation in the GIS.
- (7) At the end of the meeting, Atty. Santos emphasized that any specific water resources management project has not been advocated in the Study yet. The stakeholders for the Study are



still at the level of understanding the issues and concerns within the study area, which would lead to actions and recommendations for the effective management of water resources within Pampanga river basin and to achieve the goals and policies of the national government. He finally requested all of the SC/TWG members to submit any other comments on the Progress Report 1 within one more week. With no other matters to discuss, the meeting was adjourned by Atty. Santos at about 11:30 am

Two handwritten signatures in black ink are located at the bottom right of the page. The first signature is a simple, cursive 'w'. The second signature is more complex, starting with a large loop and ending with a horizontal stroke.

**The Study on Integrated Water Resources Management for Poverty Alleviation and Economic Development in the Pampanga River Basin**  
**Joint Steering Committee and Technical Working Group Meeting**  
*Social Action Center of Pampanga (SACOP), San Fernando City, Pampanga October 6, 2009*  
**Attendance Sheet**

NAME	POSITION	OFFICE
1. Nathaniel C. Santos	Deputy Executive Director	NWRB
2. Jesse C. Felizardo		PMO-FCSEC, DPWH
3. Agustin C. Mendoza	OIC-Chief/Supervising Econ. Development Specialist	NEDA Reg. 3
4. Rosendo D. Panganiban	Senior Engineer A	NIA Reg. 3
5. Gemiliano V. Ferrer	Provincial Planning and Development Coordinator	PPDO, Nueva Ecija
6. Lorna B. Balmeo	Project Evaluation Officer IV	PPDO, Nueva Ecija
7. Perla T. Delos Reyes		Phivolcs
8. Lovercain de Jesus		Tarlac City WD
9. Daxx Llorente		SCADC
10. Candida P. Cabinta	Development Management Officer V	NCIP
11. Mario Collado	Engineer IV	BSWM, DA
12. Antonio A. Caddac	Senior EMS	Bulacan ENRO
13. Vicente Tuddao, Jr.	Executive Director	RBCO, DENR
14. Eugenio Diaz, Jr.	Civil/Sanitary Engineer	RBCO, DENR
15. Cesar P. Odi	Forester I/Technical Staff	RBCO, DENR
16. Hilton Hernando	Senior Weather Specialist	PRFFWC, PAGASA
17. Armando P. Taruc	OIC, Pampanga River Basin Flood Forecasting and Warning Center	PRFFWC, PAGASA
18. Rollie I. Legaspi		PPDO, Bulacan
19. Elmer C. Alcanar	Project Development Officer II	PPDO, Bulacan
20. Felixberto Lansigan	Senior Forest Management Specialist	DENR - FMB
21. Arthur R. dela Cruz	Principal Engineer	NIA
22. Rosalia G. Adonis	ENRO	Pampanga ENRO
23. Walter San Diego		SCADC/CDC
24. Virgilio M. Garcia	Principal Hydrologist A	NPC, DRWD
25. Gregel B. Redublado	Department Manager, Dam and Reservoir Operation	NPC, DRFFD
26. Richard Evangelista	Planning Officer II	PPDO, Tarlac
27. Reynaldo Tabelina		PPDO, Tarlac
28. John T. Zapata	Economic Development Specialist	NEDA Reg. 3
29. Josefina N. Pineda	Project Evaluation Officer	PPDO, Pampanga
30. Norio Matsuda	Chief Representative	JICA Philippines Office
31. Naoto Kuwae	Assistant Resident Representative	JICA Philippines Office
32. Minoru Kamoto	JICA River Management Advisor	JICA-DPWH
33. Minnie Dacanay	In-house Consultant	JICA-Philippines Office
34. Makihiko Otagawa	Team Leader/IWRM	JICA Study Team
35. Tadanori Kitamura	Deputy Team Leader	JICA Study Team
36. Yukihiko Mizutani	Organization Institution Expert	JICA Study Team
37. Takeshi Ikematsu	Hydrology/River Management Expert	JICA Study Team
38. Kunita Okuwa	Agriculture Irrigation Expert	JICA Study Team
39. Yayoi Yoshioka	Environmental and Social Considerations Expert	JICA Study Team
40. Emadelyn M. Quiñones	Water Environment/Watershed Management Expert	JICA Study Team
41. Jesusa B. Mallare	Water Supply and Sewerage Planning Expert	JICA Study Team
42. Francis Joseph M. Funa	GIS Engineer	JICA Study Team
43. Eleazar Rapido	Secretary	JICA Study Team
44. Isidra D. Peñaranda	OIC, Policy and Program Division	NWRB
45. Felisa M. Manlulu	Information Officer IV	NWRB
46. Susan P. Abaño	Engineer IV	NWRB
47. Emmie L. Ruales	Engineer IV	NWRB
48. Francis B. Hilarie	Economist III	NWRB
49. Florimel R. Balbedina	Economist III	NWRB
50. Jesusa T. Roque	Engineer III	NWRB
51. Lilian P. Gacusan	Statistician II	NWRB
52. Nora M. Andrade	Administrative Assistant V	NWRB

