ASIAN DEVELOPMENT BANK

TAR:PHI 36540

TECHNICAL ASSISTANCE

TO THE

REPUBLIC OF THE PHILIPPINES

FOR A

MASTER PLAN FOR THE AGUSAN RIVER BASIN

December 2004

CURRENCY EQUIVALENTS

(as of 15 November 2004)

Currency Unit	–	peso (₱)
₱1.00	=	$.017754
$1.00	=	₱56.3250

ABBREVIATIONS

ADB	–	Asian Develoment Bank
AFMA	–	Agriculture and Fisheries Modernization Act
DA	–	Department of Agriculture
DENR	–	Department of Environment and Natural Resources
DMC	–	developing member country
DPWH	–	Department of Public Works and Highways
EA	–	executing agency
IRBM	–	integrated river basin management
IWRM	–	integrated water resources management
LGU	–	local government unit
NEDA	–	National Economic and Development Authority
NCIP	–	National Commission on Indigenous People
NGO	–	nongovernment organization
NIA	–	National Irrigation Administration
NWRB	–	National Water Resources Board
TA	–	technical assistance
TASC	–	technical assistance steering committee

TECHNICAL ASSISTANCE CLASSIFICATION

Targeting Classification	–	Targeted intervention
Sector	–	Agriculture and natural resources
Subsector	–	Water resources management
Themes	–	Sustainable economic growth, Inclusive social development, and Environmental sustainability
Subthemes	–	Developing rural areas, Human development, and Natural resources conservation

NOTE

(i) The fiscal year (FY) of the Government and its agencies ends on 31 December.

(ii) In this report, "$" refers to US dollars.

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PHILIPPINES
AGUSAN RIVER BASIN
LOCATION OF MAJOR RIVERS
LUZON
VISAYAS
MINDANAO
Manila
Project Location
118°00'E
126°00'E
16°00'N
8°00'N
9°00'N
7°00'N
122°00'E
Bohol Sea
Sulu Sea
Moro Gulf
Davao Gulf
Surigao
Badas
SURIGAO DEL NORTE
AGUSAN DEL NORTE
Butuan Bay
Nasipit
Tandag
Butuan
SURIGAO DEL SUR
Balingoan
MISAMIS ORIENTAL
Dipolog
Oroquieta
Cagayan de Oro
Prosperidad
Tagoloan
Agusan
Agusan R.
AGUSAN DEL SUR
Bislig
Pulangi
BUKIDNON
Malaybalay
ZAMBOANGA DEL NORTE
MISAMIS OCCIDENTAL
ZAMBOANGA DEL SUR
Tubod
Marawi
Pagadian
LANAO DEL NORTE
Agus
Maramag
Monkayo
Montevista
Cateel
Ipil
LANAO DEL SUR
Pulangi
DAVAO DEL NORTE
Tindalo
ZAMBOANGA SIBUGAY
Midsayap
Kibawe
Asuncion
Tagum
Nabunturan
COMPOSTELA VALLEY
NORTH COTABATO
Sangali
Davao City
DAVAO ORIENTAL
Nuling
Kidapawan
Mati
Zamboanga City
Shariff Aguak
MAGUINDANAO
Digos
Isulan
SULTAN KUDARAT
Koronadal
DAVAO DEL SUR
Tacurong
SOUTH COTABATO
Gen. Santos
Alabel
Kiamba
Maasim
SARANGANI
Project Area
National Capital
Provincial Capital
City/Town
National Road
Provincial Road
River
Provincial Boundary
Boundaries are not necessarily authoritative.
N
0
25
50
Kilometers

I. INTRODUCTION

1. During the 2003 country programming mission, the Government of the Republic of the Philippines requested the Asian Develoment Bank (ADB) technical assistance (TA) to prepare a master plan for the Agusan River Basin, following an integrated river basin management (IRBM) approach. The TA Fact-Finding Mission was fielded from 4 to 17 November 2004 to develop the project concept. Agreements were reached on the objectives, scope of work, cost estimates and financing plan, implementation arrangements, and terms of reference for the consultants for the TA. The TA is included in ADB's country strategy and program update for the Philippines.[1] The TA framework is in Appendix 1.

II. ISSUES

2. The Agusan River Basin, located in the northeastern part of Mindanao (map attached), is the third largest river basin of the Philippines with a river length of 350 kilometers (km) and a total drainage area of 10,921 km^2. The basin is divided into three subbasins on the basis of topographic features: (i) lower Agusan River Basin, which is the area along the downstream reach from Amparo in Agusan del Norte Province; (ii) middle Agusan River Basin, which is the area along the reach between Amparo and Sta. Josefa in Agusan del Sur Province; and (iii) upper Agusan River Basin, which is the area along the upstream reach from Sta. Josefa in Compostela Valley Province. Currently, there are ongoing agricultural development and flood control projects in the lower Agusan River including Butuan City. The Lower Agusan Irrigation Development Project (7,922 hectares [ha]) together with the Flood Control Project (phase II) is being implemented with funding assistance from the Japan Bank for International Cooperation.

3. A substantial part of the Agusan River Basin is composed of alluvial plain and river mouth delta. The lowlands, along the Agusan River, downstream from its confluence with the Banza River in the east bank and the Agusan Pequeño River in the west bank, consist of a vast marshy flood-prone area. This marshy land in the middle reach of the Agusan River tends to retard water flow, thus causing this portion of the river to be the habitat of snails carrying schistosomiasis parasites. Appropriate river management is necessary to improve water flow and control the spread of the disease. Agusan Marsh covering a total area of 19,197 ha^2 was proclaimed a Wildlife Sanctuary in 1996. The marsh serves as a flood retention basin for the Agusan River to cut the peak discharge of flash floods to downstream towns. The marsh harbors unique and pristine habitats like the sago and peat swamp forests. It is also the habitat of rare and endangered fauna. A comprehensive impact assessment of the marsh and formulation of a plan for the area are necessary to develop the middle Agusan River Basin. An impact assessment of the marsh is required to formulate the Agusan River Basin's development plan.

4. The Agusan River, which could be tapped for its abundant water resources, is not being fully utilized to generate economic growth and development. Water supply is insufficient in the dry season and, sometimes, prolonged drought brings about damage to agricultural production. During the wet season, recurrent overflow of the river brings serious and enormous damage to lives, properties, and agricultural crops as well as to infrastructure facilities that support agricultural activities. To date, no integrated basin development plan has been formulated for the Agusan River Basin. Regional development plans prepared by the National Economic and

[1] The TA first appeared in *ADB Business Opportunities* (Internet edition) on 17 November 2004.
[2] The Agusan Marsh is located within the political jurisdiction of Veruela, Loreto, Bunawan, La Paz, Rosario, and San Francisco municipalities of Agusan del Sur Province.

Development Authority (NEDA), and the CARAGA Region, do not address the issue of coordination among provincial governments along the Agusan River, or multiple uses of water resources. This issue is important to avoid conflict of interests in water allocation and resource transfer from downstream to upstream communities. Provincial development plans in the upstream provinces (Compostela Valley and Agusan del Sur) did not prioritize watershed management.

5. Watersheds in the basin are heavily degraded. Irrigation systems deteriorate rapidly because of heavy siltation in the facilities and lack of an operation and maintenance budget. The rapid denudation of the watershed area by illegal logging, slash-and-burn agriculture, and forest fires are the major causes of water shortage affecting the irrigation system. Watersheds have to be restored to secure water resources continuously and to achieve sustainable agricultural development. The denudation of the watershed area is one of the causes of frequent floods in the downstream area of the Agusan River.

6. The National Irrigation Administration (NIA) identified several proposals for irrigation development in the Middle Agusan River Basin; however these proposals were prepared more than 7 years ago and only at reconnaissance level. The ongoing and newly proposed projects were designed as individual projects, and neglected the benefits of multipurpose and integrated water resources development and management. It is important to prepare a comprehensive strategic plan for sustainable development of the Agusan River Basin to optimize the use of its resources and facilitate sustainable management and development.

7. Mining operations in Compostela Valley are widespread. Operations of these mines do not follow sound environmental management; an estimated 360,000 tons of mine tailings is discharged annually into the Agusan River through the Naboc River. Mining operations in Mount Diwata use mercury, cyanide, and explosives, which have serious direct effects on the environment as well as on farmers and residents of the Monkayo area, and indirect effects on the population living within the basin.

8. Most lessons learned and highlighted in ADB's water policy[3], are relevant in preparing a master plan for the Agusan River Basin. The principal lesson learned from investment in the water sector, and from a review of the sector's current context in the developing member countries (DMCs), is that ADB and its DMCs need to move rapidly from an era of disaggregated water sector investments aimed primarily at creating assets to an era of holistic, integrated investments to promote efficient water use. Investment in water supply and sanitation, irrigation and drainage, hydropower, flood control, and watershed management should be set in the context of managing water resources within river basins.

9. Currently, coordination among river basin stakeholders in the Agusan River Basin is very weak. To meet the increasing challenges of water scarcity, pollution, and degradation of watersheds and ecosystems, water and related resources need to be managed in an integrated manner. Integrated water resources management (IWRM) is a process to improve the planning, conservation, development, and management of water, forest, land, and aquatic resources in a river basin context. Such an approach will maximize economic benefits and social welfare in an equitable manner without compromising the sustainability of vital environment systems.

10. To implement IWRM, the establishment of river basin organizations (both formal and informal) will facilitate stakeholder consultation and participation, and help improve planning,

[3] ADB. 2001. *Water for All: The Water Policy of the Asian Development Bank* . Manila.

information gathering, monitoring, and advisory services to local and national authorities. Basin organizations will help prepare and maintain basin profiles with information on water demand and uses, and approved planning directions and standards. Community involvement in resource monitoring and management should be organized on a river basin basis.

11. Under the Agriculture and Fisheries Modernization Act (AFMA), the Government intends to implement specific principles and guidelines for irrigation and watershed development, providing for economic cost recovery, devolution of communal systems to local government units, and promotion of private sector-led development of minor systems. However, funding shortages have greatly constrained implementation of the AFMA. Similarly, limited national budget allocations for operation and maintenance of national irrigation systems, and NIA's inability to increase contributions from water users have led to a deterioration in irrigation system efficiencies. NIA also suffers from financial, organizational, and staffing constraints.

12. The devolution of authority needs to be complemented by capacity building at community level so that poor people, who often lack skills and organizational structure, are able to effectively carry out their new responsibilities. All water sector interventions must include sufficient time and financial resources to enable direct stakeholders to organize and to voice their opinion. A master plan for the Agusan River Basin has to be cognizant of the multiple uses of its resources, needs of the direct and indirect stakeholders, capacities and institutional framework for managing and developing the large basin area, and financial and human resources required for a holistic approach to basin management.

III. THE TECHNICAL ASSISTANCE

A. Purpose and Output

13. The TA will help the Government prepare a master plan for the Agusan River Basin in Mindanao through an IRBM approach with the participation of all stakeholders, including civil society, the private sector, the local government units (LGUs), and the national Government. The goal of the master plan is to map out a development strategy that, once implemented, will promote optimal development of resources and reduce poverty in the Agusan River Basin.

14. The TA will help the Government (i) hold extensive consultations with stakeholders in the Agusan River Basin, (ii) formulate a plan to strengthen IRBM capability in relevant government organizations as well as people in communities, and (iii) identify appropriate institutional arrangements for managing the basin.

B. Methodology and Key Activities

15. The TA will collect relevant statistical data relating to climatic, hydrologic, geographic, hydrogeological, environmental, and socioeconomic conditions in the basin; and review the existing policies and strategies in water-related sectors. It will review the role and sustainability of a river basin organization, resources transfer mechanisms between downstream residents and upstream poor people living in the watershed areas, and participatory approaches for formulation of a master plan for the whole river basin.

16. After identifying stakeholders in the Agusan River Basin, intensive consultation meetings with stakeholders in the downstream, midstream and upstream areas will be conducted to identify their needs and resolve conflict of interests, determine approaches to develop the river basin in the future while protecting environmentally sensitive areas.

17. The consultant team will assess the role of the existing basin organizations, such as Laguna Lake Development Authority and Agno River Basin Commission,[4] with analysis of the issues on sustainability of inactive organizations, such as Cagayan River Basin Commission and Bicol River Basin Commission.

18. The TA will then firm up the development strategy for the Agusan River Basin, taking into consideration the outcome of the stakeholder consultations. At the end of phase 1, a workshop will be held for representatives from the Department of Environment and Natural Resources (DENR), National Water Resources Board (NWRB), Department of Agriculture (DA)/NIA, Department of Public Works and Highways (DPWH), and four provincial governments,[5] Butuan City government, nongovernment organizations, and other stakeholders to discuss the basin development strategy as well as the consultant team's interim report. The development strategy will be discussed at the tripartite meeting among representatives from the Government, the consultant team, and ADB.

19. In phase 2, a master plan for the Agusan River Basin will be prepared based on the development strategy agreed upon at the end of phase 1. The master plan will identify measures for strengthening the capability for IRBM, and assess the necessity for the Agusan River Basin Commission. The master plan will include the prioritized list of potential projects in irrigation, watershed restoration and management, environmental protection, hydropower, domestic and industrial water supply and other sectors, with preliminary cost estimates of each project. The master plan will be presented and discussed in a final workshop, and will be used by the Government and ADB and other development partners to inform future development activities.

C. Cost and Financing

20. The total TA cost is estimated at $1,390,000 equivalent, of which $490,000 is in foreign exchange cost and $900,000 is in local currency cost. The Government has requested ADB to finance $970,000 equivalent covering the entire foreign exchange cost and $480,000 equivalent of the local currency cost. The TA will be financed by ADB on a grant basis from ADB's TA funding program. The Government will assume the balance of the local currency cost of $420,000 equivalent by providing experienced counterpart staff, appropriate office space in Manila and Butuan City, data, administrative and clerical services, and communications. Detailed cost estimates are in Appendix 2.

D. Implementation Arrangements

21. The Executing Agency for the TA will be DENR in association with NWRB. A TA steering committee (TASC) will be established in Manila to review the progress and outputs of the TA. The TASC will be chaired by a senior officer in DENR, and cochaired by a senior official of NWRB. The members of TASC will be senior representatives from NEDA, DA/NIA, DPWH, National Commission on Indigenous People (NCIP), and representatives of the four provincial governments involved.[5] A technical working group, chaired by the regional director of DENR,[6] and comprising staff from NEDA regional office, DA/NIA regional office, NCIP regional office, representatives from four provincial governments,[5] and Butuan City government, will be

[4] The Agno River Basin Commission was recently abolished by the President's Office.
[5] Agusan del Norte, Agusan del Sur, Surigao del Sur, and Compostela Valley.
[6] Including staff from Environmental Monitoring Bureau and Mines and Geoscience Bureau.

established in Butuan City for close monitoring of the consulting services and to discuss technical issues. DENR has therefore agreed to immediately nominate a project officer with the rank of directorate head in DENR/NWRB, who will be the point of contact between DENR and ADB and ultimately responsible for the day-to-day implementation of the TA.

22. The TA will be implemented over 1 year in two phases of 4 and 8 months starting February 2005. A consultant team will be stationed in Butuan City, the largest city in the basin, located at the mouth of the Agusan River. International consultants (17 person-months) and domestic consultants (58 person-months), for a total of 75 person-months will be engaged through an international consulting firm. The team leader, an international consultant, will work full-time in the Philippines for the duration of the TA study except for 1 month between phase 1 and phase 2. Expertise will be required in IRBM, river basin planning, hydrology, hydraulic structure engineering, irrigation, sociology, watershed management, institutional development, environment, economics, and database and/or geographic information system. The consultants will be engaged in accordance with ADB's *Guidelines on the Use of Consultants*, using the cost-based selection method and simplified technical proposals. The consultants will begin fieldwork in June 2005 and will complete it in May 2006. Outline terms of reference for the consulting services are in Appendix 3.

23. The TA will be implemented in a fully participatory manner, involving extensive consultations with local governments and communities in the basin. Representatives of the stakeholders, including gender-balanced communities, will be invited to the workshops to be held at the end of the first and the second phases. Five stakeholders active in the planning process will be invited to participate in a study trip abroad to observe best river management practices. They will be required to produce as a team a study report on the best practices studied. The Brisbane river basin was identified as a potential relevant basin for study.

24. The consultants will submit four reports and papers for workshops. The inception report, to be submitted within 1 month of the start of the TA, will summarize the initial findings and present an updated work plan. The interim report, to be submitted 1 week before the end of phase 1, will describe the findings and recommendations of the first phase, and will be reviewed by the TASC and by a tripartite meeting of DENR, the consultants, and ADB. The draft final report will be submitted 2 weeks before the end of phase 2, and will be discussed at a tripartite meeting and a second workshop. The final report will be submitted 2 weeks after the final tripartite meeting. All reports will be prepared in English. Equipment will be procured in accordance with ADB's *Guidelines for Procurement*.

IV. THE PRESIDENT'S DECISION

25. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of $970,000 on a grant basis to the Government of the Philippines for a Master Plan for the Agusan River Basin, and hereby reports this action to the Board.

TECHNICAL ASSISTANCE FRAMEWORK

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
Goal Sustainable use of Agusan River Basin resources to reduce poverty	Gross domestic product in the river basin higher than the national average with the execution of the master plan Reduced incidence of floods and drought in the basin with the execution of the master plan Percentage of population below the poverty line decreased from 60.7% to below 50% with the execution of the master plan	National and local government statistics Annual socioeconomic reports at provincial and district levels Provincial socioeconomic survey Local government tax revenues	
Purpose Preparation, dissemination, and approval of Master Plan for the Agusan River Basin	A. Key river management outcomes (i) Plan for rehabilitation and construction of irrigation system of about 20,000 hectares (ha) by 2006 (ii) Protection of about 10,000 ha of flood-prone areas designed by 2006 (iii) A flood warning system designed in the basin by 2006 B. Key economic and social outcomes (i) Completion of water supply plan by 2006 (ii) Average water consumption in the basin increasing from 41 cubic meters (m^3) per capita per day to 120 m^3 per capita per day in 2020 (iii) Completion of a plan by 2006 on water supply service coverage ratio increasing from 57% to 82% in 2020	National and local government statistics Coordination committee report Media coverage National and local government report on disasters National Irrigation Administration, local government units (LGUs), water users reports on water availability	(A) Stable peace-and-order situation in the river basin (A) Increased private sector investment in the basin (R) Conflicts among resources users (A) Continued Strong political commitment (A) Acceptance of the master plan by the national Government and local governments concerned

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
	C. Institutional development (i) Integrated river basin management (IRBM) capacity strengthened in local governments and communities (ii) Arrangements for management of the basin		
Outputs Master Plan for the Agusan River Basin prepared, including (i) Analysis of water resource (ii) Identification of stakeholders (iii) Options for development and management (iv) Institutional framework and physical structure for basin management	Analysis of current policy and strategies on the River Basin Management by the end of phase I Future water demand analysis in the basin by the end of phase I Water balance study with mathematical model by the end of phase I Series of stakeholder consultation meetings by the end of phase II Prioritized list of subprojects for improvement of basin management by the end of phase II	Consultants' reports (inception, interim, draft final, final) Consultant monthly report TA review mission report TA completion report	(A) Both local and national governments strong commitment to formulation of a master plan for the Agusan River Basin
Activities (i) Prepare a master plan for the basin (ii) Strengthen capability of the staff related to the water sector in the basin (iii) Assess the needs for establishing a river basin organization (iv) Workshops and stakeholders coordination	(i) Start: May 2005 Complete: April 2006 Responsibility: Department of Environment and Natural Resources (DENR)/National Water Resources Board (NWRB) (ii) Start: May 2005 Complete: April 2006 Responsibility: DENR/NWRB (iii) Start: May 2005 Complete: April 2006 Responsibility: DENR/NWRB (iv) Start: May 2005 Complete: April 2006 Responsibility: DENR/NWRB	Consultants' reports (inception, interim, draft final, final) TA review mission report TA completion report	(A) Government's full understanding of the necessity to establish the organization (A) Participation of LGUs and local communities (R) Poor performance of the consultants

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
Inputs	ADB total: $970,000		
1. Consulting Services	$647,000, 17 person-months international, 58 person-months domestic	ADB project disbursement document	(A) Timely recruitment of consultants
2. Equipment	$20,000		(R) Government delay in providing its contribution
3. Training and Workshops	$60,000		
4. Surveys	$60,000		(R) Government delay in providing counterpart staff
5. Consultation Visit	$30,000		
6. Developing member country contribution	$420,000		
7. TA negotiation and Contingency	$98,000		
Total TA Cost	**$1,390,000**		

COST ESTIMATES AND FINANCING PLAN
($'000)

Item	Foreign Exchange	Local Currency	Total Cost
A. Asian Development Bank Financing[a]			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultants	360	0	360
ii. Domestic Consultants	0	290	290
b. International Travel	30	0	30
c. Local Travel (Land and Air)	0	10	10
d. Reports and Communications	5	5	10
2. Equipment[b]	20	0	20
3. Training, Seminars, and Conference			
a. Facilitators	0	10	10
b. Workshops	0	50	50
4. Surveys[c]	0	60	60
5. Consultation Visit[d]	30	0	30
6. Miscellaneous Administration and Support Costs	0	5	5
7. Representative for Contract Negotiations[e]	0	1	1
8. Contingencies	45	49	94
Subtotal (A)	**490**	**480**	**970**
B. Government Financing			
1. Office Accommodation, Transport, Logistics	0	150	150
2. Remuneration and Per Diem of Counterpart Staff	0	150	150
3. Information, Data, and Security	0	120	120
Subtotal (B)	**0**	**420**	**420**
Total	**490**	**900**	**1,390**

[a] Financed by ADB's technical assistance funding program.

[b] Includes copy machines, computers, software, communications, survey, and investigation equipment.

[c] Includes topographic survey, hydrological measurements, geotechnical investigations, and soil surveys.

[d] This component provides for up to five officials to have a consultation visit of up to 1 week to exchange views on integrated river basin management through a community participatory approach in the best practice area, and will cover travel, accommodation, and materials.

[e] From Butuan City in Mindanao

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Required Expertise

1. The international consultants (person-months are in parentheses) required for the study are (i) an integrated river basin management specialist cum team leader (11), (ii) an environmental specialist (3), and (iii) a sociologist (3). The domestic consultants required are (i) a river basin planner cum co-team leader (12), (ii) a sociologist with extensive knowledge and experience in gender issues (5), (iii) a watershed management specialist (5), (iv) an economist (4), (v) an environment specialist (5), (vi) an institutional development specialist (4), (vii) a hydrologist (4), (viii) a hydraulic structure engineer (4), (ix) an irrigation engineer (3), and (x) a database and geographic information systems specialist (12).

B. Scope of Consulting Services

2. Using the water policy of the Asian Develoment Bank (ADB) as a tool to analyze the country-specific situation of the water sector in the Philippines, the consultants will assist the Government to formulate a master plan for Agusan River Basin to lead to sound investment decisions in the sector. The terms of reference for consulting services will include the following tasks:

1. Water Policy and Strategy for Basin Development (Phase 1)

(i) Review and assess the guiding policy principles for river basin development and management at national, sector, and project levels that have been enunciated and adopted by experts, international organizations, and governments in the Philippines.

(ii) Review the experience of international and bilateral organizations such as Japan Bank for International Cooperation, World Bank, and ADB in the water sector of the Philippines. Assimilate the lessons learned to build on past work and enhance the developmental impact of the technical assistance (TA) outputs.

(iii) Collect all relevant statistical data relating to climatic, hydrologic, geographic, hydrogeological, environmental, and socioeconomic conditions in the river basin to formulate a master plan.

(iv) Identify existing water control structures and those used in the basin, and assess current working conditions.

(v) Review and assess the existing regional development plan, basin development plan, provincial and municipal development plan, and identify conflict of interest among local government units and/or the basin communities, if any. Assess the role of the existing river basin organization[1] and its current issues. Analyze the issues on sustainability of the inactive organizations.[2]

[1] Agno River Basin Commission (recently abolished), and Laguna Lake Development Authority.
[2] Cagayan River Basin Commission and Bicol River Basin Commission.

(vi) Study international and locally recognized best practices for watershed management activities[3] by communities, nongovernment organizations (NGOs), and business communities, and analyze whether these practices are applicable to the Philippines, especially in the Agusan River Basin.

(vii) Study international and locally recognized best practices for the resource transfer mechanisms from people living in the downstream flood-prone area to people living in the upstream watershed area, and analyze whether these practices are applicable to the Philippines, especially in the Agusan River Basin.

(viii) Identify all stakeholders who are now or who in the future may be involved in developing and managing the water sector in the basin, and analyze their background, history, concepts, interests, and approach to the water sector. Analyze their roles, rights, responsibilities, motivations, and aspirations. Examine and evaluate policies for stakeholder participation; the absorptive capacity of different stakeholder groups including NGOs, gender issues; experience in participatory water resources management; and mechanism for client groups' participation (including women) in planning, implementation, and management in the sector in the basin.

(ix) Conduct consultation meetings with stakeholders, communities, civil society, and business communities in each province in the basin, focusing on how to solve the current problems in the water sector through community participation.

(x) Undertake social analysis for the river basin to identify (a) groups who will benefit from and/or use the proposed works, (b) groups who may be adversely affected by the works, (c) indigenous people, and (d) gender concerns.[4] In each social analysis, describe the needs, demands, and absorptive capacity of the groups, and consider the need to compensate those likely to be adversely affected. From secondary sources, derive socioeconomic data, including current urban and rural population levels and migration trends, growth predictions, presence of minority peoples, land use and tenure, employment, gender issues, division of labor, and productivity and family incomes, and supplement them by interviews and rapid rural appraisal. Pay particular attention to discerning differences in the extent and severity of poverty among beneficiaries and the population as a whole. Prepare an assessment of the impact on indigenous people, in accordance with ADB's *Operations Manual on Indigenous Peoples.*

(xi) Include in the review of the water policy and basin development strategy gender-disaggregated data in all areas. For gender analysis, (a) collect baseline data on gender relations, gender disparities, gender division of labor, and women's and girls roles and status within the project area; (b) analyze the potential direct and indirect impacts of the project on women's and men's livelihood activities, food security, health, land tenure, access to and control of water resources, employment, and basic services in the project area; (c) identify risks, opportunities and specific mitigating measures and activities to address the identified negative impacts on women in the project area; (d) assess the

[3] Moreton Bay in Australia, and Chesapeak Bay in the United States.
[4] The procedures in conducting social analyses using rapid appraisal techniques are described in ADB's *Handbook on Poverty and Social Analysis* (December 2001).

capacity of communities, the ministries, and NGOs to identify and mitigate gender-related impacts and recommend capacity-building needs; and (e) recommend mechanisms to ensure that women participate in and benefit from the development and mitigation plans.

(xii) Conduct discussions with relevant institutions at central, provincial, and local levels, including the Department of Agriculture, the Department of Environmental and Natural Resources, National Water Resources Board, Department of Public Works and Highway, Department of Budget and Management, Office of the President, NGOs, and business communities to assess current administrative arrangements, policies, and strategies for the water sector.

(xiii) Review current water pricing in view of the principles of cost recovery and equity, including issues such as water price subsidies and indirect pricing or taxation methods, and water license fees. Review the methodology used to price water, and the availability of data necessary to establish an opportunity cost or shadow price for water. Base the review on ADB's position on tariffs as described in Economics and Research Department Technical Note No. 9.

(xiv) Organize for five stakeholders a study trip abroad to observe best relevant river basin management. The consultant, in consultation will ADB, will ensure that the people selected are indeed stakeholders participating actively in the TA implementation and planning process. The Brisbane river basin could be a good example of best practices.

(xv) Assess the effectiveness of existing policies, laws, decrees, regulations, and circulars pertaining to the water sector that govern allocation of available water resources, water rights and water pricing, project identification and implementation, funding mechanisms, water infrastructure management, catchment management, environmental protection, environmental sanitation, and public health. Identify shortcomings in these instruments.

(xvi) On the basis of consultations with river basin stakeholders, formulate a development strategy, including options for the Agusan River Basin up to year 2020, considering population growth, economic development in the basin, water availability and resources development, and environmental conservation activities.

2. Formulation of a Master Plan (Phase 2)

3. After reviewing and assessing data and information collected, and on the basis of the development strategy agreed on at the end of phase 1, the consultant team will formulate a master plan for the Agusan River Basin that is applicable to the year 2020, together with the prioritized list of projects with a rough cost estimate, including the following details:

(i) Describe current natural and socioeconomic condition and trends in the river basin, highlighting current problems in the water sector.

(ii) Describe surface water and groundwater resources development and use in the basin. Assess existing water rights including customary water right (water tapped for a long time by indigenous people without official registration) in the basin

including tributaries. Explain how water has been allocated between different consumptive and nonconsumptive uses, and assess the bases for such allocations and priorities. Evaluate past and present development of single and multipurpose water supply and control infrastructure. Assess past and present programs in water supply and disposal for human consumption, and programs in irrigation and drainage, and industrial purposes, and identify trends. Evaluate the impact of in-stream uses on the environment, particularly those related to hydropower generation.

(iii) Describe the physical resource base in the basin, including surface water availability, groundwater availability, and water quality. Identify sensitive ecosystems, and comment on how issues of water quality affect such ecosystems. Review and update the existing water balance study, including a mathematical model of the basin.

(iv) Describe current land use, land title/ownership and forest concessions in the basin, and identify the trend of land use and appropriate land use in 2020 in the basin.

(v) Describe the efficiency and effectiveness of relevant institutions at the macro and micro levels. In particular, evaluate the appropriateness of the current planning-by-level philosophy. Identify and comment on overlaps and duplication of functions both between and within levels of Government. Analysis should emphasize structure, organization, management, and the role of adequate cost recovery.

(vi) Describe the state of water resources and of critical portions of the natural environment that are closely related to water availability and water quality in the basin. Review major water-related public health issues. Prepare an inventory of matters related to the physical resource base and the environment, including the effects of water development on the environment.

(vii) Identify for each subsector the major issues facing the basin at present, and identify future trends. In particular, distinguish the constraints that now, or may in the future, hinder the resolution of major issues facing the water sector, and specify the opportunities that may exist to facilitate or accelerate their solution.

(viii) Prepare a gender action plan to reflect gender analysis of the role of women in the decision making process. Include in the plan the possibility of women's participation and their roles in the river basin organizations.

(ix) Ascertain the status of current major projects related to the water sector in the basin. Review their appropriateness in terms of their effectiveness in addressing the major issues identified previously.

(x) Identify proposed projects including the nonstructural component in connection with (a) watershed conservation and management, (b) irrigation, (c) hydropower generation, (d) water supply for domestic and industrial use, (e) disaster mitigation, drainage and flood control, (vi) wastewater management, (f) navigation, and (g) environmental conservation. Then prioritize the identified projects based on the selection criteria set forth.

(xi) Review and evaluate the Agusan marsh's protection plan and ensure that the prioritized proposed projects do not infringe or have negative impacts on the proposed protected marsh.

(xii) Evaluate alternative strategies for managing water resources, including those relating to the management of supply, e.g., investment, allocation, and real-time management, and those relating to the management of demand, e.g., regulatory measures and controls, pricing, incentives, finance, and markets. Develop clear economic and administrative decision criteria to allocate scarce water resources among competing subsectors in the basin.

(xiii) Prepare a public awareness plan for integrated river basin management, such as children's education program, radio broadcasting, and exchange visits.

(xiv) Prepare a map of natural disaster hazards based on collected data on the topographic and socioeconomic conditions.

(xv) Assess the impact of implementing the master plan on the poor living in the basin.

(xvi) Identify the constraints to implement the proposed master plan and propose mitigating measures.

C. Workshops and Reporting Requirements

4. Two workshops will be organized.[5] The first workshop will be conducted at the end of phase 1 (4 months) to discuss strategy and river basin management structures. The second workshop will be organized after submission of the draft final report to discuss the draft master plan with stakeholders. The two workshops will coincide with the tripartite meetings to be held among the Government, the consultants, and ADB. At each workshop, the consultants will make powerpoint presentations and provide concise reports for discussion. A final report incorporating comments from the Government, NGOs, conference participants, foreign agencies, and ADB will be submitted within 1 month of the last tripartite meeting.

5. In addition to the reporting assignments (para. 4), the consultants will prepare brief monthly progress notes for review by the technical working group established by the Government. The notes, which should not exceed three pages, are intended to keep the steering committee regularly informed of progress achieved and constraints impeding smooth TA implementation.

6. Twenty copies of the inception and interim reports will be in English. Approximately 50 copies of the draft final report and 30 copies of the final report in English will be submitted. ADB will require 5 copies of the inception and interim reports, 10 copies of the draft final report, and 5 copies of the final report.

[5] The workshops should draw together the major stakeholders in water resources decisions: key officials from relevant institutions involved in the strategy formulation process at the central and provincial levels, professional associations, private sector agencies, NGOs, and external support agencies. All should be given an equal opportunity to voice their views and define their interests.