

**REPORT AND RECOMMENDATION
OF THE
PRESIDENT
TO THE
BOARD OF DIRECTORS
ON A
PROPOSED LOAN
TO THE
SOCIALIST REPUBLIC OF VIET NAM
FOR THE
SECOND RED RIVER BASIN SECTOR PROJECT**

October 2001

CURRENCY EQUIVALENTS

(as of 1 October 2001)

Currency Unit	–	Dong (D)
D1,000	=	\$0.0665
\$1.00	=	D15,027.00

For the purpose of calculations in this report, the rate of \$1.00 = D14,600 was used, the rate generally prevailing at the time of loan appraisal.

ABBREVIATIONS

ADB	–	Asian Development Bank
AFD	–	Agence Francaise de Développement
BME	–	benefit monitoring and evaluation
CEMMA	–	Committee for Ethnic Minority and Mountainous Area Affairs
CPO	–	Central Project Office
DARD	–	Department of Agriculture and Rural Development
DWRHWM	–	Department of Water Resources and Hydraulic Works Management
EIA	–	environmental impact assessment
EIRR	–	economic internal rate of return
GAP	–	gender action plan
GPEM	–	guidelines for the participation of ethnic minorities
ICB	–	international competitive bidding
IDMC	–	irrigation and drainage management companies
IFAD	–	International Fund for Agricultural Development
IEE	–	initial environmental examination
JBIC	–	Japan Bank for International Cooperation
JFPR	–	Japan Fund for Poverty Reduction
km ²	–	square kilometers
LCB	–	local competitive bidding
m ³ /h	–	cubic meter per hour
MARD	–	Ministry of Agriculture and Rural Development
MOLISA	–	Ministry of Labor, Invalids and Social Affairs
MW	–	megawatt
NGO	–	nongovernment organization
NWRC	–	National Water Resources Council
O&M	–	operation and maintenance
PIM	–	participatory irrigation management
PIU	–	project implementation unit
PMO	–	project management office
PRA	–	participatory rural appraisal
RDS	–	rural development support
RRBO	–	Red River Basin Organization
RRDWRSP	–	Red River Delta Water Resources Sector Project
SIEE	–	summary initial environmental examination

TA	–	technical assistance
VBARD	–	Viet Nam Bank for Agriculture and Rural Development
WRL	–	Water Resources Law
WUO	–	water user organization
VWU	–	Viet Nam Women's Union

NOTES

- (i) The fiscal year (FY) of the Government ends on 31 December.
- (ii) In this report, "\$" refers to US dollars.

CONTENTS

	Page
LOAN AND PROJECT SUMMARY	ii
MAP	v
I. THE PROPOSAL	1
II. INTRODUCTION	1
III. BACKGROUND	1
A. The Water Resources Sector and the Red River Basin	1
B. Poverty Status	3
C. Government Policies and Plans	3
D. External Assistance to the Sector	6
E. Lessons Learned	6
F. ADB's Sector Strategy	7
G. Policy Dialogue	7
IV. THE PROPOSED PROJECT	9
A. Rationale	9
B. Objective and Scope	10
C. Cost Estimates	15
D. Financing Plan	15
E. The Executing Agency	16
F. Implementation Arrangements	17
G. Environmental and Social Measures	25
V. PROJECT JUSTIFICATION	28
A. Economic Analysis	28
B. Impact on Poverty and Gender	29
C. Environment	30
D. Resettlement and Land Acquisition	30
E. Risks	31
VI. ASSURANCES	31
A. Specific Assurances	31
B. Conditions for Loan Effectiveness	33
VII. RECOMMENDATION	33
APPENDIXES	34

LOAN AND PROJECT SUMMARY

Borrower	The Socialist Republic of Viet Nam
Project Description	The Project is a sector project designed to establish integrated water resource management in the Red River basin, and to improve priority infrastructure for water service delivery in the poorer provinces of the basin. High-priority investments will be supported by appropriate institutional strengthening measures and capacity building through participatory processes.
Classification	Poverty intervention Thematic: gender and development
Environmental Assessment	Category B. Initial environmental examinations were carried out for four sample subprojects.
Rationale	<p>The incidence of poverty in Viet Nam is about 37 percent, and 80 percent of the poor are farmers who not only depend on reliable and timely irrigation and drainage services (especially for rice cultivation), but also are the most vulnerable to drought, floods, and poor water quality. Poorer farmers typically live at the end of the water distribution system, and their poverty is closely linked to unreliable and insufficient access to water and drainage services. Rehabilitating irrigation and drainage infrastructure and improving water management are therefore directly targeting poorer farmers.</p> <p>The Red River basin is home to about one third of Viet Nam's population. Poverty incidence in the upland provinces of the basin is 59 percent, considerably higher than the national average. While agricultural productivity has increased in recent years, further growth is needed to support and sustain a growing population. However, water alone (i.e., irrigation/drainage) is not enough to reduce poverty. A combination of increased agricultural production, equitable benefit distribution, and increased capacity of the poor to manage risks is required. Community needs are diverse, and existing formal and informal organizations at the local level cannot be dealt with by a top-down, blueprint, fixed-menu approach. Empowering poor communities through participatory planning, implementation, and monitoring and evaluation is key to achieving a sense of ownership and sustainability of projects. The poor are also the most vulnerable to water-related natural disasters, which are aggravated by deforestation in the watershed.</p> <p>The proposed Project recognizes the need to improve water resources management and water service delivery in the Red River basin through (i) river basin planning, management, and coordination; (ii) rehabilitation of water resources infrastructure in conjunction with community-managed rural development support activities to increase agricultural productivity and generate employment in poor communities; and (iii) improved environmental monitoring and protection of watersheds. Including social</p>

and institutional preparation phase will ensure that the investment subprojects are designed to support the Government objectives of poverty reduction, decentralization, and commune-level democratization.

Objective and Scope

The proposed Project aims to improve agricultural performance (and thereby incomes) of poorer communities through sustainable improvements in irrigation, better drainage, watershed protection, and flood protection, in a framework of integrated water resource management in the Red River basin. The Project is organized into two parts: part A will address aspects related to integrated water resource management and associated institution building, while part B will address the provision of infrastructure improvements and the necessary agricultural support services at the community level to optimize the benefits from the water services. To optimize benefits, the Project will support related priority needs identified by poor farmers. A process-oriented approach will focus on poverty reduction, strengthen the community's sense of ownership and capacity, and promote project sustainability through participatory planning, implementation, monitoring, and evaluation. The activities to be funded through this mechanism will complement the improvements to physical infrastructure.

Cost Estimates

The Project is estimated to cost \$156.2 million equivalent, of which \$26.5 million is the foreign exchange cost and \$129.7 million equivalent is the local currency cost.

Financing Plan

Source	(\$ million)			
	Foreign Exchange	Local Currency	Total Cost	Percent
Asian Development Bank	20.0	50.0	70.0	45
Government	-	37.6	37.6	24
Beneficiaries	-	8.0	8.0	5
Agence Francaise de Développement	0.8	29.2	30.0	19
Grant:				
Government of the Netherlands	5.7	4.9	10.6	7
Total	26.5	129.7	156.2	100

Loan Amount and Terms

The Asian Development Bank (ADB) loan in an amount equivalent to SDR 54,338,000 (\$70 million) will be from ADB's Special Funds resources with an amortization period of 32 years, including a grace period of 8 years, interest charge of 1 percent per annum during the grace period and 1.5 percent thereafter.

Period of Utilization

Until 30 June 2008

Implementation Arrangements

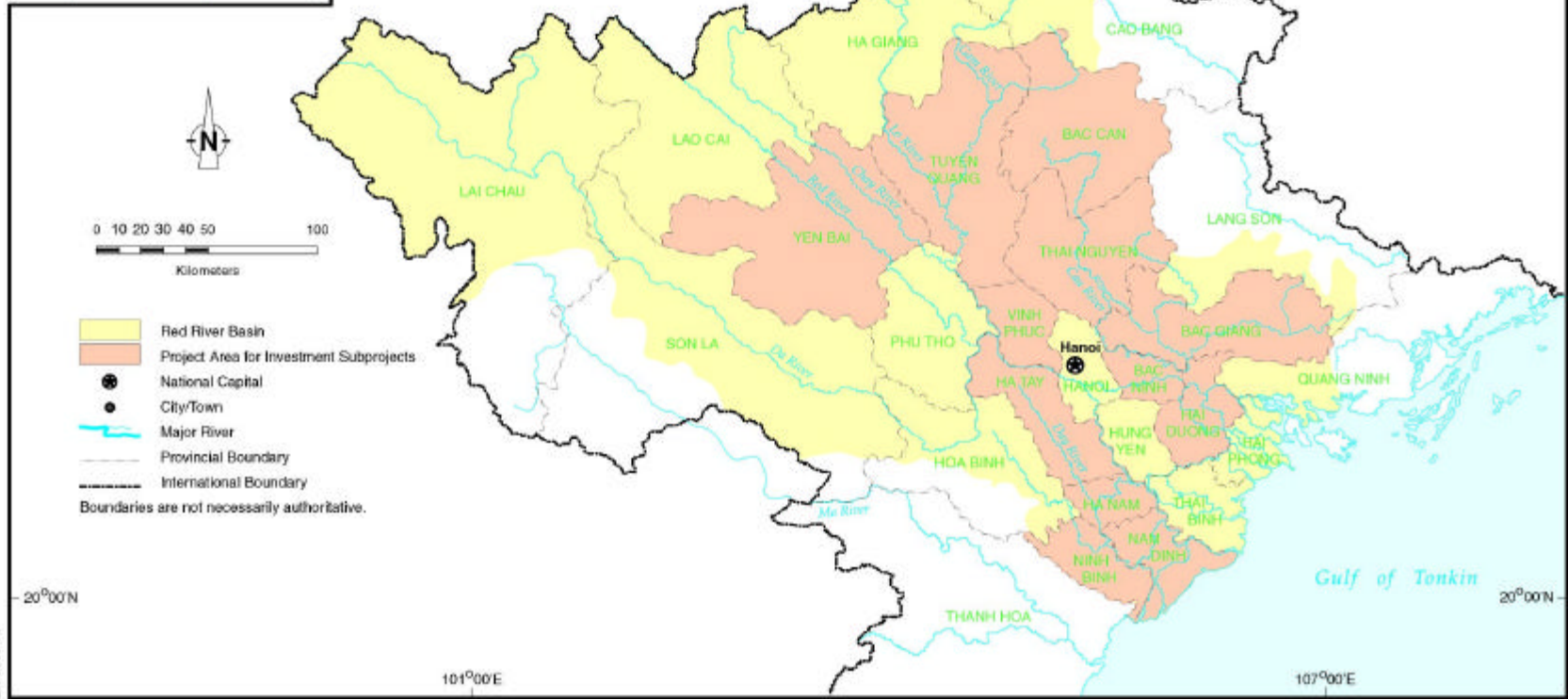
Part A will be implemented by the Department of Water Resources and Hydraulic Works Management of the Ministry of Agriculture and Rural Development (MARD), in collaboration with the Red River Basin Organization established in April 2001, and with the support of central ministries and provincial governments concerned. Part B will be implemented through a project management office established in the

Central Project Office of MARD, in collaboration with project implementation units established at the provincial level. Subprojects will be identified and selected in accordance with detailed criteria. Local communities and nongovernment organizations will actively participate in project implementation.

Executing Agency	The Executing Agency will be MARD. Provincial authorities will be involved in formulating and implementing subprojects, as well as in activities under part A.
Procurement	The procurement of goods and services financed by ADB under the Project will be in accordance with ADB's <i>Guidelines for Procurement</i> . Contractors and design firms for civil works will be required to prequalify according to conditions specified, to ensure selection of firms with adequate capacity and competence. Equipment packages over \$500,000 will be procured through international competitive bidding, while smaller packages will be financed through international shopping or off-the-shelf purchase.
Consulting Services	The Project will require approximately 1,018 person-months of consulting services: 652 domestic and 366 international. Of these services, 361 person-months domestic and 250 international consulting services will be financed as a grant by the Government of the Netherlands under part A. The consulting services will cover project management, water policy and planning, watershed management, training, hydrology, information technology, legal aspects of water licensing, farming systems, agricultural economics, agricultural and forestry extension, civil engineering, institutional development, financial management, and participatory planning. Consultants will be recruited in accordance with ADB's <i>Guidelines on the Use of Consultants</i> and other arrangements on the use of domestic consultants satisfactory to ADB.
Estimated Project Completion Date	31 December 2007
Project Benefits and Beneficiaries	The poverty reduction and socioeconomic benefits will arise mainly from increased agricultural production and productivity leading to increased income, reduced vulnerability to floods, and enhanced food security. Other benefits will accrue through (i) improved rural infrastructure; (ii) increased capacity to utilize productive support services; (iii) improved water quality monitoring that reduces health hazards, particularly to women farmers who suffer from water-related diseases due to long hours of working in the field and the poor quality of water; (iv) employment generation through subproject construction activities; and (v) environmental benefit in watershed protection through reforestation activities. Poverty impact and benefit distribution studies have shown farmers in poorer communities to be the greatest beneficiaries of the Project, particularly poorer farmers in the upland region of the basin.



VIET NAM SECOND RED RIVER BASIN SECTOR PROJECT



I. THE PROPOSAL

1. I submit for your approval the following Report and Recommendation on (i) a proposed loan to the Socialist Republic of Viet Nam for the Second Red River Basin Sector Project, and (ii) proposed administration by the Asian Development Bank (ADB) of a grant for the Project to be provided by the Government of the Netherlands.

II. INTRODUCTION

2. The Government of the Socialist Republic of Viet Nam aims to establish integrated planning and management of water resources in the country's main river basins, and to improve water services to poor farmers through irrigation, drainage, flood protection, and agricultural support. The Government expects that agricultural productivity will consequently increase, poverty will be reduced, and natural resources will be managed for sustainable economic development and environmental protection. The Red River basin is one of the three main river basins that are crucial to the development of Viet Nam's economy; the two others are those of the Mekong and the Dong Nai rivers. The Government sought the assistance of ADB to support capacity building for water resources management in the Red River basin, and to substantially improve water services to poor farmers. The Project was prepared under ADB technical assistance (TA).¹ Following fact-finding in February 2000, an ADB Mission carried out preappraisal on 29 May-12 June 2000 and appraisal on 5-16 March 2001.² This report is based on the findings of the Appraisal Mission; earlier ADB Missions; reports prepared by the TA consultants; and discussions with Government departments, current and potential beneficiaries, international organizations, nongovernment organizations (NGOs); and external assistance agencies concerned with water resources management and irrigated agriculture in Viet Nam. Appendix 1 sets out the project framework.

III. BACKGROUND

A. The Water Resources Sector and the Red River Basin

3. Viet Nam ranks among the poorest countries in the Asian and Pacific region. In 1999, its annual per capita income was only \$350. Viet Nam is subject to irregular rainfall and recurrent typhoons and flooding, and investments in water resources infrastructure have for centuries been key to the development of the country's agriculture sector. Poverty in Viet Nam is compounded by the degraded water resources infrastructure and unreliable water services on which the 70 percent of the population employed in agriculture depend. The degraded infrastructure has a severe impact on the income and livelihood of poor households at the tail end of systems, denying them reliable access to both irrigation and drainage services. Poor farmers are also most severely affected in the event of floods caused by dike failure.

¹ TA 3050-VIE: *Second Red River Basin Water Resources Sector Project*, for \$600,000, approved on 22 July 1998.

² The Appraisal Mission comprised W. Lincklaen Arriëns, Senior Water Resources Specialist/Mission Leader; P. Smidt, Senior Project Implementation Specialist; S. Sahni, Financial Specialist; S. Tanaka, Social Development Specialist; and Nguyen Nhat Tuyen, Gender and Development Specialist. O. Gilard, Senior Project Officer, participated on behalf of Agence Française de Développement (AFD); and F. Hamer, Senior Water Resources Advisor, participated on behalf of the Royal Netherlands Embassy. The Government's team was led by Dao Trong Tu, Deputy Director, International Cooperation Department, Ministry of Agriculture and Rural Development (MARD); and Nguyen Dinh Hiep, Director, Central Project Office, MARD.

4. Viet Nam has 15 major river systems that are dominated by the Red River basin in the north and the Mekong Delta in the south. The Red River basin is home to about 28 million people or about one third of the country's total population. Its total area is 169,000 square kilometers (km²) of which the upper half is in the People's Republic of China and the lower half in Viet Nam. The Red River basin has 25 provinces: 9 are in the delta, and the remaining 16 are in the uplands. The population of delta is about 20 million, of which 4 million live in Hanoi and Hai Phong, the second and third largest cities of Viet Nam. The Red River delta has a long history as a fertile agricultural area, and is one of the most densely populated areas of the world: the rural areas support about 1,000 persons/km², and Hanoi about 2,200 persons/km². Urbanization in the basin is about 15 percent, and the urban population is increasing by about 10 percent annually. The delta has irrigation systems that were among the first to be developed in the country, several centuries ago, and the irrigation facilities have degraded over time. In the low-lying areas, drainage rather than irrigation is often the key factor affecting the stability and productivity of agricultural crops, and an extensive centuries-old system of river and sea dikes reduces vulnerability to flooding. A high priority among Government investments is maintaining and strengthening the dike system.

5. Agriculture accounts for about 35 percent of the gross domestic product in the Red River delta, compared with 24 percent for industry and 41 percent for services. Land-holdings in the basin are small and scattered, particularly in the delta, where the average farm size is only 0.6 hectare (ha). Irrigated agriculture in the basin uses 78 percent of total water abstracted, followed by industry with 18 percent, and water supply for municipal and domestic use with 4 percent. Of the approximately 6.7 million ha served by irrigation and drainage in Viet Nam, almost 1 million lies in the Red River basin. The existing irrigation and drainage facilities in the basin are 30 large and medium-scale schemes in the delta, including 27 pumping stations, serving about 760,000 ha, and many small schemes in the uplands serving about 210,000 ha. Of the annual rice production of about 32 million tons (t) in Viet Nam in 1998, about 6 million t or 20 percent was produced in the Red River basin, of which about 5 million t or 80 percent was produced in the delta. Reliable and timely availability of water is essential in the whole basin to ensure double- or triple-cropping seasons, and to allow cultivation of high-yielding varieties, which are the only possible response to the scarcity of arable land.

6. The forest cover in Viet Nam had declined by an alarming 65 percent between 1981 and 1996 to about 25 percent, which is among the lowest in Asia. Forest cover is only 15 percent in the Red River basin, and about 17 percent in the upland areas of the basin. Degradation of the watershed has increased the vulnerability to flooding. Recent studies³ have shown that crop losses due to flooding can push households into poverty for a number of years. Information on water supply and sanitation is only available on a national basis. Of the urban population in Viet Nam, 45 percent have access to safe drinking water, compared with only 15 percent of the rural population. Access to sanitation facilities is 20 percent in urban areas, but only 2 percent in rural areas. Industrial use of water is increasing, though at a slower pace in recent years as a result of the economic slowdown. Water pollution is becoming an increasingly serious problem in the Red River basin, particularly downstream of urban and industrial areas. Inappropriate disposal of human waste and pollution resulting from the high level of fertilizer and pesticide use are other key contributors to the degradation of water quality. No water quality monitoring network exists in the basin. Of the total hydropower potential of 18,600 megawatts (MW) in Viet Nam, 8,480 MW or 45 percent is in the Red River basin. A total of 2,049 MW or 70 percent

³ *Attacking Poverty*. Report presented at the 1999 Consultative Group Meeting, held in Hanoi on 14-15 December 1999, p.107-111. This report notes that it can take 3-5 years for a household to recover from the impact of a lost crop or a severe illness in the family.

of the country's installed capacity of 2,855 MW is in the Red River basin, in the Hoa Binh and Thac Ba facilities. Viet Nam's reliance on hydropower for electricity generation is about 70 percent and gradually declining.

B. Poverty Status

7. The incidence of poverty in Viet Nam is approximately 37 percent. About 15 percent of the people live under the food poverty line and suffer from hunger. Of the poor, 80 percent are farmers. Recent (1998) poverty data according to an internationally agreed upon poverty line⁴ are available only at the subregional level. Two subregions comprise the Red River basin: the northern highlands, with poverty incidence at 59 percent, considerably higher than the national average (37 percent); and the Red River delta, with considerably lower poverty incidence at 29 percent. National poverty statistics show that within the delta, differences can be considerable, particularly between the urban centers (Hanoi and Hai Phong) and the rural areas, which derive most of their livelihood from agriculture, especially rice cultivation. The TA consultants found that about 55 percent of the population in the sample subproject in the Red River delta, only 30 km from Hanoi, live below the poverty line, compared with more than 60 percent in some upland subprojects.

8. Agricultural productivity has increased in recent years because of agricultural liberalization and agricultural diversification. But poor communities in disadvantaged rural areas have benefited less because they lack access to adequate education, water, and extension services. Because the poorer farmers typically live at the end of the water distribution system, and their poverty is closely linked to unreliable and insufficient access to water and drainage services, rehabilitating irrigation and drainage infrastructure and improving water management is therefore directly targeting poorer farmers. Also, a large part of the rural population has incomes just above the poverty line, and is therefore vulnerable to crop failure from drought and floods. Facing a lack of reliable water services and good extension services, farmers are often reluctant to borrow and invest in on-farm improvements because the perceived risks could jeopardize their ability to repay loans. Therefore, opportunities to further increase productivity and reduce vulnerability lie in rehabilitating degraded irrigation, drainage, and flood protection infrastructure, together with improved water management and more effective agricultural extension services targeted to poor communities. This is consistent with the Government's evolving approach to poverty reduction by creating opportunity, ensuring equity, and reducing vulnerability.

C. Government Policies and Plans

9. The Government strategies and planning for the water sector have evolved significantly in recent years. Past sector plans were largely supply-driven and focused on investment targets that were determined at central level. The Government's current approach is more demand-based and follows a process-oriented strategy in the context of integrated water resources planning in river basins with the participation of stakeholders. Most significant in this process was the adoption of the Water Resources Law (WRL) in 1998, which sets out a new institutional framework for coordination in the sector and for managing water resources in a river basin context, involving the establishment of river basin organizations for the larger river basins, such as the Red River. In water service delivery, policies have also shifted to a more

⁴ The "overall poverty" line of \$128 per capita expenditure in 1998 allows coverage of nutritional needs and basic nonfood needs. If the "food poverty" line is used (which allows consumption of 2,100 calories per day, but makes no allowance for nonfood expenditures), the incidence of poverty in 1998 was 15 percent nationally.

decentralized and participatory approach, particularly for irrigation and drainage services. The government policy now is to promote the development of autonomous irrigation and drainage management companies and to strengthen water user organizations at the local level.

10. For the Red River basin, an investment plan was prepared in 1989 for the period until 2000; this plan was updated in 1993 to cover 2005. However, these plans were developed without the participation of stakeholders. Several subsector plans focus on parts of the Red River basin and provide further detailed guidance for the Project. A comprehensive *Red River Delta Master Plan* published in 1995 outlines the development strategies for the Red River delta and the investment requirements for irrigation, drainage, and flood protection, with emphasis on the 1996-2000 period and broad guidelines for 2001-2005. While the contents of the master plan are somewhat dated, the document still provides a comprehensive framework for the delta subregion. A comprehensive flood protection plan (FPP) for the Red River delta was completed in November 1999. It includes an inventory of existing and planned flood protection structures, models for flood forecasting and tidal transmission, hydrological and socioeconomic data sets, and an analysis of the economic benefits resulting from flood control. The FPP is the most up-to-date and comprehensive compilation of flood protection initiatives, and provides a detailed sector background for flood protection activities in the delta subregion. Subbasin plans for the Cau River and Day River were started in 1999 and are currently being completed. The plans identify relevant water resource issues and investment plans, with special emphasis on irrigation and drainage interventions for the Cau and Day subbasins, which represent the bulk of the area preselected for the Project.

11. More recently, ADB supported the preparation of a Red River basin profile and information system, as a precursor of an integrated plan for the sustainable management of water resources in the Red River basin.⁵ In an innovative approach, all 25 provinces in the basin participated in preparing the profile in 1999. The profile provides basic information and indicative development priorities and targets for each of the five subregions of the basin, in terms of agricultural production, industrial development, water services, reforestation, and environmental protection. The rehabilitation of irrigation and drainage infrastructure, and reforestation of the upland areas feature prominently in these subregional priorities. The profile has been endorsed by MARD and the interministerial Red River Basin Strategy Committee, which was established by MARD under TA2871 as the precursor of the Red River Basin Organization (RRBO). The actions outlined in the profile are based on the master plan for the Red River delta (1996) and more recent Government initiatives in the areas of food security, poverty reduction and hunger eradication, reforestation, rehabilitation and improvement of water resources works in the Red River delta, small water works for the upland and mountain areas, and clean water and environmental sanitation program for rural areas.

12. Meanwhile, the Government's evolving investment strategy for sustainable water resources management in the basin toward 2010 focuses on (i) ensuring sustainable irrigation and drainage services in 1,300,000 ha; (ii) providing water supply for the industrial zones of Hanoi, Hai Phong, and Quang Ninh; (iii) strengthening the dike system for flood protection and increased reforestation in the uplands; and (iv) improving water quality and aquatic fauna. Key result areas include further rehabilitation of degraded water resources infrastructure (irrigation, drainage, and flood protection), water resources planning and management, reforestation and watershed management, water quality control, and environmental protection. The Mission extensively reviewed the sector strategy and basin plans and found them to provide a

⁵ TA 2871-VIE: *Red River Basin Water Resources Management*, for \$1,150,000, approved on 19 September 1997. On 31 December 1997, additional funds were approved, bringing the total for the TA to \$1,362,663.

satisfactory basis for further investment in the sector and in the Red River basin. The main milestones of the strategies are in Appendix 2.

1. Government Institutions and Policies

13. Under the WRL adopted in 1998, a National Water Resources Council (NWRC) was established to advise on water resource management issues for the country as a whole. The NWRC was established in 2000 and convened for the first time in June 2001. MARD serves as the coordinating ministry for water resources management under the WRL, and is also responsible for irrigation, drainage, and flood protection. MARD's policy is to introduce integrated water resources management in the main river basins in Viet Nam, including the Red River basin, and to transfer the operation and maintenance (O&M) of irrigation and drainage projects to autonomous water user organizations (WUOs) and irrigation and drainage management companies (IDMC). Recently, MARD demonstrated its capability as Executing Agency for one ADB-financed project loan and three ADB-financed sector loans.⁶ Under the WRL, river basin organizations will also be established for planning for large rivers such as the Red River, together with a system of water abstraction rights and wastewater discharge permits, public information, and supporting measures to improve water resources management. RRBO was established in April 2001 and comprises an interministerial council and a permanent office. RRBO will be involved in planning investments for sustainable natural resources management, including land, water, and forest; and coordinating water service delivery for agriculture, industry, and domestic uses. The NWRC and RRBO constitute an appropriate institutional framework for implementing the Project. The Project will help to build the capacity of RRBO.

2. Other Policies Affecting the Sector

14. The Government's evolving policy framework for rural development, poverty reduction, and environmental protection—together with recent decrees on democratization at commune level, and the establishment of domestic NGOs—provides a good enabling environment for the Project. Land use rights introduced in 1993 have created conditions for more secure land tenure for farm households, and facilitate community-managed reforestation by allocating forestland to farmers. Forest development and protection have also been enhanced, and a special reforestation program was created to strengthen forest protection, regeneration, and reforestation by 2010 through projects that encourage community participation. Access to credit was improved through support for the Viet Nam Bank for Agriculture and Rural Development (VBARD). The Government has adopted poverty reduction as an important objective, to be supported through the National Program for Hunger Eradication and Poverty Reduction. As part of this national program, interventions through credit and other measures are targeted to the 1,715 poorest communes. A new law on cooperatives was adopted in 1996 to stimulate the emergence of agricultural service cooperatives that supply agricultural inputs and services in response to members' demands, thereby enhancing the environment for genuine demand-driven farmer organizations to emerge. The decree on democratization at the commune level approved in 1998 will strengthen local participation and a sense of ownership in all projects and in policies. The State Law on Budget was revised in 1998 in support of decentralization from the national to provincial commune level, thereby advancing the status of

⁶ Loan 1259-VIE(SF): *Irrigation and Flood Protection Rehabilitation*, for \$76,500,000, approved on 26 October 1993; Loan 1344-VIE(SF): *Red River Delta Water Resources Sector Project (RRDWRSP)*, for \$60,000,000, together with TA 2233-VIE: *Capacity Building in the Water Resources Sector*, for \$1.44 million, approved on 13 December 1994; Loan 1564-VIE: *Rural Infrastructure Sector Project*, for \$105,000,000, approved on 23 October 1997; and Loan 1515-VIE: *Forestry Sector Project*, for \$33,000,000, approved on 20 March 1997.

local administrations. A process of public administration reform was launched in 1995 to strengthen the capacity to address the needs of local rural communities.

D. External Assistance to the Sector

15. Several development partners are supporting projects in the water resources sector in Viet Nam, and the Government requested ADB in 1998 to play a leading role in coordinating assistance for capacity building to implement the WRL. In response, ADB developed in 1999 a partnership of agencies to assist in this sector. The major participants are Australia, Denmark, Japan Bank for International Cooperation (JBIC), Netherlands, and the World Bank. Coordination between the Government and external assistance agencies has resulted in a division of geographic areas for water resources planning and investment. ADB will continue to focus on the Red River basin for both water investments and water resources management, and is expected to support water resources planning and management in the Dong Nai basin in the south. Denmark is assisting water resources investments in two medium-size river basins in the central region, the Srepok and the Ca rivers. The World Bank has largely focused on water resources management and investments in the Mekong Delta and the south central region. ADB, Australia, Denmark, Netherlands, and the World Bank together support the work of the NWRC through complementary tasks, with ADB taking a leading role. JBIC is assisting multipurpose water resources projects mainly in the central and southern regions. Following the devastating floods in the central region in late 1999, a multiagency initiative, in which ADB is actively participating, is under way to investigate water resources investment requirements in that area. This initiative will lead to a comprehensive water resources investment strategy for the central region. The Government has requested ADB assistance in preparing this strategy. The externally-assisted water resources projects are listed in Appendix 3.

16. In the Red River basin, Sweden, International Fund for Agricultural Development (IFAD), and the European Union are involved in rural development projects in the upland provinces, including assistance to small-scale irrigation projects in remote areas. The World Bank is formulating a similar, larger-scale, rural development project to benefit poor communities in remote areas. The proposed Project will complement these projects by targeting disadvantaged areas in the delta as well as medium- and small-scale irrigation projects in poor districts of the upland provinces. The Project will build on the experience generated by these projects, in particular the Swedish-supported Mountain Rural Development Project, which introduced participatory rural appraisal and implementation approaches to Viet Nam over the last decade. Participatory irrigation management (PIM) experience generated by IFAD-supported projects will also be incorporated in the Project, and replicated in other provinces. Several of the externally-assisted rural development projects have introduced social or community funds to channel financial resources directly to local communities for development activities. The Project will build on this experience to strengthen agricultural support services and poverty interventions at the community level. Several NGOs are also active in agriculture and water resources in the Red River basin through action research and implementation of pilot projects. They have been consulted extensively during project preparation, and the Project will seek their involvement in training, research, and advisory services.

E. Lessons Learned

17. Most lessons learned are drawn from the ADB-financed Red River Delta Water Resources Sector Project (RRDWRSP). This project rehabilitated about 30 medium-scale irrigation and drainage schemes in the Red River delta. It rehabilitated or replaced discrete items of infrastructure, mostly the pumping stations and main canals. Project progress has

been satisfactory, and the quality of the completed infrastructure works is acceptable. Review missions noted that follow-up investments should take a more holistic approach to improving entire irrigation systems from a hydrological and agricultural point of view. Benefit monitoring surveys indicated that the improved irrigation and drainage services benefited the communities concerned.

18. Specifically, lessons learned from the review of RRDWRSP for the design of the Project are as follows: (i) the number of scattered subprojects needs to be reduced to allow more effective design and efficient management; (ii) some subprojects need to be expanded to include agricultural support services beyond the rehabilitation of physical infrastructure; (iii) the capacity of executing and implementing agencies needs to be complemented by sustained technical assistance—particularly in social, environmental, and governance aspects—by international and domestic consultants throughout project design and implementation; (iv) subprojects should include entire hydrological units in the delta and subbasins in the uplands, to stimulate agricultural production and protect the watershed; and (v) in-depth study of technical, social, institutional, environmental, economic, and financial dimensions of subprojects will result in a better understanding of approaches that can be usefully applied in other parts of the basin. Appendix 4 gives a status report on RRDWRSP.

19. Lessons learned from early implementation of the Rural Infrastructure Sector Project and the Forestry Sector Project (footnote 6) point to the need to ensure that the necessary Government guidelines for subproject implementation are completed and approved early to avoid delays in implementation. Under the Forestry Sector Project in particular, serious delays were encountered because implementation modalities for community-managed investment activities were not prepared in adequate detail in advance. The proposed Project took this experience into account and will seek early completion of adequately detailed implementing guidelines and a field manual. Both the RRDWRSP and the Rural Infrastructure Sector Project have devolved the management of project funds and procurement of goods and services to provincial authorities. The Project will follow this example.

F. ADB's Sector Strategy

20. A new assistance strategy for Viet Nam is being prepared for a second generation of investment projects that will focus more on poverty reduction. The new Country Strategy and Program (CSP) will also underline the importance of improving natural resources management, including water resources and forests. The design of the Project responds to ADB's poverty reduction strategy and to its policy on water. Poverty reduction and other social development dimensions will be more actively pursued as part of the new CSP. In Viet Nam, floods, drought, water pollution, and lack of access to irrigation and drainage services are linked to poverty in a vicious cycle. ADB's water policy promotes water resources management investments in important river basins, with a holistic focus on watershed protection, water rights, and management infrastructure. The policy also requires investments to improve water services, such as irrigation, to increase the autonomy and accountability of service providers to meet the needs of the poor. Cost recovery, regulatory controls, and public education should work together in promoting sustainable water use in society. The Project was designed to respond to these policy directions, which are fully shared by the Government.

G. Policy Dialogue

21. During Project processing, ADB staff actively pursued policy dialogue with MARD, the Ministry of Planning and Investment, the Office of Government, NGOs, and other external

assistance agencies that share responsibility for shaping sector policy. The dialogue focused on three broad areas: (i) establishing basinwide integrated water resources management; (ii) targeting poverty reduction; and (iii) improving governance, including decentralization, stakeholder participation, and cost recovery.

1. Basinwide Integrated Water Resources Management

22. In the context of implementing the WRL and ADB's water policy, the Project will be implemented with a basinwide approach that incorporates both resource management and service delivery interventions. This represents a major shift in approach from the ongoing RRDWRSP, which focused only on discrete investment subprojects in the Red River delta. ADB staff actively pursued the establishment of RRBO in April 2001. It is the first river basin organization for a major river in Viet Nam. The sector plan is more comprehensive than the previous investment plan. Once RRBO is operational, it will manage a comprehensive and participatory river basin planning process under the guidance of NWRC. This will be a significant improvement over the top-down, fragmented, stand-alone plans in the past. The functions of RRBO, described in the WRL, focus on the management of river basin planning. A Red River basin framework plan will be approved by December 2003. The development of a pilot water licensing system for part of the Red River basin will allow for the introduction of water allocation.

2. Targeting Poverty Reduction

23. While agreement on the approach to poverty reduction was reached at an early stage, it became evident that experience was lacking to apply these strategies to project design. In the social and poverty assessments in sample subprojects, beneficiaries expressed the need for a project design that is more integrated, demand-based, and decentralized. ADB staff and the Government therefore reached an understanding that the investment subprojects will include a rural development support component that targets poor farmers, to improve agricultural support services and provide community-based reforestation and small-scale water-related infrastructure at the community level in a decentralized demand-based approach to reduce poverty, and that these supporting investments will be contracted out to community-based organizations wherever possible. These will be in addition to civil works rehabilitation, which will follow an approach similar to that in RRDWRSP, yet with stronger beneficiary involvement according to the principles of PIM. The selection of subprojects will also target poor districts and communes where at least one third of the people are living below the poverty line. The subproject design will include specific poverty reduction measures through the rural development support (RDS) activities.

3. Improving Governance

24. Dialogue took into account ADB's policy on governance and focused on the need to devolve project implementation to provinces and communities, increase the participation of stakeholders, and improve the financial autonomy of water service providers and their accountability to the water users. While MARD has demonstrated its ability as Executing Agency of a sector loan project in the ongoing RRDWRSP, an understanding was reached that the Project will require several changes in project management and implementation procedures. MARD has agreed to implement a reorganization by December 2002 to separate water resources management from the management of irrigation and drainage services. MARD has also agreed to devolve subproject identification and implementation to provinces that have adequate capacity to do so, and for a larger number of

stakeholder agencies and organizations to participate in the Project. The stakeholder organizations include MARD and its Central Project Office (CPO), other ministries concerned, RRBO, provincial and district agencies, consulting firms, IDMCs, the commune-level people's committees, mass organizations at commune level, local WUOs, village development committees, NGOs, and the academe. MARD also agreed that water service providers such as the IDMCs and WUOs should become more autonomous and accountable to their clients, and that selected IDMCs and WUOs would be assisted in this process. Women's participation will be promoted through their representation in water management organizations at all levels, including local WUOs, IDMCs, and RRBO. The Government's policy is to achieve full recovery of O&M costs, taking into account affordability for water users. Recovery is already high at approximately 70 percent, and will be pursued further to sustain project results, with a revised decree to be approved during project implementation after consultation with ADB. The establishment and strengthening of local WUOs in the subproject areas will be promoted to ensure the participation of farmers in subproject design, implementation, and water management. Private sector participation in the Project will be pursued in the context of the financial autonomy of IDMCs and the technical capability of farmer organizations, and by stipulating that government agencies limit their responsibilities in the Project to planning, regulation, supervision, monitoring, and evaluation; and provide contracts for project design and implementation to qualified autonomous firms that operate commercially under an independent management.

IV. THE PROPOSED PROJECT

A. Rationale

25. The TA results show several main challenges in reducing poverty, sustaining economic development, and improving natural resource management in the Red River basin. From an economic point of view, the most important challenge is to further increase agricultural productivity and reduce poverty in rural areas, despite the high population density and the consequently very small and scattered land-holdings. Poverty levels are high in most upland provinces of the Red River basin, and in several areas of the Red River delta. The scope for expanding the cultivated area has been nearly exhausted. To lift and keep poor households out of poverty, it is necessary to increase and maintain agricultural productivity. Labor absorption in other sectors is not likely to be sufficient to keep pace with the reduction in the agricultural labor force that would be necessary to reduce the pressure on land. For many people, rice self-sufficiency is still the immediate way out of hunger and poverty.

26. In the poor and disadvantaged areas of the basin, insufficient or untimely irrigation and drainage services, and recurrent floods expose farmers to lower yields, risk of crop loss, and hence poverty. Reducing poverty and vulnerability is directly connected with improving the amount and predictability of water access. Rehabilitating water resources infrastructure to give better access to tail-end farmers and others who lack access to regular and predictable water service will have a significant poverty reduction impact. This strategy must be complemented by augmenting nonrice-related income from other crops and livestock. Higher rice productivity also requires the use of high-yielding varieties, better water management, fertilizers, and pest control, for which local agricultural support services need to be strengthened. To further reduce poverty, support for small-scale water-related infrastructure in communities and reforestation in the uplands is needed, together with income-generating activities for women. Resource allocation for poverty reduction will be more efficient if the investment subprojects under the Project target areas that combine agricultural potential with a high incidence of poverty.

Extremely poor or marginalized communities in remote and marginal areas may be better supported through multisectoral Government interventions, using resources generated and freed by ADB-supported investments, and by other externally-assisted projects that offer broad-based rural development support, including health and education.

27. For long-term natural resource management, the Government has firmly committed itself to investments on the use and conservation of the water resources of the Red River basin to ensure sustainable economic development. The main challenges are to introduce water allocation policies and licensing of extraction, to monitor and arrest industrial and urban water pollution and improve water quality to safeguard public health, to mitigate the damages from flood disasters through forecasting and early warning systems, and to protect and reforest the severely degraded upper watershed to reduce vulnerability to floods. Experience in ongoing forestry projects points to community-managed investments in reforestation and watershed improvement as being more sustainable, and beneficiaries consulted during project processing underlined the need to include such activities in the Project for environmental protection and income generation.

28. Given the above challenges, the Project needs to (i) increase agricultural productivity in poor communities in the Red River basin and thereby increase the income of poor farmers, including women; (ii) reduce farmers' vulnerability to unreliable water services and to floods; (iii) improve planning and management of water resources in the basin by introducing water allocation and by reducing water pollution; and (iv) improve conditions in the degraded watershed.

B. Objective and Scope

29. The Project will improve agricultural performance (and thereby incomes) of poorer communities through sustainable improvements in irrigation, better drainage, watershed protection, and flood protection, within a framework of integrated water resource management in the Red River basin. The Project will also promote stakeholder participation in water management at local and basin levels, with emphasis on women's participation. The Project has two parts: part A will address aspects related to integrated water resource management and associated institution building; part B will address the infrastructure improvements and the necessary rural development support investments at the community level to optimize the benefits from the water services (Appendix 1).

30. The project area includes all the 25 provinces in the Red River basin, and will receive benefits from activities in part A. For subprojects under part B, 12 provinces have been selected that meet the following criteria: (i) representative of different hydrological conditions; (ii) likely to have schemes of adequate size; (iii) covered by recent subbasin plans or implementing innovative approaches (e.g., participatory irrigation management); and (iv) poverty incidence above the basinwide average or above the average for provinces with similar characteristics. Other provinces can propose subprojects for consideration later in the course of the Project.

31. The 12 provinces are in three subregions: (i) Cau River subbasin (Bac Can, Thai Nguyen, Vinh Phuc, Bac Giang, Bac Ninh, and Hai Duong provinces); (ii) upland provinces with participatory irrigation management experience (Yen Bai and Tuyen Quang provinces); and (iii) Day River subbasin (Ha Tay, Ha Nam, Nam Dinh, and Ninh Binh provinces). The selection of these subregions will avoid the scattering of subprojects, and will allow more effective design and management. The initial subprojects will be concentrated in provinces that already have

capacity and prior experience with beneficiary participation so as to successfully introduce the participatory approach.

1. Water Resource Management (Part A)

32. Part A has five components: (i) capacity building for RRBO; (ii) public awareness and education programs for water resource management; (iii) a pilot water licensing and wastewater discharge permit systems; (iv) a water quality monitoring network; and (v) project management support.

33. **Capacity Building for the Red River Basin Organization.** Advisory TA2871 (footnote 5) supported the establishment of the RRBO with the participation of agencies and provinces concerned. This component will build RRBO's capacity to carry out its assigned functions. The activities to be undertaken will include (i) raising awareness of and building capacity of RRBO for integrated water resources management and its implementation; (ii) developing a strategic planning process for RRBO; (iii) establishing cooperative exchange arrangements between RRBO and other basin organizations, including one in the region at an early stage of development and another elsewhere with a good track record in integrated water resources management; (iv) training RRBO staff in the operational aspects of a river basin organization; (v) supporting RRBO office facilities; (vi) finalizing a brief water sector action plan for the Red River basin as a framework for selecting and designing water service investment subprojects in part B; (vii) developing the brief water sector action plan into an integrated framework basin plan for the Red River Basin as recommended in TA 2871; (viii) facilitating collaboration among provinces in the Cau River and Day River subbasins in water resources management, and assisting to develop an environmental protection plan for the Cau River subbasin; and (ix) developing and implementing procedures to monitor and evaluate the effectiveness of the Red River basin planning process. Stakeholders in the Red River basin will participate in all these activities. To the extent possible, the capacity of provinces for integrated water resources management will also be strengthened.

34. **Public Awareness and Education Programs.** The Government has recognized that the successful implementation of WRL requires public awareness and active participation. This component will design and implement mass media programs and school education programs to increase public awareness and education regarding water resource management issues, particularly issues related to watershed management, flood forecasting, water quality, water related health and hygiene, and water allocation, rights, and permits. This component will be implemented in coordination with central ministries and the provinces concerned.

35. **Pilot Water Licensing System.** This component will implement a pilot surface water exploitation licensing system and a wastewater discharge permit system in the Cau River subbasin, in accordance with the WRL and appropriate decrees, by-laws and regulations. The frameworks for the two systems were developed under TA 2871 (footnote 5), including recommended policies and procedures. The activities will comprise (i) developing institutional, organizational, and administrative processes and procedures required to manage the pilot scheme, and defining the overall arrangements to apply it to the Cau River subbasin (for both surface water exploitation and wastewater discharge permit systems); (ii) formulating the administrative and organizational arrangements for a licensing scheme for assigning and modifying rights to use surface water (via pumps or by gravity) for all relevant purposes and for permits for discharge of wastewater to the waters of the subbasin; (iii) developing appropriate organizational structures and linkages among provincial agencies and with MARD for the successful implementation and operation of the system; (iv) building the capacity of both MARD

and provincial staff to enable them to implement and maintain the systems; (v) developing functioning sub-systems such as computer-based licensing and permit registers, a financial accounting system, standard operation manuals for the licensing and permit schemes, forms, and other documentation; (vi) implementing the pilot schemes in the subbasin; (vii) developing a performance assessment system for the pilot schemes; (viii) after an initial trial period, reviewing and revising the schemes based on experiences gained; and (ix) planning to extend the systems to other provinces in the Red River basin.

36. **Water Quality Monitoring Network.** The need for a water quality monitoring network was identified during project preparation. The Cau River subbasin is one of the priority areas where this issue is to be addressed. This component will (i) identify issues relevant to water quality and community values; (ii) evaluate available recorded data and anecdotal information to determine water quality hot spots; (iii) design a water quality monitoring program for ambient water and its management, and including determinants, location, and frequency; (iv) prepare network and processing equipment specifications; (v) detail logistics management, for instance, how samples will be collected, transported, processed, and analyzed; (vi) resolve data management issues, such as where and how samples will be analyzed, who will be responsible for quality checking, and filing and disseminating data; (vii) identify training needs and develop a training program; (viii) install a trial network in the Cau River subbasin; (ix) operate, monitor, and evaluate the trial network over one year; (x) based on the experience of the trial network, install a basinwide network; (xi) monitor program implementation and operation, and ongoing support over two years; (xii) monitor health impact of water quality change through baseline surveys; and (xiii) evaluate the program and recommend improvement or modification as needed.

37. **Project Management Support.** This component will provide the necessary management support to MARD, ADB, and the Government of the Netherlands in consultant selection and recruitment, procurement, design, implementation, coordination, monitoring, review, reporting, quality assurance, financial management, and evaluation of the activities in part A, and the research studies in part B, and to help coordinate parts A and B. A full-time international project management expert/water resources specialist will carry out this component with assistance from a domestic deputy project management expert/financial management specialist. Coordination between parts A and B will ensure that water service investment subprojects in part B will be developed in accordance with Red River basin frameworks and plans developed in part A, and that feedback from experience in part B will be available to the river basin planning process in part A.

2. Water Service Investment Subprojects (Part B)

38. Part B will comprise (i) subprojects to improve irrigation systems and watershed protection in the uplands, (ii) subprojects to improve delta irrigation and drainage systems, (iii) subprojects to strengthen flood protection systems in the delta, (iv) project implementation support, and (v) research studies.

39. Each subproject under components (i) and (ii) will comprise two complementary subcomponents: (i) improving water resources infrastructure through civil works and provision of equipment (pumps, gates, vehicles, etc.); and (ii) providing agricultural support services and small-scale water-related infrastructure at community level through decentralized and participatory RDS activities. Flood protection subprojects under (iii) may include small RDS subcomponents as needed.

40. RDS will complement the water resources infrastructure improvement to enhance agricultural productivity and direct poverty reduction benefits in the community. The RDS subcomponent will therefore improve agricultural support services and small-scale water related infrastructure in communes and villages through a decentralized and participatory approach. The rationale for the approach is that the diverse needs of poor farmers, especially women, for agricultural improvements and poverty reduction are best met through a process-oriented approach that strengthens community sense of ownership, capacity, and project sustainability through participatory planning, implementation, monitoring, and evaluation. Women's participation will be promoted in all RDS activities.

41. The RDS activities will be based on the priority needs of poor farmers and can include (i) community-based reforestation in the uplands; (ii) improvement of local extension services for water distribution and PIM, agriculture, livestock, forestry/fruit, and tea crops; (iii) support services for credit use (e.g., disseminating information on available credit, training on how to utilize credit services); (iv) small-scale community infrastructure such as small irrigation pumps, footbridges, rural feeder roads, community wells for safe water supply; (v) skills development training for alternative income generation, especially for women; and (vi) research on market availability and price information. Excluded from the scope of the RDS subcomponent are the provision of credit, social services, and social infrastructure (i.e., health and education), and direct funding to individual households.⁷ Requests for subsidized agricultural inputs will be discouraged and can only be considered for demonstration purposes and for targeted assistance to the poorest households. The RDS subcomponent also includes the cost of mobilization, implementation support, and benefit monitoring and evaluation (BME). The poverty focus of the Project may be further strengthened by a separate, complementary poverty reduction support project, which would include the pilot demonstration of RDS, poverty impact monitoring, and capacity building and dissemination activities.

42. **Upland Irrigation Systems and Watershed Protection.** Improvement of irrigation services in the upland region of the Red River basin faces difficulties common to such areas in that (i) irrigable areas are relatively small and dispersed, (ii) development costs per hectare are relatively high, and (iii) run-of-river schemes have unreliable dry season water supply. The sample subproject in Yen Binh district of Yen Bai Province that was evaluated during project preparation involves the rehabilitation of a cluster of irrigation projects in a district, and includes a community-managed watershed improvement component involving farmers living in the irrigated area. The RDS subcomponent will provide for the reforestation activities, together with the necessary improvements in agricultural support services, water management, and community interventions to reduce poverty.

43. **Delta Irrigation and Drainage Systems.** The subprojects will improve the performance of existing irrigation and drainage infrastructure, including (i) pumping stations, (ii) headworks, (iii) canal and drainage systems, and (iv) sluices. The sample subproject evaluated by the TA consultants in Bac Ninh Province comes under the jurisdiction of the Gia Thuan IDMC, and involves the rehabilitation of irrigation pumping facilities to ensure that irrigation and drainage services will benefit the poor tail-end farmers.⁸ It is representative of many potential subprojects in the delta. It is expected that changes in irrigation and drainage management will be introduced as the IDMC is receptive to a more participatory approach by farmers, and farmers

⁷ Guidelines for RDS implementation were prepared by MARD with the assistance of TA consultants and were discussed during loan negotiations. The guidelines make use of existing experience, such as Programs 133 and 135 of the Government, the Viet Nam-Sweden Mountain Region Development Program, and the ADB-financed Forestry Sector Project.

⁸ TA 3050-VIE: *Second Red River Basin Sector Project. Final Report.* 2001.

are interested in establishing or strengthening WUOs. The RDS subcomponent will provide for necessary improvements in agricultural support services, water management, and community interventions targeted to reduce poverty, especially among the majority of women farmers. Performance monitoring and minor repairs of completed facilities under the RRDWRSP and of the Hanoi dike improvements completed under the Irrigation and Flood Protection Rehabilitation Project (footnote 6), will also be supported under this component.

44. **Flood Protection.** The subprojects in the delta will include (i) riverbank protection and erosion control to prevent direct loss of land and property and to prevent threats to nearby dikes; (ii) dike strengthening to lessen risks, reduce maintenance, and harmonize standards;⁹ and (iii) improved access to facilitate flood fighting and emergency repairs. The construction and use of emergency dike spillways to improve flood management will be studied during Project implementation and may be implemented after the midterm review, subject to the recommendations of a separate feasibility study to be approved by the Government, ADB, and Agence Francaise de Développement (AFD).¹⁰ An optional RDS subcomponent will support community interventions for poverty reduction and building the capacity of local mass organizations for flood and disaster management.

45. **Project Implementation Support.** This component will help MARD to coordinate subprojects implementation and to build the capacity for (i) subproject identification according to the identification criteria; (ii) subproject planning and design, incorporating social assessments, the participatory approach, poverty focus, and RDS activities; (iii) subproject implementation and analysis; and (iv) reviewing the governance of irrigation services, with a view to promoting farmers participation and making the service providers more autonomous and accountable. Capacity building will be carried out by recruiting additional staff for agricultural and forestry extension, social development, environmental assessment and management, resettlement; and by recruiting consultants. A long-term project management expert will assist MARD in managing the subprojects and in analyzing their performance in relation to the project objectives. Short-term advisers with relevant expertise will be recruited to inspect, advise, and improve the quality of subproject implementation in important areas such as farming systems, agricultural extension, agricultural economics, forestry extension, postharvest and marketing, training, gender and ethnic minorities, resettlement, social development, and environment, and other areas as required. Support will also be provided in developing financial management, and project management information and communications systems. A team of consultants will assist MARD in reviewing the governance of irrigation services, including the recovery of O&M costs to promote the financial autonomy of IDMCs and WUOs. Provision is also made for a cost-effective communication network (intranet and e-mail) to link the project management office (PMO) in MARD with the various Implementing Agencies, other departments in MARD, and local authorities and consultants in the provinces and subprojects.

46. **Research Studies.** This component will support Vietnamese research institutes in implementing water resources management research in the Red River basin in support of the objectives of the Project. MARD will approve suitable research proposals in consultation with ADB, AFD, and the Government of the Netherlands.¹¹ Research can make investments in

⁹ Dike strengthening can include filling of swampland and borrow pits along dikes, and distributing the reclaimed land to poor families in the area.

¹⁰ AFD is considering providing separate grant financing for international experts required for subproject feasibility studies and follow-up work from its Project Preparation Fund in the amount of approximately Euro200,000 during the Project.

¹¹ The proposal prepared by the Viet Nam Institute for Water Resources Research for drainage management for sustainable agriculture in Bac Nam Ha is an example of candidate proposals for this component.

rehabilitation of water resources infrastructure more efficient and sustainable. For example, research to improve drainage management in the Red River delta could mean large savings in electricity costs for pumping. Reviews of ADB's policy on agriculture and natural resources research have established that investments in agricultural research typically have a high economic internal rate of return. Research should therefore be an integral part of a sector project. Within six months after loan effectiveness, MARD will provide ADB with proposals for a detailed agenda and implementation arrangements for the research studies.

C. Cost Estimates

47. The total project cost is estimated at \$156.2 million equivalent, including about \$12.2 million equivalent for duties and taxes. The foreign exchange cost is estimated at \$26.5 million, or about 17 percent of the total project cost. Local currency costs are \$129.7 million equivalent, or about 83 percent of the project cost. The cost estimates are summarized in Table 1 with details in Appendix 5.

Table 1: Project Cost Estimates
(\$ million)

Project Component	Foreign Exchange	Local Currency	Total Cost
A. Water Resource Management	5.2	5.1	10.3
B. Water Service Investment Subprojects ^a	19.4	122.6	142.0
C. Contingencies ^b	0.5	2.0	2.5
D. Service Charge	1.4	-	1.4
Total^c	26.5	129.7	156.2

^a Includes water resources infrastructure and RDS subcomponents, and contracts for the conduct of subproject social assessments, public hearings, feasibility studies, detailed design, equipment, land acquisition and resettlement, and administration and management of civil works. No contingencies are provided on this component.

^b Physical contingencies are at the rate of 10 percent. Price contingencies have been provided at 2.4 percent for foreign costs and 8 percent for local costs.

^c Totals may not tally due to rounding.

D. Financing Plan

48. The Government requested ADB to provide a loan of \$70 million equivalent from its Special Funds resources to finance about 45 percent of the total project cost (Table 2). The loan will finance about \$20.0 million of the foreign exchange cost and about \$50.0 million equivalent of the local currency cost. The foreign exchange cost financing will cover costs relating to equipment and materials, consulting services, and part of the civil works, all excluding duties and taxes, and the project management costs. AFD has agreed in principle to provide up to \$30.0 million equivalent through parallel cofinancing to finance the flood protection subprojects and related consultants under project implementation support, and some irrigation and drainage subprojects in the delta, those without international competitive bidding (ICB) contracts.¹² The Government and the beneficiaries will finance the remaining costs of \$45.6 million equivalent. The beneficiaries' share in the total project cost is estimated at about

¹² MARD estimates that out of 15 candidate irrigation and drainage projects in the delta proposed to date, 7 will require ICB and local competitive bidding (LCB) contracts, while the remaining 8 would require only LCB contracts.

5.1 percent.¹³ For part A and the research studies under part B, the Government of the Netherlands is considering cofinancing in the amount of \$10.6 million equivalent, on a grant basis, to be administered by ADB.

49. The proposed ADB loan will have a repayment period of 32 years, including an 8-year grace period, and will carry an interest charge of 1.0 percent per annum during the grace period and 1.5 percent thereafter. The Borrower will be the Socialist Republic of Viet Nam. The proposed AFD loan will be provided as parallel financing, and will be on AFD's standard terms and conditions.

Table 2: Financing Plan
(\$ million)

Source	Foreign Exchange	Local Currency	Total Cost	Percent
Asian Development Bank	20.0	50.0	70.0	44.8
Government	-	37.6	37.6	24.1
Beneficiaries	-	8.0	8.0	5.1
Agence Francaise de Développement	0.8	29.2	30.0	19.2
Grant: Government of the Netherlands	5.7	4.9	10.6	6.8
Total^a	26.5	129.7	156.2	100.0

^a Totals may not tally due to rounding.

E. The Executing Agency

50. MARD will be the Executing Agency for the Project. MARD was established in 1995 through a merger of the ministries of agriculture, water resources, and forestry. MARD is implementing four of ADB's major projects in the rural sector: Irrigation and Flood Protection Rehabilitation Project, RRDWRSP, Forestry Sector Project, and Rural Infrastructure Sector Project. Thus, MARD has staff who are familiar with ADB's procedures and policies, and have experience in implementing a sector project consisting of a number of small rural development-oriented subprojects. Work on these projects is progressing satisfactorily, despite delays during the start-up of the rural infrastructure and the forestry projects.

51. MARD has recognized a need for capacity building in two main areas: (i) water resources planning and management for part A, and (ii) poverty reduction and social assessment and mobilization for part B. Since its technical staff were formerly primarily agriculturists, irrigation and drainage engineers, or foresters, the level of expertise and knowledge in water resource planning and management is limited. Provincial and district government technical staff who will be preparing and implementing the subprojects are, on the whole, well-trained professional engineers and agriculturists capable of preparing and implementing the type of subproject envisaged, except for the poverty reduction and social assessment and mobilization requirements, for which capacity building is needed. Part B includes project implementation support to build capacity and improve staff knowledge and skills in poverty reduction, social and environmental dimensions of the Project; and resources to engage specialist consultants for project management. Technical feasibility studies, detailed

¹³ Estimated at 5 percent in water resources infrastructure improvements and 15 percent in RDS subcomponents.

design, and construction supervision, as well as social assessments, mobilization, and implementation support, and BME will be contracted out to qualified consulting firms, research institutes, universities, and NGOs.

F. Implementation Arrangements

1. Project Organization and Management

52. For part A, the Department of Water Resources and Hydraulic Works Management (DWRHWM) will be the Implementing Agency (IA). MARD issued in April 2001 a decision to establish the RRBO, with a council and an office.¹⁴ The RRBO is expected to be fully operational by June 2002, and to convene the first meeting of the council. The council is expected to approve a brief water sector action plan for the Red River basin. MARD will establish a project steering committee (PSC) for the interim period until the RRBO is fully operational.¹⁵ After the interim period, the Red River Basin Council (RRBC) is expected to serve as PSC for both parts of the Project. The Office of RRBC will have full-time staff assigned from the Institute for Water Resources Planning (IWRP) and other relevant ministries and agencies.¹⁶ Part B will be implemented through the CPO of MARD, and the participating provincial authorities will be implementing agencies. The project organization chart is in Appendix 6.

53. The PSC will coordinate the implementation of parts A and B and ensure effective collaboration and coordination with other agencies and organizations concerned, including VBARD, Viet Nam's Women's Union; Committee for Ethnic Minorities and Mountainous Areas (CEMMA); Ministry of Labor, Social Affairs, and Invalids (MOLISA); the steering committee for protection and development of the Cau River in six provinces (the Cau River Project); provincial governments; the Central Committee for Storm and Flood Control; and other related organizations. Under the Project, MARD will coordinate the identification, preparation, approval, financing and implementation of the subprojects in part B, and this will be carried out in accordance with the framework and plans for the Red River Basin developed in part A and the subproject selection criteria.

54. The director of DWRHWM will be appointed as project director for part A, and will be assisted by a full-time project manager.¹⁷ ADB will administer the Government of the Netherlands' grant financing for part A and the research studies under part B, and will recruit the consultants for capacity building for the RRBO, pilot implementation of water licensing system, project management support, and any international consultants for the research studies. ADB will delegate the recruitment of consultants and procurement of equipment to MARD for the public awareness and education programs and the water quality monitoring network, subject to conditions to be finalized and agreed upon by the Government of the Netherlands, ADB, and MARD. MARD will provide and/or rent suitable office space for the consultants in part A in DWRHWM, IWRP, or in a separate location as required.

¹⁴ The decision signed by the Minister of MARD on 9 April 2001 refers to the Planning and Management Council for the Red-Thai Binh River Basin, and its office within the Institute of Water Resources Planning.

¹⁵ The PSC in the interim period will be chaired by a MARD Vice-Minister and comprise chairpersons or vice-chairpersons of people's committees of participating provinces, and representatives of other ministries and agencies concerned, including the ministries of science, technology and environment; industry, construction; communication and transportation; health; the General Department of Hydrometeorology; and others. The same ministries and agencies will be members of the RRBC.

¹⁶ The participation of other ministries and agencies in the Office of RRBC will be achieved through working groups during the initial project implementation period, and will be reviewed during the midterm review.

¹⁷ The project cost estimate provides for financial support for the project manager position.

55. For part B, the Director of CPO will be appointed as project director. CPO will be strengthened to take on multidisciplinary responsibilities for coordinating part B, by establishing a project management office (PMO), headed by a full-time project manager. The PMO will function as an integral part of CPO, and will include incremental full-time senior experts in each of these areas: agriculture extension, forestry extension, social development, environmental assessment and management, resettlement, and financial management. The project manager and other required experts will be assigned from existing CPO staff. CPO's present office space is inadequate for the PMO, and separate office space will be rented and furnished. The project directors, project managers, and project management experts for parts A and B will have regular project coordination meetings.

56. Subprojects in part B will follow a decentralized approach wherever possible. In consultation with the provinces, MARD will appraise all subprojects and will approve them to ensure the quality of design and implementation and facilitate the release of counterpart funds from MARD to the IAs, including the provinces. The provincial people's committees will identify candidate subprojects in the uplands, which are not expected to be technically complex. Provinces with sufficient capacity can request MARD to delegate to them the responsibility for preparation and implementation. Candidate subprojects in the delta will be identified by MARD or the provincial people's committee. MARD and the province(s) concerned will in each case determine which contracts can be delegated by MARD to the province. The following contracts will, however, not be delegated and will be implemented under MARD's direct responsibility: (i) contracts for headworks that are technically complex and/or involve interprovincial water management, (ii) contracts that require ICB, and (iii) contracts for flood protection works on national dikes. MARD and the province(s) concerned will decide on a suitable coordination arrangement for each subproject in the delta.

57. Notwithstanding these delegation arrangements, MARD will retain final project management responsibility for each subproject, and will support the provinces in preparing and implementing the subprojects as required. MARD will also help the participating provinces to strengthen their capacity to prepare and implement subprojects. Within one month after loan effectiveness, each participating province will have established a provincial implementation unit (PIU) reporting to the provincial Department of Agriculture and Rural Development (DARD). Under the guidance of CPO, DARD, and the provincial people's committees, the PIUs will arrange for the preparation, implementation, and monitoring of subprojects and/or works that MARD has delegated to the provinces. The PIUs will be provided with incremental staff, vehicles, and operation budget to carry out their tasks. CPO will use its existing subproject offices to monitor for quality control of subprojects, and to manage contracts executed by CPO, for which incremental operations costs will be financed under the Project.

58. During project implementation, MARD will seek the active collaboration of NGOs, experts, and representatives of other projects in the Red River basin. MARD will organize regular consultation workshops with these stakeholders in conjunction with meetings of the RRBC or its standing committee, at least twice a year. Three consultation workshops were held with NGOs during Project processing and it was agreed that NGOs will be invited to participate in (i) the public awareness program in part A; (ii) participatory social assessments for subprojects in part B; (iii) RDS identification, implementation, and support; (iv) action research, poverty impact monitoring, and dissemination to demonstrate the impact of innovative RDS activities; and (v) capacity building for project staff, officials concerned, and community members in participatory approaches.

2. Criteria for Selecting Subprojects

59. Investment subprojects for part B must have a significant impact on the agricultural performance of poorer communities through sustainable improvements in irrigation, better drainage, watershed protection, and flood protection, together with RDS activities. The criteria are to be applied at two stages: the identification stage and the appraisal stage. In support of the poverty reduction and watershed improvement objectives of the Government and ADB, at least 30 percent of the Project's funds for part B will be allocated for subprojects in the uplands, with a target of about 20,000 ha comprising about 12,000 ha for irrigated land and about 8,000 ha for watershed improvement.

a. Identification Stage

60. Candidate subprojects in the upland provinces will be identified by district and provincial authorities, in close consultation with the communes and beneficiaries concerned. In the delta provinces, irrigation and drainage subprojects will generally be larger and will cover more than one district. These subprojects will, therefore, be identified by provinces in consultation with MARD. Flood protection subprojects will be identified by MARD in consultation with the provinces concerned. The responsibilities for preparing identified subprojects and the process of social mobilization to be complied with are described in the following sections. The screening criteria to be applied during the identification stage are as follows:

- (i) the subproject will provide improved irrigation, drainage, watershed protection and/or flood protection and rural development support in accordance with the objectives of the Project to improve agricultural performance (and consequently the livelihood and incomes) of poorer communities through sustainable improvements in irrigation, better drainage, watershed protection and flood protection, within a framework of integrated water resource management in the Red River basin;
- (ii) the subproject is consistent with the river basin plan or subbasin plan, and included in the provincial or district investment plan;
- (iii) the estimated cost of subprojects is at least \$1,000,000 equivalent and not more than \$5,000,000 equivalent;
- (iv) the people's committees of the communes, districts, and provinces where the subproject will be located have provided written support for it;
- (v) the proportion of beneficiaries below the poverty line is at least 33 percent according to international criteria;¹⁸
- (vi) the subproject proposal describes feasible and participatory O&M arrangements;
- (vii) the subproject will be based on proven technology;
- (viii) the subproject has no obvious negative social impact such as the loss of productive assets and livelihood, and physical displacement of a significant number of people; and
- (ix) the subproject has no obvious adverse environmental impacts such as the diversion or pollution of sizable bodies of water or the destruction of environmentally sensitive areas such as wetlands, mangrove, or forest areas.

¹⁸ This corresponds to 13 percent in the uplands and 10 percent in the delta area when using the MOLISA poverty criteria.

b. Appraisal Stage

61. The responsibilities for preparing identified subprojects and the process of social mobilization to be complied with, are described in the following sections. The selection criteria to be applied during the subproject appraisal stage are as follows:

- (i) it is confirmed that the subproject continues to meet the preliminary screening criteria, including consistency with Project objectives;
- (ii) the subproject has been shown to be technically feasible;
- (iii) the subproject has been shown to be financially sustainable;
- (iv) feasible subproject implementation arrangements have been spelled out for design, construction, O&M, and monitoring, with well-defined roles for beneficiary participants and WUOs in all stages of implementation, without having to resort to onerous labor contributions;
- (v) costings have been clearly identified and shown, including costs related to social mobilization, BME, rural development activities, capacity building, and mitigation of adverse social and environmental impacts, if any;
- (vi) sources of counterpart funding (national budget, provincial budget, beneficiary contributions) have been identified and confirmed;
- (vii) procurement packages have been clearly identified as well as the method of procurement (which must be in accordance with *ADB's Guidelines for Procurement* for subprojects financed under the ADB loan);
- (viii) implementation monitoring procedures have been clearly spelled out and are in accordance with the implementation guidelines for the Project;
- (ix) at least two public hearings on the subproject proposal have been held with beneficiaries in the subproject area, at the start and completion of the feasibility study, and it has been confirmed that the subproject supports priority development needs of the beneficiaries and will have no negative social impact; where such impact is unavoidable, adequate provision has been made to mitigate, compensate, and resolve the impact or conflict identified, including preparation of a resettlement plan where required;
- (x) the subproject has been shown to have no significant adverse environmental impact and measures have been set out in the feasibility study to mitigate adverse impacts;
- (xi) the subproject has been shown not to have any significant adverse effects for either upstream or downstream water users;
- (xii) the subproject has an economic rate of return of at least 12 percent; and
- (xiii) irrigation and drainage rehabilitation subprojects have an adequate management plan, based on PIM principles, that will improve the financial autonomy and accountability of the irrigation and drainage service providers.

62. Prior to approval, ADB will review the appraisal reports of the first two upland and the first two delta irrigation rehabilitation subprojects to ensure that the criteria are clearly understood and applied. Subsequent subproject appraisal reports will be reviewed and discussed by ADB prior to approval as needed.

3. Guidelines for Design and Implementation of RDS Activities

63. The Government's commitment to decentralization from the central to the provincial levels, and the experience of other projects in using a more decentralized and participatory approach are key considerations in the design of implementation arrangements for the Project

and, in particular, the RDS activities. The design and implementation of the RDS activities for poverty reduction as an integral part of each subproject will be based on three guiding principles: (i) community participation; (ii) decentralization of responsibilities for planning and implementation, together with accountability and transparency; and (iii) support for activities that have local priority and ownership, especially among women farmers, within a predefined range of options.

64. The RDS guidelines set out the preparation and implementation steps, defining how the community (and women) will participate, how responsibilities will be decentralized (preparation, approvals, funds flow, community contributions, budgeting, allocating, accounting), project management arrangements, types of procurement arrangements, financial limits for contracts, O&M arrangements and guidelines. The cost norm for RDS is approximately 30 percent of the total cost of the water resources infrastructure component in the irrigation and drainage subprojects, and in no case less than 25 percent. For flood protection subprojects, RDS is optional and up to 15 percent of the cost of the infrastructure component. PIUs, advised by CPO, will contract with shortlisted consulting firms, social research institutes, or NGOs to undertake needs assessment, social mobilization, design of RDS activities, implementation support, and BME. The cost of these contracts will be 10-15 percent of the RDS allocation for subprojects in the uplands, and 5-10 percent of the RDS allocation for subprojects in the delta provinces.

4. Process for Social Mobilization in RDS

65. After approval of a candidate subproject, community organizers recruited by the PIUs will act as facilitators to start a process of social mobilization, to help the local community prepare and implement priority RDS activities using loan funds and community contributions. RDS activities will be managed at the local level by the commune, based on priority needs of poor farmers determined at the village level, and under guidance of the PIU. At commune level, an RDS committee will be established comprising (i) a chairperson; (ii) representatives of the farmers' association, cooperative, Viet Nam Women's Union, and WUO; and (iii) village organizers and women organizers. Technical assistance will be provided by the district, PIU, and province as needed. RDS committees and village organizers and women organizers will be trained in participatory rural appraisal (PRA) and social preparation, for which NGO collaboration will be sought in training courses financed by the Project. Communes will submit a quarterly progress report to the PIU. The PMO team will monitor and coordinate the RDS activities, and identify the need for further assistance in implementing RDS activities. During implementation, the guidelines will be reviewed and lessons learned incorporated in other subprojects. It is expected that the learning and dissemination process will be supported by a separate grant-financed project on poverty reduction in the Red River basin under the Japan Fund for Poverty Reduction.

5. Implementation Schedule

66. The Project will be implemented over six years beginning in 2002 (Appendix 7). A six-month period after loan closing is for finalizing payments and consolidating accounts. While the start of activities for part A will be linked to establishment of the RRBO, activities for part B will start with social assessments and social preparation in the selected provinces before subproject implementation can be taken up. To ensure adequate social preparation, civil works contracts will be signed by the Implementing Agency only after social mobilization is completed and an agreement concluded between PIU, commune authorities, and commune RDS committees regarding the scope, budget, financing, and implementation arrangements for the

PIM and RDS activities under the subproject. Completing social mobilization and concluding the agreement will normally require at least six months after subproject approval. Feasibility studies for four sample subprojects representing about 5 percent of the total cost have been completed. After Government review and approval of the feasibility studies, subproject implementation could start with loan effectiveness. To avoid delays in the project start-up, MARD has already developed the necessary project implementation procedures, guidelines, and financial circular. The implementation procedures will be phased in through a first batch of subprojects in provinces that already have adequate capacity and prior experience in community participation modalities. Staff from all participating provinces will receive training in the start-up period.

6. Operation and Maintenance

67. An O&M plan for each subproject is a requirement for the subprojects. The O&M plan will be consistent with the Government's policy on cost recovery in water resources projects, as reflected in Decree 112/CP. The responsibility for O&M will vary from one subproject to another and often from one province to another. While smaller schemes may be managed by the local commune or cooperative, larger schemes are generally managed by an IDMC, or irrigation management station in upland provinces, which provides water to the communes on a contract basis. The IDMC is responsible for maintaining the local infrastructure developed by the national and provincial agencies. At the tertiary canal level, production teams—analogue to independent water user associations although not officially recognized as separate legal entities—provide the labor needed for water management and maintenance. Similar procedures will be followed for subprojects under the Project, and PIM by beneficiaries will be encouraged. During the project period, MARD will provide ADB with detailed information regarding O&M budgets for all IDMCs in the Red River basin on a timely basis, including (i) annual O&M budget as requested, (ii) annual O&M budget actually allocated, and (iii) subsequent utilization of O&M budget. ADB will monitor the provision of an adequate O&M budget. Under the project implementation support component, consultants will review the governance of irrigation services to promote farmer participation and the evolution of irrigation service providers into autonomous and accountable organizations.

7. Procurement

68. Goods and works financed by ADB will be procured in accordance with ADB's *Guidelines for Procurement*. The civil works contracts in part B are small and dispersed and are not expected to be of interest to foreign contractors. Civil works contracts estimated to cost \$1,000,000 or less will be procured through LCB procedures among prequalified firms and organizations acceptable to ADB. Contracts estimated to cost more than \$1,000,000 equivalent will be procured through ICB. Technical competence and capacity will be important criteria. State-owned enterprises will be eligible to bid for contracts if they are financially autonomous, independently managed, and operate on the basis of commercial practices. For social assessment, social mobilization, design of RDS activities, implementation support, and BME, eligible firms or organizations will include research institutes, universities, and NGOs. To implement RDS activities, PIUs will contract local contractors and/or capable and responsible community-based organizations. The PIU may delegate the selection and engagement of community-based organizations to communes that are capable of undertaking this task. The first contract awarded to any community-based organization will not exceed \$10,000 equivalent. Community-based organizations that have shown good performance under the first contract may be awarded subsequent contracts for RDS activities up to \$30,000 equivalent per contract. Subject to this provision, contracts for RDS activities costing more than \$10,000 equivalent will

be awarded by the PIU through LCB procedures among local contractors in accordance with standard government procedures that are acceptable to ADB.

69. To be procured under the Project are water quality monitoring equipment, laboratory equipment, vehicles, computer equipment, software, irrigation and drainage pumps, motors and electrical installations. ADB-financed equipment packages costing \$500,000 and more will be procured through ICB. Packages not anticipated to exceed \$500,000 equivalent will be procured through international shopping; those costing less than \$100,000, through direct purchase. In procuring irrigation and drainage pumps, motors, and electrical installations for part B, items with similar specifications will be combined into one package for subprojects that are ready for implementation at the same time.

8. Consulting Services

70. The Project will require approximately 1,018 person-months of consulting services: 366 international, and 652 domestic. Part A will require 250 person-months of international and 361 person-months of domestic expertise in water policy and planning, watershed management, gender and development, training, monitoring and evaluation, hydrology, instrumentation, meteorology, hydraulic modeling, information technology, environment, water quality, wastewater, public health, financial management, legal and policy aspects of water licensing, information technology, mass media production, video production, and information, education, and communication materials. Consulting firms will be recruited to provide the services for part A, except for the project management support component and the research studies under part B, for which consultants will be recruited on an individual basis. For Part B, consulting services will consist of 116 person-months of international and 291 of domestic expertise in farming systems, agricultural economics, social development, flood protection, institutional development, irrigation, financial management, and human resources development. The consultants for part B will be recruited partly as a firm and partly as individuals. In addition, the CPO will contract shortlisted domestic institutes or consulting firms to obtain domestic advisory inputs—as and when required during project preparation and implementation—in the areas of agricultural extension, forestry extension, postharvest and marketing, training, gender and ethnic minorities, resettlement, social development, environment, and others. Contracts for advisory inputs are expected to amount to approximately 264 person-months. Shortlisted firms or organizations will also be recruited to undertake feasibility studies, detailed design, review of procurement evaluation, and construction supervision; and social assessment, social mobilization, design of RDS activities, implementation support, and BME. All recruitment will follow ADB's *Guidelines on the Use of Consultants*, except for the flood protection specialists financed by AFD. ADB approved advance action for recruitment of consultants. The Government has been informed that such approval does not commit ADB to financing inputs in the event that the loan is not approved. The consulting services in part A will be financed through a grant from the Government of the Netherlands. Consulting services for project implementation support (part B) will be financed with the ADB loan. The outline terms of reference for consulting services are in Appendix 8.

9. Disbursement

71. The subprojects will be implemented in several provinces. Contracts are generally small in value and will be awarded to several contractors and suppliers. To ensure timely disbursements, central imprest accounts for parts A and B will be established by DWRHWM and CPO immediately after loan effectiveness, in accordance with the procedures of the Ministry of Finance and the State Bank of Viet Nam. Payments will be made to and from these accounts for

all eligible expenditures under the Project. The imprest accounts will be established, maintained, and audited in accordance with ADB's *Loan Disbursement Handbook*. The initial amount to be deposited in the imprest account will not exceed the estimated expenditures for the first six months. MARD, in consultation with ADB, will develop procedures to ensure that PIUs can establish sub-imprest accounts at the provincial level to facilitate project implementation in the subprojects. MARD may use the statement of expenditures (SOE) procedure to liquidate advances, in accordance with ADB's *Loan Disbursement Handbook*. Individual payment to be reimbursed under the SOE procedure will not exceed the equivalent of \$100,000.

10. Accounts, Audits, and Reporting

72. The CPO, assisted by the project implementation support consultants, will prepare separate accounts for the Project as a whole. The RDS implementation guidelines will specify if RDS accounts at the commune level are required. Provincial accounts will be monitored and consolidated by CPO. Within 12 months after loan effectiveness, MARD will establish a central computerized management information system in CPO for efficient monitoring, financial management, and reporting of subproject progress and contracts. The accounts and financial statements for the Project will be audited annually by an auditing firm selected through LCB. The audit will specifically cover the imprest accounts and statements of expenditure, and a separate opinion on these will be included in the audit reports. The audit must be carried out as part of the regular annual audit of MARD's general accounts, and the report submitted to ADB and AFD annually within nine months of the close of each fiscal year.

73. Each agency involved in the Project will prepare quarterly progress reports. Reports for part A will be collated within one month and submitted to ADB by the project director for part A. The project manager of the PMO in part B will consolidate and submit the reports within one month to ADB and AFD through the project director for part B. The reports will detail the achievements to date as related to the implementation schedule, targets and plans for the next reporting period, problems requiring resolution, and steps being taken to resolve them. Reporting will make use of the computerized networking/e-mail system to be developed. MARD will prepare and submit to ADB and AFD a project completion report within three months after physical completion of the Project.

11. Midterm Review

74. A comprehensive midterm review will be conducted jointly by the Government, ADB, AFD, and the Government of the Netherlands during year 3 of implementation, in consultation with the PSC. The review will examine (i) project progress to date, including implementation of the process of social assessment, mobilization, and RDS; quality of subproject plans and designs; initial physical works; construction quality; and initial benefits; (ii) future implementation plans and targets; (iii) allocation of funds for subprojects and loan categories; (iv) effectiveness of the project management structure and implementation arrangements as well as any need for modification; (v) any major environmental or social issues that have arisen with the subprojects; and (vi) the status of policy and institutional developments in water resource management. Any changes in project scope, financing, or implementation arrangements deemed necessary will be effected during the period following the review.

12. Benefit Monitoring and Evaluation

75. BME of the subprojects in part B will be the responsibility of the CPO in collaboration with the PIUs and beneficiaries. The CPO will build on the experience and expertise gained in

this regard in the ongoing RRDWRSP and other ADB-financed sector projects. The BME design will be finalized with the help of the long-term consultants in the CPO, and with advisory inputs provided by NGOs. Before implementing the subprojects, baseline surveys will be carried out within the subproject area as part of social assessment. Benefits generated during the project period will be measured against these initial data, as part of the contract for social mobilization and implementation support. Beneficiaries will be involved in participatory poverty impact monitoring. BME work will be eligible for ADB financing under the loan. A suitable monitoring and evaluation system for part A will be designed at the start of implementation under the management support component. The monitoring and evaluation of pro-poor effects of the Project will be integrated into the BME system for part B and the monitoring and evaluation system for part A.

G. Environmental and Social Measures

1. Environmental Dimensions

76. The environmental dimensions of the Project are related to all the proposed developments—sustainable increase in agricultural production, higher levels of rural income, reduced poverty, increased security against flooding, and improved water quality in the Red River basin. Four areas are of particular interest: (i) addressing potentially significant negative environmental consequences in accordance with the guidelines; (ii) creating environmental benefits as a result of project activities; (iii) capacity building, in the form of both institution building and establishing monitoring networks and databases; and (iv) public awareness and participation, including links with poverty reduction.

77. To address the concern of possible negative environmental impacts resulting from Project activities, initial environmental examination (IEE) studies were carried out for the sample subprojects, as part of the feasibility studies during project preparation. The results show no significant negative environmental consequences; minor ones can be mitigated to an acceptable level. A full-scale environmental impact assessment (EIA) was therefore not considered necessary. Should a need for more detailed studies emerge for any subproject during its preparation, an EIA will be carried out in accordance with ADB guidelines. A possible reason to upgrade the Project to environmental category A from the current category B could be, for example, involvement in significant construction works in the valuable mangrove zone in the estuary of the Red River. Most of the river basin has been under cultivation for thousands of years, and there are few areas where the value of nature protection can be distinguished from the immediate need of the people.

78. A summary IEE (SIEE) report prepared and reviewed by MARD and ADB presents the key findings of the subproject IEEs, with cost estimates for mitigation and monitoring measures. The expenses, as well as environmental benefits, were taken into account in making cost-benefit analysis, and funds were provided for the purpose. The SIEE was translated into Vietnamese. It has been advertised, particularly to the people whose interest may be at stake due to the Project. MARD has arranged for copies of the IEE reports for the sample subprojects to be made available on request.

79. The IEEs point to the risk of high amounts of fertilizers and pesticides being used to improve agricultural productivity, particularly in the uplands, where extension services are less developed. This practice can pollute drinking and household water unless integrated pest management and training are implemented. It was noted that most farmers in the Gia Thuan subproject in the delta are already practicing integrated pest management. Its use in other

subprojects in the delta and the uplands will be assessed and promoted. Positive impacts are expected to come from the reforestation work in the uplands, although it is unlikely that its flood prevention and erosion reduction impact on the lowlands could be quantified before the new community-managed reforestation approach would be catalyzed over a larger area. Localized impact in the upstream subproject areas might be realized in the short term. The water quality interventions in part A will be designed to address both industrial and domestic water pollution and, in the longer term, erosion control.

80. In addition to the subprojects, the SIEE addresses the concern of the institutional capacity of MARD and other involved agencies to carry out IEEs for future subprojects, and to respond to other environmental requirements of ADB and the Government. The capability of different agencies to prepare environmental analysis was examined during project preparation (footnote 1). Part B provides capacity building support to improve staff knowledge and skills in the environmental dimensions of the Project, and ensure their familiarity with ADB requirements.

2. Social Dimensions

81. **Poverty Reduction and Rural Development Support.** The poverty and social assessment under TA 3050 (Appendix 9) observed that poverty in the sample subproject areas is widespread although the income disparity among the population is still relatively low, and that pockets of poverty and hunger exist within each community. Poverty was caused by (i) lack of access to, or poor functioning of irrigation and drainage facilities; (ii) low level of education, especially among ethnic minorities and women; (iii) poor access to market centers and social services; (iv) lack of capacity to optimize the use of allocated forestland for agriculture and tree/fruit crops production due to lack of access to credit, agricultural inputs, and technologies; (v) surplus labor within the household and hence land area for each household member is too small; (vi) ethnicity in the uplands acting as a constraint on development opportunities; and (vii) gender, especially the households headed by women, particularly, older women. The poor also are more affected by either lack of or poor-quality domestic and irrigation water. The burden of coping with these problems falls disproportionately on women because of their multiple roles in meeting with daily hardships.

82. Considering lessons learned from TA 3050 and project processing, and from experience in poverty reduction programs elsewhere, four approaches were adopted in the project design to ensure poverty reduction impacts: (i) a multidisciplinary approach to combine agricultural and other productive support services with water management; (ii) a community-based approach to establish mechanisms to enable beneficiaries to make technical and financial decisions; (iii) a flexible approach recognizing that the needs of poor communities cannot be dealt with by a blueprint approach, and that physical designs, funding mechanisms and time frame must be demand-based and hence flexible; and (iv) an approach to local capacity building that will substantially assist in social preparation for demand-based community initiatives. The criteria for selecting investment subprojects will exclude provinces with poverty incidence lower than the national average. Within the selected provinces, subprojects will be selected in poorer districts, and within these districts in the poorer communes, to the extent possible, keeping in view other criteria for subproject selection.

83. The RDS component has been designed to provide productive support services on demand basis to poor farmers in each subproject area. The RDS will allow poor communes to identify activities according to their needs and to plan, manage, and monitor such activities. Communes will act as the core unit of financial management, while village-level organizations such as farmers' associations and Viet Nam Women's Union will be mobilized for

community-based activities. This mechanism, combined with capacity-building activities, will allow direct participation of the poor, ethnic minorities, and women in addressing their needs. MARD prepared the RDS guidelines for subproject preparation and implementation. MOLISA has been invited to collaborate with the PMO to strengthen the latter's its poverty reduction focus. MOLISA has agreed to annually provide updated poverty information to communes, districts, and provinces concerned during project implementation to facilitate BME work.

84. **Beneficiary Participation.** The Project will stimulate beneficiary participation in four ways: (i) subproject social assessments using participatory techniques; (ii) social mobilization in RDS planning, implementation, and BME; (iii) PIM; and (iv) other activities (e.g., construction labor, flood protection subprojects). MARD has prepared guidelines for the social assessment of subprojects. A detailed handbook for social assessment for intended field workers will also be prepared. In accordance with BME guidelines prepared by MARD, PMO and PIUs will monitor implementation.

85. For irrigation and drainage services, WUOs and groups will be strengthened to enable male and female farmers' to actively participate in O&M of the on-farm irrigation/drainage system. Currently, the lowest level of irrigation management organization is at the commune level in the uplands (cooperatives or water management groups attached to commune people's committees), and in some cases at district level (cooperatives) in the delta. During project preparation, farmers clearly expressed the need for more control over O&M. They also are interested in monitoring the quality of construction. Because of diverse institutional structures, a standardized approach for transferring irrigation/drainage management to farmers would not work. Therefore, decisions during subproject social assessment will be made in consultation with all stakeholders (farmers, communes cooperatives, IDMCs) on how PIM will be implemented in the subproject. The guidelines for implementing PIM will follow those prepared in an earlier ADB TA.¹⁹ In the uplands where the scale of civil works is smaller than in the delta, efforts will be made to provide for percentages of local labor and female labor in the contract documents. This will create temporary income generation opportunities for local communities and reunite families currently separated by out-migration. As for the flood protection subprojects, direct community participation in decision making is limited. However, where needs exist, RDS can be utilized in the poorest communities.

86. To facilitate the decentralized project implementation approach, all levels of local participants will be trained in project management, social mobilization, and poverty targeting. Such capacity building exercises will require the help of NGOs and community-based organizations with experience in these areas. The Project will actively engage them in training the trainers on participatory techniques, subproject social assessments, and possibly as field-level consultants. In addition, they will play a major role in the campaign to spread information on water rights and environment/pollution issues. They will also be involved in monitoring and evaluating the benefits/impacts of selected activities through action research.

87. **Gender.** The Project has a thematic focus on gender and development to ensure that poverty among rural women in the subproject areas is reduced through income-generating opportunities provided by the Project, and that women's representation in decision making for water management is increased. In many subproject areas, out-migration of men seeking employment outside agriculture has left the majority of women in charge of farming. Women farmers are therefore expected to be dominant among subproject beneficiaries. The findings of

¹⁹ TA 2869-VIE: *O&M Development in the Irrigation Sector*, Final Report prepared by MARD, Department of Irrigation with the assistance of consultants, 1999.

the social assessments show that (i) the burden of poverty is disproportionately borne by women because of their multiple tasks in meeting daily hardships; (ii) a high number of women and children suffer from waterborne diseases due to their long hours of working in the field and the poor-quality drinking water; (iii) women's needs for better access to safe domestic water and more funds for credit are very high; (iv) women's need for alternative income generation opportunities is very high, and they are ready to pursue these at the cost of further time pressure; (v) women actively participate in periodic irrigation maintenance work and in the delta as pump operators, but their representation in decision making regarding water issues is limited at all levels.

88. The Project's gender action plan (Appendix 10) was prepared to address such gender issues and ensure women's participation. In part A, women's roles in water resources management, health and hygiene issues will be highlighted in various action plans and public awareness and education programs. Women's representation in the RRBO will be required. In part B, the RDS activities are specifically designed to address the needs of and constraints on poor women farmers. Women's participation in planning, implementing, and monitoring the RDS activities will be mandated in the guidelines and field manual. Their participation will be facilitated by village-level women organizers and Viet Nam Women's Union, and women's needs will be identified separately from men's needs. At least 40 percent women's representation is required in the RDS committees. Where PIM is implemented, 50 percent of women's representation in the newly formed/existing water user groups will be mandated under the Project. The water quality monitoring component of the Project will also contribute, in the longer term, to improved water quality, thereby reducing health hazards for women and children.

89. **Ethnic Minorities.** The subprojects in upland areas involve large numbers of ethnic minority groups, such as Tay, Cao Lan, Dao, Muong, and others. No major negative impacts on these ethnic groups are expected. However, a strategy was developed to ensure that their special needs will be adequately addressed and that they will have equal access to all project benefits. MARD prepared guidelines for the participation of ethnic minorities in the project (GPEM) in accordance with ADB's policy on indigenous peoples, which emphasize ethnic minority participation and upland subproject designs responsive to the socioeconomic and cultural needs of ethnic communities (Appendix 11). The guidelines prioritize the needs of disadvantaged ethnic minority groups. Examples of special measures for ethnic minority groups include innovative approaches to extension services that emphasize local technical knowledge in agriculture, such as farmer exchange instead of conventional top-down extension services; irrigation management improvement with emphasis on appropriate technology; group formation taking into account ethnicity; income generation schemes combined with traditional cultural practices (e.g. handicraft). CEMMA will work closely with the CPO and PIUs to facilitate and monitor implementation of the GPEM.

V. PROJECT JUSTIFICATION

A. Economic Analysis

90. Quantified benefits from the Project will include a substantial increase in food crop production and incomes of poor farming communities in existing water resources systems of the Red River basin. A separate economic analysis will be undertaken for each subproject. The overall viability of the Project has been ensured by the requirement that subprojects financed from the loan must have an estimated economic internal rate of return (EIRR) of at least 12 percent. This level of return can be achieved since most of the subprojects will entail the

upgrading, rehabilitation, or completion of existing schemes. Nonquantifiable benefits are expected to accrue to households engaged in processing, marketing, and distribution of increased agricultural and forest products. Expanded employment opportunities resulting from an increased demand for labor for constructing subproject-related civil works are also expected to increase incomes in the areas. The EIRRs of upland projects are expected to be lower than those in the delta due to the higher rehabilitation costs per ha.

91. To test the general viability of the investments, the EIRRs were estimated for four sample subprojects. The assumptions used for net benefit calculations, as well as the results of the economic analysis are in Appendix 12. All subprojects were economically viable, with EIRRs ranging from 12.4 percent for Nghia Lo and 20.6 percent for Yen Binh in the uplands, to 21.8 percent for Gia Thuan and 69 percent for Duong River flood protection subproject in the delta. Sensitivity analyses showed the subprojects to be most sensitive to decreases in the yields of all crops and in the irrigated area. Complementary activities through the RDS to support infrastructure rehabilitation are expected to increase the EIRRs.

92. Benefit distribution and poverty impact analysis were conducted for several sample subprojects on a pilot basis (see Supplementary Appendix A). The analysis indicated that the proportion of the total net benefits accruing to the poor farmers is higher in the uplands, and that the total net benefit accruing to the poor is larger in the delta because the delta area is suited to larger-scale subprojects that allow some economy of scale. The selection criteria will ensure that the chosen subprojects will satisfy both efficiency and poverty reduction requirements.

B. Impact on Poverty and Gender

93. The Project comprises specific interventions to target poverty reduction in poor communes in the Red River basin. Social assessment identified the need and opportunity for poverty reduction, positive socioeconomic impacts, and beneficiary participation, especially of the poor, ethnic minorities, and women. Participatory poverty mapping confirmed a strong link between poverty incidence and the location of dysfunctional irrigation and drainage facilities, or the lack of access to those facilities. The Project's RDS activities targeting poor communes will, together with socially acceptable designs of water-related infrastructure, ensure that project benefits are directed to the poor and disadvantaged population in the subproject areas.

94. Overall, the Project will benefit the population of Red River basin in 25 provinces. In part B, the expected poverty reduction and socioeconomic benefits from the subproject investments include (i) increased agricultural production and productivity in poorer communes and among women, leading to increased income, reduced poverty, and enhanced food security; (ii) increased capacity in utilizing productive support services, especially among poor farmers; (iii) direct benefit of improved rural infrastructure, particularly for poor and vulnerable groups in the subproject areas; (iv) reduced vulnerability to floods and increased capacity and capital in coping with risks such as natural disasters and price fluctuations (poor farmers are more economically vulnerable to flood damages than better-off farmers); (v) improved water quality monitoring system, which will contribute to better water quality in the longer term, reducing the health hazards (e.g., reproductive tract infections) experienced by women farmers; (vi) generation of on-site jobs, which will reunite families currently separated due to out-migration; (vii) reduced domestic and farm work burden for women; and (viii) confidence gained through more representation and participation of the poor, ethnic minorities, and women in community-level decision making.

C. Environment

95. IEEs carried out as part of feasibility studies for four sample subprojects confirm that no potentially significant negative environmental impacts are expected to result from the Project, and that minor impacts can be mitigated to an acceptable level. An SIEE was prepared and disseminated by the Executing Agency among the people with interest in the subproject areas. Public participation in project planning will be encouraged through extensive consultations and workshops. IEEs will be prepared for all future subproject proposals. These will be screened by the Environment and Resettlement Unit of MARD-CPO, and EIAs, if warranted, will be undertaken on each subproject that could have potentially significant negative impacts.²⁰

96. The Project will have positive impacts on the environment by supporting sustainable increases in agricultural production, improved water quality, increased security against flooding, and watershed protection through reforestation in the uplands. At the same time, the requirements that environmental criteria be satisfied as part of subproject selection and design is a safeguard that was built in to ensure that the Project does not have any adverse environmental impacts. To date, subproject selection has satisfied the criteria, and EIAs have not been necessary.

97. MARD, together with national institutes for environmental research, is capable of organizing environmental monitoring of the project area. In addition, water quality monitoring will be introduced, and efforts will be made to reduce industrial and municipal pollution through wastewater permits. Environmental monitoring will be part of BME procedures to be implemented for all subprojects.

98. The criteria for approval of subprojects include consultation with affected parties and public availability of relevant subproject information. Specific environmental criteria have been developed to ensure that the Project will not result in significant pollution or other physical impacts on the environment; will not result in loss of biodiversity, endangered species, or environmentally sensitive areas; and will be acceptable to the people living in the subproject areas. If significant environmental concerns emerge during the preparation of future subprojects, full-scale EIAs will be carried out and the Project can be upgraded to environmental category A.

D. Resettlement and Land Acquisition

99. The Project as a whole expects only minor resettlement or land acquisition, as most civil works will involve only rehabilitation of existing structures. However, where resettlement/land acquisition is inevitable, efforts will be made to minimize the impacts while compensation will be provided at replacement costs. A resettlement plan will also be prepared in accordance with ADB's *Handbook on Resettlement*, and guidelines for resettlement and land acquisition²¹. During the preparation of the Duong River sample flood protection subproject, a resettlement plan was formulated to compensate 443 households whose agriculture and/or aquaculture will be affected by dike strengthening and filling of ponds, causing the expansion of right-of-way in a narrow strip of agricultural land adjacent to the dike in selected locations. No relocation of people is, however, involved. Although no significant negative impacts on ethnic minorities are expected, guidelines for the participation of ethnic minorities in the Project were also prepared

²⁰ For subprojects requiring EIAs, the subproject appraisal reports will be reviewed by ADB.

²¹ The guidelines for resettlement and land acquisition were prepared for the Project in accordance with ADB's policy on involuntary resettlement and the laws and policies of the Government.

to ensure that their special needs are reflected and that they will receive their share of the project benefits. A summary of the resettlement guidelines and issues is in Appendix 13.

E. Risks

100. The risks to the Project arise from its integrated approach, which may cause initial delays in implementation. The Government's demonstrated commitment to implement the WRL through the NWRC and the RRBO minimizes the risks to part A of the Project. As a sector Project comprising a number of smaller subprojects, the overall risk to part B is reduced, since a problem with one subproject is unlikely to affect another. The focus on poverty reduction and the introduction of participatory and decentralized processes for subproject identification, planning, design and implementation entail the risks of delayed or partial implementation. To mitigate this risk, the necessary implementation guidelines were discussed during loan negotiations, and are to be completed soon after loan effectiveness. Adequate provision has also been made to support the capacity of the PMO and PIUs through consultants to be recruited under the Project. Implementation will be phased, starting with a first batch of subprojects in selected provinces supported by extensive training. The research component will help to generate better information and experience in subproject preparation and implementation. A formal agreement to implement subprojects according to the guidelines has also been made a criterion for subproject identification, as indicator of the local and provincial commitment to the subproject. The possibility of delays in subproject implementation has been minimized by the detailed selection criteria, and by the guidelines and a field manual to be prepared.

101. The existing O&M systems, together with the willingness of beneficiaries to adopt PIM practices, lead to confidence in the long-term sustainability of part B. At present the participation of farmers' organizations in water management in the delta is very low. A related problem is that contracts between service providers and users are loosely written and difficult to enforce within existing legal structures. PIM through water user groups and associations will provide more sustainable solutions. Commitment to PIM has therefore been made a condition for including a subproject.

102. As observed during project preparation, a problem of irrigation and drainage service providers is that their revenue from service fees is insufficient to finance all O&M costs, particularly in the delta where all irrigation and drainage require pumping. Government subsidies are required to keep them operational. Decree 112/CP provides for the regulation of water fees, but excludes the recovery of investment costs. Currently, a policy on water pricing is being prepared. It will be the subject of further dialogue with the Government during the start-up of the Project.

VI. ASSURANCES

A. Specific Assurances

103. The Government has given the following assurances, in addition to the standard assurances, which have been incorporated in the legal documents.

- (i) MARD will provide to ADB the proposed shortlist of consulting firms/individual consultants for project implementation support in part B, by 31 December 2001.
- (ii) MARD will complete the staffing of the PMO for part B within one month after loan effectiveness.

- (iii) MARD will approve and disseminate detailed project implementation guidelines within three months after the consultants are mobilized for part B, followed by a field manual for project implementation staff three months later.
- (iv) RRBC will endorse and the Government will approve by December 2003 the Red River Basin Framework Plan, taking into account the TA 2871 recommendations.
- (v) The project directors for parts A and B will each be supported by a full-time project manager to ensure efficient project implementation.
- (vi) MARD will maintain two interdepartmental working groups, for part A and for part B, respectively, to maintain effective cooperation between the departments concerned in implementing the Project.
- (vii) MARD will, within 12 months of loan effectiveness, establish in the CPO a computerized management information system for efficient monitoring, financial management, and reporting of subproject progress and contracts.
- (viii) The Government will convene NWRC in accordance with its regulations, and will maintain a fully operational office of NWRC, staffed on a full-time basis with experts assigned from MARD and with the participation of other relevant ministries through working groups under the office of the NWRC. MARD will request that special meetings of NWRC and RRBC be held as required for successful project implementation.
- (ix) Upon the recommendation of NWRC, and following endorsement by the Government, MARD will, by December 2002, or another date agreed upon by MARD and ADB, implement a reorganization to separate water resources management activities and responsibilities regulated by the WRL from irrigation and drainage management activities and responsibilities.
- (x) Each subproject feasibility study will include a financing plan showing the percentages of the estimated subproject cost to be financed by (a) the ADB or AFD loan, (b) counterpart funds from MARD, and (c) the subproject beneficiaries, respectively. Promptly upon approval of a subproject, the Government through MARD will make the required counterpart funds available to the budget of the implementing agency concerned.²²
- (xi) In subproject preparation, the interests of the poor and disadvantaged groups, especially women and ethnic minorities, will be taken into account through consultation with them, in accordance with the guidelines for the participation of ethnic minorities in the Project and the gender action plan approved by MARD and ADB for the Project. The CPO, in close cooperation with the relevant PIUs in the provinces concerned will ensure that any negative social impact resulting from implementation of any subproject is prevented, mitigated, or resolved according to the measures set out for that purpose in the feasibility study for that subproject. If any subproject will require any resettlement, a resettlement plan will be prepared in accordance with ADB's *Handbook on Resettlement* and the guidelines for resettlement and land acquisition agreed upon by MARD and ADB for this Project. The resettlement will be undertaken and affected people will be compensated following this plan. ADB will be provided with a copy of the resettlement plan before the relevant subproject is approved and, in the event of a significant resettlement impact (i.e., more than 200 affected persons), an independent monitoring organization will be invited by MARD to monitor the correct implementation of the resettlement plan. In all subprojects with

²² Article 4 of the State Budget Law stipulates that, in case where a higher-level State management agency authorizes a lower-level State agency to carry out an expenditure that comes under the former's responsibility, funds must be transferred from the higher-level budget to the lower-level budget for performing such task.

resettlement impact, civil works contracts will be signed by the implementing agency only after the satisfactory completion of compensation payment and relocation activities by the implementing agency, to be confirmed by MARD.

- (xii) As part of each subproject appraisal, CPO will carry out environmental screening. Where appropriate, IEE will follow ADB and Government procedures. The CPO, in close cooperation with the PIU and the Province concerned, will ensure that any negative environmental impact resulting from the implementation of any subproject will be mitigated according to the measures set out for that purpose in the feasibility study for that subproject, and that the costs of mitigation, management, and monitoring are incorporated in the subproject cost and budgets.
- (xiii) The IA concerned will ensure that the O&M of each subproject will follow the O&M plan in the feasibility study for each subproject. Each O&M plan will follow the Government policy on cost recovery in water resources projects.
- (xiv) The CPO, PIU, and the subproject beneficiaries will be responsible for monitoring and evaluating the impact of each subproject. During subproject appraisal, a socioeconomic baseline survey will be carried out in the subproject area. During and after subproject implementation, generated benefits will be measured against the data from the baseline survey.
- (xv) MARD will, by March 2002, provide ADB with a draft revision of Decree 112/CP on cost recovery in water resources projects, for consultation, and the Borrower will cause the decree to be approved and implemented during the Project.

B. Conditions for Loan Effectiveness

104. For a smooth start-up for part B of the Project, the Government will have obtained confirmation from AFD that the AFD loan for part B has been approved, and from the Government of the Netherlands that the Netherlands grant for part A has been approved.

VII. RECOMMENDATION

105. I am satisfied that the proposed loan would comply with the Articles of Agreement of ADB and recommend that the Board approve

- (i) the loan in various currencies equivalent to Special Drawing Rights 54,338,000 to the Socialist Republic of Viet Nam for the Second Red River Basin Sector Project, with a term of 32 years, including a grace period of 8 years, and with an interest charge at the rate of 1 percent per annum during the grace period and 1.5 percent per annum thereafter and such other terms and conditions as are substantially in accordance with those set forth in the draft Loan Agreement presented to the Board; and
- (ii) ADB administering a grant in an amount of approximately \$10,600,000 equivalent from the Government of the Netherlands to the Socialist Republic of Viet Nam for the Second Red River Basin Sector Project.

TADAO CHINO
President

4 October 2001

APPENDIXES

Number	Title	Page	Cited on (page, para.)
1	Project Framework	35	1, 2 10, 29
2	Sector Strategy and Basin Planning Milestones	39	5, 12
3	Externally Assisted Projects in the Water Resources Sector in Viet Nam	40	6, 15
4	Loan 1344-VIE(SF): Red River Delta Water Resources Sector Project Status Report	41	7, 18
5	Detailed Cost Estimates	44	15, 47
6	Project Organization Chart	46	17, 52
7	Implementation Schedule	47	21, 66
8	Outline Terms of Reference for Consulting Services	48	23, 70
9	Summary of the Poverty and Social Assessment	54	26, 81
10	Summary of the Gender Action Plan	58	28, 88
11	Summary Guidelines for the Participation of Ethnic Minorities (GPEM) in the Project	60	28, 89
12	Description and Projected Economic Performance of the Subprojects	62	29, 91
13	Summary of Resettlement Guidelines and Issues	71	31, 99

SUPPLEMENTARY APPENDIXES

(available on request)

- A Benefit Distribution and Poverty Impact Analysis
- B Guidelines for Subprojects
- C Resettlement Plan for the Duong River Flood Protection Subproject
- D Guidelines for the Participation of Ethnic Minorities in the Project
- E Summary Initial Environmental Examination
- F Gender Action Plan

PROJECT FRAMEWORK

Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Goal</p> <p>To establish integrated water resource management in the Red River basin</p>	<ul style="list-style-type: none"> • Reduced impact of water-related natural disasters 	<ul style="list-style-type: none"> • Government's monitoring systems 	<ul style="list-style-type: none"> • No change in commitment to implement water resources law and associated legislation
<p>To protect and improve production, productivity and income of farmers in the Red River basin</p>	<ul style="list-style-type: none"> • Farmers' income increased by at least 20% per year over baseline in 2001. 	<ul style="list-style-type: none"> • Expenditure surveys • Benefit monitoring and evaluation (BME) system design 	<ul style="list-style-type: none"> • Agricultural input costs and commodity prices remain relatively stable.
<p>Purpose</p> <p>To improve agricultural performance of poorer communities through sustainable improvements in irrigation, better drainage, watershed protection and flood protection, within an integrated water resource management framework</p>	<ul style="list-style-type: none"> • Rice production in subproject areas increased by an average of at least 20%. • Collection of additional water fees sufficient to finance incremental operation and maintenance (O&M) costs of water infrastructure • Economic Internal Rate of Return (EIRR) of subprojects is at least 12 percent after 5 years. 	<ul style="list-style-type: none"> • BME reports • Review missions • Project performance reports (PPR) • Project completion report (PCR) 	<ul style="list-style-type: none"> • No significant natural disasters • Continuing demand exists for more agricultural produce than the baseline system can provide.
<p>To promote stakeholder participation in water management, with emphasis on women's participation</p>	<ul style="list-style-type: none"> • Women's representation in rural development support (RDS) committees, water user organizations, irrigation and drainage management companies, and Red River Basin Organization (RRBO) 	<ul style="list-style-type: none"> • Review missions 	

Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
Outputs			
Water Resource Management			
<ul style="list-style-type: none"> Institutional capacity enhanced for basinwide management in the Red River basin 	<ul style="list-style-type: none"> RRBO fully functional and financed by Government Red River basin framework plan approved by December 2003 Exchange arrangements established with two other basin organizations 	<ul style="list-style-type: none"> Project progress reports Review missions 	<ul style="list-style-type: none"> Government commitment to RRBO fulfilled RRBO fully operational by June 2002 Staff made available for training
<ul style="list-style-type: none"> Public awareness campaigns conducted on water resource management 	<ul style="list-style-type: none"> Mass media program implemented by 2003 Training material prepared and approved by Ministry of Culture Schoolchildren trained in 12 provinces by 2004, and in remaining provinces by 2006 	<ul style="list-style-type: none"> Project progress reports Review missions 	<ul style="list-style-type: none"> Time made available in the school curriculum to give the training
<ul style="list-style-type: none"> Water quality monitoring network established 	<ul style="list-style-type: none"> Water quality information used to plan and implement improved water quality programs 	<ul style="list-style-type: none"> Water quality monitoring reports Review missions 	<ul style="list-style-type: none"> Timely procurement of equipment and services
<ul style="list-style-type: none"> Pilot implementation undertaken for water rights licenses and wastewater discharge permits 	<ul style="list-style-type: none"> Legislation established and information systems operational Successful implementation in Cau River basin 	<ul style="list-style-type: none"> Project progress reports Review missions 	<ul style="list-style-type: none"> Legislation will be approved by Government.
<ul style="list-style-type: none"> Project management support 	<ul style="list-style-type: none"> Coordination between parts A and B 		
Water Service Investment Subprojects			
<ul style="list-style-type: none"> Upland irrigation systems and watershed protection improved 	<ul style="list-style-type: none"> 20 subprojects completed and operational by 2007, covering 12,000 ha of rehabilitated irrigation area and 8,000 ha of reforestation RDS activities undertaken to increase benefits from irrigation and watershed protection 	<ul style="list-style-type: none"> Project progress reports Review missions BME reports 	<ul style="list-style-type: none"> Implementation arrangements in place at the appropriate level of local government Timely provision of counterpart funds Timely procurement of inputs
<ul style="list-style-type: none"> Delta irrigation and drainage 	<ul style="list-style-type: none"> 10 subprojects completed and 	<ul style="list-style-type: none"> Project progress 	<ul style="list-style-type: none"> Implementation arrangements in

Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
systems improved	operational by 2007, covering 80,000 ha of rehabilitated irrigation <ul style="list-style-type: none"> RDS activities undertaken to increase benefits from irrigation and drainage 	reports <ul style="list-style-type: none"> Review missions BME reports 	place at the appropriate level of local government <ul style="list-style-type: none"> Timely provision of counterpart funds Timely procurement of inputs
<ul style="list-style-type: none"> Flood protection systems strengthened 	<ul style="list-style-type: none"> 10 subprojects completed by 2007, covering a total area of 1.5 million ha 	<ul style="list-style-type: none"> Project progress reports Review missions BME reports 	<ul style="list-style-type: none"> Implementation arrangements in place at the appropriate level of local government Timely provision of counterpart funds Timely procurement of inputs Major natural disasters exceeding subproject design criteria
<ul style="list-style-type: none"> Subproject planning, design, and implementation capacity established and operating at all levels 	<ul style="list-style-type: none"> Subprojects prepared and formulated according to guidelines and criteria Subprojects completed within budget and schedule Measures identified for enhanced autonomy and accountability of water service providers 	<ul style="list-style-type: none"> Reports of social development consultants Project progress reports Review missions 	<ul style="list-style-type: none"> New social preparation processes institutionalized No change in decentralization policy Timely recruitment of experts Timely procurement of inputs
<ul style="list-style-type: none"> Enhanced capacity of implementing agencies and local authorities to target poverty reduction 	<ul style="list-style-type: none"> Field manual prepared by April 2002 Central and provincial BME units established and operational by 2002 200 project implementation and management staff trained 400 district-level community organizers trained 	<ul style="list-style-type: none"> Project progress reports Review missions BME reports 	<ul style="list-style-type: none"> New social preparation processes are institutionalized No change in decentralization policy Timely recruitment of experts
Research	<ul style="list-style-type: none"> Research activities to be selected during project implementation. 	<ul style="list-style-type: none"> Project progress reports 	<ul style="list-style-type: none"> Commitment to utilize research results to improve subproject design

Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
Activities			
Water Resource Management			
Select and recruit international and national experts	<ul style="list-style-type: none"> 250 person-months international, 361 person-months domestic 	<ul style="list-style-type: none"> Project progress reports 	<ul style="list-style-type: none"> Timely completion of recruitment process
Procure equipment and services	<ul style="list-style-type: none"> \$0.7 million for equipment and services 	<ul style="list-style-type: none"> Project progress reports 	<ul style="list-style-type: none"> Timely completion of procurement process
Install equipment	<ul style="list-style-type: none"> Inputs to be confirmed after detailed design 	<ul style="list-style-type: none"> Project progress reports 	<ul style="list-style-type: none"> Timely completion of design of water quality monitoring network
Operation & maintenance (O&M) of monitoring and measuring equipment	<ul style="list-style-type: none"> Inputs to be confirmed after detailed design 	<ul style="list-style-type: none"> Project progress reports 	<ul style="list-style-type: none"> Departments commit necessary resources.
Develop, print, and distribute training material and conduct training	<ul style="list-style-type: none"> \$1.9 million for awareness campaigns 	<ul style="list-style-type: none"> Project progress reports 	<ul style="list-style-type: none"> Effective coordination among ministries concerned
Design and develop audiovisual material			
Conduct workshops and training	<ul style="list-style-type: none"> Inputs for training activities to be finalized by the consultants 	<ul style="list-style-type: none"> Project progress reports 	<ul style="list-style-type: none"> Timely fielding of consultants
Undertake study tours, technical exchanges, and bilateral exchange of experts	<ul style="list-style-type: none"> Inputs for study and exchange visits to be finalized by the consultants 	<ul style="list-style-type: none"> Project progress reports 	<ul style="list-style-type: none"> Arrangements made with collaborating institutions

SECTOR STRATEGY AND BASIN PLANNING MILESTONES

1989	Investment Plan and Development Strategy for the Water Resources Sector until 2000
1993	Investment Plan and Development Strategy for the Water Resources Sector until 2005
1995	Red River Delta Master Plan
1998	Water Resources Law (WRL)
1999	Red River Delta Flood Protection Plan
1999	Red River Basin Profile prepared with participation of all 25 provinces
1999	Subbasin Plan for the Cau River
1999	Subbasin Plan for the Day River
1999	Development policy letter regarding water resources
2000	Main decrees to implement the WRL
2000	Decision to establish the National Water Resources Council (NWRC)
2001 (February)	Establishment of international support group for water sector by Ministry of Agriculture and Rural Development
2001 (April)	Decision to establish the Red River Basin Organization
2001 (June)	First meeting of the NWRC
2002	Decree 112/CP (revised) on cost recovery in water resources projects
2003	Red River Basin Framework Plan

**EXTERNALLY-ASSISTED PROJECTS IN THE WATER RESOURCES SECTOR
IN VIET NAM**

Programs/Projects	Amount (\$ '000)	Type	Source
Irrigation and Flood Protection Rehabilitation Project	74,700	Loan	ADB
Lower AYUN Irrigation Project	16,500	Loan	Kuwait
Irrigation Development in Cuu Long River Delta	101,800	Loan	WB
Irrigation Rehabilitation Project (of 7 Irrigation schemes: Cam Thuy, South Nghe An, Linh Cam, An Trach, Thach Nham, Dong Cam, Hoc Mon North Binh Chanh) CR 2711	100,000	Loan	WB
Red River Delta Water Resources Sector Project, Loan 1344	55,500	Loan	ADB
Operation and Maintenance Strengthening Project	1,950	TA	ADB
Phuoc Hoa Multipurpose Water Resources Project	2,600	TA Loan	ADB
North Vam Nao Water Control Project	5,600	TA	AusAID
Improvement of Drainage System in Tan Chi Agriculture Area	27,000	TA	JICA
Assistance in Drafting Water Management Legislation Project	586	TA	WB
Irrigation Development in Cuu Long Basin TF-209701	850	TA	WB
Red River Basin Water Resources Management Project	1,300	TA	ADB
Second Red River Basin Sector Project	600	TA	ADB
Upgrading and Rehabilitation of Sea Dikes in Central and Northern Viet Nam PAM 4617 and 5325	38,419	Grant	WFP
Control-Net of Capacity of Low Course of River Mekong	472	Grant	UNDP
Evaluation of Environment Impact in Dong Thap Muoi Area after 10 years Development of Irrigation	350	Grant	Sida + Danida
Sea Dike Engineering Services VIE/92/023	1,161	Grant	UNDP
Disaster Management Unit (DMU) VIE/93/031	250	Grant	UNDP
Support to Disaster Management in Viet Nam VIE/97/002	1,808	Grant	UNDP
Extension of DMU Project VIE/93/031	525	Grant	UNDP

ADB=Asian Development Bank, AusAID=Australian Agency for International Development, Danida=Danish International Development Agency, JICA=Japan International Cooperation Agency, WFP=World Food Program, Sida=Swedish International Development Cooperation Agency, TA=technical assistance, UNDP=United Nations Development Programme, WB=World Bank.

LOAN 1344-VIE(SF): RED RIVER DELTA WATER RESOURCES SECTOR PROJECT STATUS REPORT

1. The loan of SDR40.417 million equivalent to \$60 million at the time of approval and the associated advisory technical assistance (TA) of \$1.44 million¹ for the Red River Delta Water Resources Sector Project were approved on 13 December 1994. The loan is the Asian Development Bank's (ADB's) second loan to Viet Nam's water sector following resumption of lending to Viet Nam in 1993.² The Project was designed to promote economic growth and reduce poverty by financing a five-year time slice of the Government's water resources investment plans in the Red River delta. This was achieved through implementation of 30 medium-scale irrigation and drainage subprojects covering about 515,000 hectares selected according to a set of criteria agreed upon during appraisal.
2. After the loan became effective in April 1995, project implementation remained slow until end-1997 due to several factors. One was the late fielding of the loan-financed consultants in November 1996 as a result of the time-consuming decision-making processes within the Government. In contrast, the TA-financed consultants were fielded on time in August 1995. Also, preparation and Government approval of feasibility studies, detailed designs, and tender documents for the subprojects took significantly more time than envisaged, partly due to the late fielding of the loan consultants. The initial unfamiliarity of the Ministry of Agriculture and Rural Development (MARD) with ADB's procedures and counterpart funding problems during 1997 added to the delay. Project implementation accelerated during late 1997 and has been fully satisfactory since then.
3. The Project was substantially completed as per original scope, with ADB's project completion report scheduled in 2002. The works are generally satisfactory. The overall performance of MARD and the provincial agriculture and rural development departments has been satisfactory but their capacity for subproject planning and preparation needs further improvement despite the capacity-building activities of the Project and the TA. This is also true of the design companies engaged under the Project. Loan covenants were generally complied with.
4. Project benefits are already accruing in the completed subprojects, but since the Project's benefit monitoring and evaluation program started late, the benefits cannot yet be quantified. Discussions with local people during review missions confirm the realization of benefits. MARD also reported that the Project has helped reduce income disparities at the commune level.
5. Important lessons from implementing the Project can be used in designing future water sector projects in Viet Nam, as follows.

¹ TA 2233-VIE: *Capacity Building in the Water Resources Sector*, for \$1.44 million, approved on 13 December 1994.

² Loan 1259-VIE: *Irrigation and Flood Protection Rehabilitation*, for \$76,500,000, approved on 26 October 1993, was the first loan.

Lesson	Recommendation
Subproject Selection	
<p>The subprojects identified during appraisal were regarded as “firm” by MARD and the original list of potential subprojects was not altered. The sector approach, under which subprojects are developed during implementation and benefiting from implementation experience, was therefore not followed.</p>	<p>Government procedures and MARD’s planning approach need to be modified to ensure that they are fully compatible with a sector approach.</p>
<p>The \$3.0 million cost ceiling for individual subprojects distorted the selection of subprojects, resulted in an excessive number of scattered subprojects that challenged the processing ability of MARD and PARs, reduced the scope of the subproject investments to below that actually required, and created the situation where a number of individual subprojects within one system/hydrological unit were included without reflecting the linkages between them.</p>	<p>The number of scattered subprojects should be limited to ensure that resources are adequate to ensure quality design; subprojects should cover an entire system/hydrological unit to ensure an integrated approach.</p>
Adequacy of Feasibility Studies and Appraisal Reports	
<p>The feasibility reports for the subprojects submitted for ADB approval were generally poor. ADB’s guidelines for social dimensions were generally not used and environmental impact assessments were cursory. Because the loan-financed consultants completed their contract before the bulk of the feasibility reports for the additional subprojects were processed by MARD, the impact of the consultants’ guidelines on the quality of the appraisal reports submitted was minor. The supporting studies conducted under TA 2233 were similarly not influential in ensuring the quality of the feasibility reports, probably because this TA was not formally linked to the implementation process.</p>	<p>Consultants should be retained for conducting feasibility studies until MARD, PARs and the design companies have acquired in-house capability to conduct feasibility reports in accordance with ADB guidelines and prepare quality reports satisfactory to ADB.</p>
	<p>The services of TA financed consultants need to be fully integrated with project implementation; the phasing-in of the consultants’ input needs to be closely linked to project implementation stages and the willingness of the executing agency to consider and adopt recommendations formulated under the TA.</p>
Selection of Design Companies	
<p>Smaller design companies are still inadequately equipped to satisfactorily undertake feasibility studies according to ADB standards. Selection of and instructions to design companies should be more rigorous.</p>	<p>A competitive process of selecting design companies should be initiated, and standardized terms of reference developed to define the requirements for subproject feasibility report preparation.</p>

Lesson	Recommendation
<p>Procurement</p> <p>In some cases, the procurement and delivery of pump equipment was completed well before the civil works were ready for pump installation. This created a problem for the supplier, as commissioning and testing are part of the supply contract. It also involved expenditure before it is required.</p> <p>The separation of irrigation system investments into individual subprojects – because of the \$3 million cost limit – resulted in separate procurements under the international competitive bidding (ICB) for adjacent pumping stations. This, in turn, resulted in inefficient use of resources and caused adjacent pump stations with similar duties to be fitted with pumps from different manufacturers when the benefits of a common set of equipment under the control of one irrigation and drainage management company (IDMC) are clear.</p>	<p>More attention needs to be given to coordinate the status of civil works for pumping station construction and the timing of procurement of associated pumping equipment.</p> <p>Consideration should be given to combining procurement of pumping equipment of similar duty and configurations, especially where pumping stations are within one IDMC.</p>
<p>Construction Management and Supervision and Quality Aspects</p> <p>The standard of construction work under the Project is at the lower end of acceptable international quality standards.</p>	<p>More attention should be given to adoption of international standards, especially for finish and protection of steelwork components. Improved documentation of site activities is required for both contractors and supervision agents.</p>
<p>Counterpart Funding by Provincial Governments</p> <p>Several subprojects included significant components to be entirely financed by provincial governments. In several cases, the concerned provincial governments could not provide the requirement within the envisaged time-frame, thereby delaying the completion of these components and accrual of project benefits.</p>	<p>Firm commitments to providing counterpart funds need to be obtained from the provincial governments. Part of the counterpart funds need to be secured before subproject implementation starts. Joint financing of all components under a subproject could also be considered.</p>

DETAILED COST ESTIMATES
Table A5.1: Expenditure Accounts, by Component
(\$'000)

Item	D'000,000			\$'000			% Foreign Exchange	% Total Base Cost
	Local	Foreign	Total	Local	Foreign	Total		
A. Water Resources Management⁴⁴								
1. Institutional Capacity Building for the RRBO	26,459.4	24,670.5	51,129.9	1,890.0	1,762.2	3,652.1	48.3	2.4
2. Public Awareness and Education Programs	13,376.0	8,231.4	21,607.4	955.4	588.0	1,543.4	38.1	1.0
3. Pilot Water Licensing Systems	12,067.7	13,317.3	25,385.0	862.0	951.2	1,813.2	52.5	1.2
4. Water Quality Monitoring Network	9,756.8	8,449.2	18,206.0	696.9	603.5	1,300.4	46.4	0.9
5. Project Management	9,717.5	18,480.0	28,197.5	694.1	1,320.0	2,014.1	65.5	1.3
Subtotal (A)	71,377.4	73,148.3	144,525.7	5,098.4	5,224.9	10,323.3	50.6	6.8
B. Water Service Investment Projects								
1. Subprojects	1,557,764.3	229,949.5	1,787,713.8	111,268.9	16,425.0	127,693.8	12.9	83.9
2. Project Implementation Support	140,997.8	37,519.0	178,516.8	10,071.3	2,679.9	12,751.2	21.0	8.4
3. Research Studies	16,800.0	4,200.0	21,000.0	1,200.0	300.0	1,500.0	20.0	1.0
Subtotal (B)	1,715,562.1	271,668.5	1,987,230.6	122,540.1	19,404.9	141,945.0	13.7	93.2
Total Baseline Costs	1,786,939.4	344,816.8	2,131,756.2	127,638.5	24,629.8	152,268.3	16.2	100.0
Physical Contingencies	14,543.3	1,406.7	15,950.0	1,038.8	100.5	1,139.3	8.8	0.7
Price Contingencies	48,556.1	17,095.8	65,651.9	1,004.0	363.4	1,367.4	26.6	0.9
Total Project Costs	1,850,038.9	363,319.3	2,213,358.2	129,681.3	25,093.7	154,775.0	16.2	101.6
Interest During Construction	0.0	20,530.3	20,530.3	0.0	1,442.7	1,442.7	100.0	0.9
Total Costs to be Financed	1,850,038.9	383,849.6	2,233,888.5	129,681.3	26,536.4	156,217.8	17.0	102.6

⁴⁴The cost estimates are being appraised and finalized by the Government of the Netherlands.
O&M = operation and maintenance, RRB=Red River basin.
Source: ADB estimates.

Table A5.2: Financing Plan Summary
(\$'000)

Item	Source of Financing										Foreign Exchange	Local (Excl. Taxes)	Duties and Taxes			
	Government		Beneficiaries		ADB		AFD		Netherlands					Total		
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%				Amount	%	
A. Water Resources Management																
1. Institutional Capacity Building for the RRBO	997.4	25.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,907.8	74.5	3,905.1	2.5	1,833.0	1,943.0	129.1
2. Public Awareness and Education Program	186.4	10.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,518.0	89.1	1,704.4	1.1	612.9	1,075.5	16.0
3. Pilot Water Licensing System	239.7	12.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,661.3	87.4	1,901.0	1.2	973.7	906.0	21.3
4. Water Quality Monitoring Network	48.3	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,342.6	96.5	1,390.9	0.9	634.6	708.0	48.3
5. Project Management	107.4	4.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,066.2	95.1	2,173.6	1.4	1,410.8	738.0	24.7
Subtotal (A)	1,579.1	14.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9,495.9	85.7	11,075.0	7.1	5,465.1	5,370.6	239.4
B. Water Service Investment Projects																
1. Subprojects	30,073.5	23.6	8,061.7	6.3	59,858.6	46.9	29,700.0	23.3	-	0.0	0.0	127,693.8	81.7	16,425.0	101,192.2	10,076.7
2. Project Implementation Support	5,499.2	37.9	0.0	0.0	8,700.4	60.0	306.5	2.1	0.0	0.0	14,506.2	9.3	2,903.7	9,675.1	1,927.4	
3. Research Studies	450.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	1,050.0	70.0	1,500.0	1.0	300.0	1,200.0	0.0	
Subtotal (B)	36,022.7	25.1	8,061.7	5.6	68,559.0	47.7	30,006.5	20.9	1,050.0	0.7	143,700.0	92.0	19,628.6	112,067.3	12,004.1	
Total Disbursement	37,601.9	24.1	8,061.7	5.1	68,559.0	43.9	30,006.5	19.2	10,545.9	6.8	154,775.0	99.1	25,093.7	117,437.9	12,243.4	
Interest During Construction					1,442.7	100.0					1,442.7	0.9	1,442.7			
Total Costs To Be Financed	37,601.9	24.1	8,061.7	5.1	70,001.8	44.8	30,006.5	19.2	10,545.9	6.8	156,217.8	100.0	26,536.4	117,437.9	12,243.4	

ADB=Asian Development Bank, AFD=Agence Francaise de Développement, RRBO=Red River basin organization.
Source: ADB estimates.

IMPLEMENTATION SCHEDULE

Activity/Component	Yr. Qtr.	1			2			3			4			5			6			
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
I. ADVANCE ACTION ON CONSULTANT SELECTION																				
1. Nominate project managers at PMO and																				
2. Submit invitation letter, TORs, and shortlist of consultants																				
II. Part A. WATER RESOURCE MANAGEMENT																				
A. Capacity Building for the RRBO																				
1. Engage consultants																				
2. Prepare training program																				
3. Develop RRBO strategic and framework																				
4. Establish cooperative exchange arrangements with other RBOs																				
B. Water Quality Monitoring Network																				
1. Engage consultants																				
2. Identify issues relevant to water quality																				
3. Design water quality monitoring program																				
4. Develop and implement training program																				
5. Install, implement, and monitor water quality program																				
C. Pilot Water Licensing System																				
1. Engage consultants																				
2. Review previous work undertaken in assistance projects and formulate guidelines for the issuance of new rights																				
3. Design forms/procedures and develop software																				
4. Develop guidelines for sanctions and monitoring performance																				
5. Implement trial system in Cau River subbasin																				
6. Monitor implementation and operation																				
D. Public Awareness and Education																				
1. Engage consultants																				
2. Design information, education, and communication (IEC) awareness program																				
3. Implement IEC program																				
E. Project Management Support																				
1. Engage consultants																				
III. Part B. WATER SERVICE INVESTMENTS																				
A. Subprojects																				
1. Implementation of upland irrigation and watershed management subproject																				
2. Implementation of delta irrigation and drainage subprojects																				
3. Implementation of flood protection subprojects																				
B. Research																				
1. Research activities																				

PIU=project implementation unit, PMO=project management office, RBO=river basin organizations, RRBO=Red River Basin Organization, TOR=terms of reference.

OUTLINE TERMS OF REFERENCE FOR CONSULTING SERVICES

1. Over six years of project implementation, 366 person-months of international consultants and 652 of domestic consultants will be required (Table A8). The terms of reference for the consultants are outlined here.

A. Water Resources Management (Part A)

1. Capacity Building for the Red River Basin Organization

2. The team of consultants will be led by an internationally recruited institutional specialist, experienced in developing strategic plans for water-based organizations as well as policy and river basin plans. With the assistance of a domestic expert in this area, the specialist will coordinate the work of the other experts and work closely with the Red River Basin Organization (RRBO). Together with the water policy and planning specialists, they will be primarily responsible for (i) raising awareness and capacity of RRBO in integrated water resources management and its implementation; (ii) developing a strategic planning process for RRBO; (iii) establishing cooperative exchange arrangements between RRBO and two other basin organizations, one in the region at an early stage of development and the other elsewhere with a good track record in integrated water resources management; (iv) training RRBO staff in the operational aspects of a river basin organization; (v) finalizing a brief water sector action plan for the Red River basin as a framework for selection and design of water service investment subprojects in part B; (vi) developing the brief water sector action plan into an integrated framework basin plan for the Red River basin as recommended by TA 2871¹, (vii) facilitating collaboration in water resources management among provinces in the Cau River and Day River subbasins; (viii) developing and implementing procedures to monitor and evaluate the effectiveness of the Red River basin planning process; and (ix) preparing and assisting in implementing a plan to strengthen the capacity of provinces for integrated water resources management. Stakeholders in the Red River basin will participate in the work.

3. The hydrologists will be water resource management specialists with a background in hydrology to understand hydrologic issues, including emerging groundwater issues. The experts will (i) assemble available data and evaluate the water resources in the basin, as inputs for the planning process; and (ii) address the water allocation/rights issues. They will also work on the flood control aspects of planning.

4. The environmental specialists should have expertise in public health and in ecology. Focusing on water quality issues in basin planning, they will help to develop an environmental protection and management plan for the Cau River subbasin. The monitoring and evaluation specialists will support the planning process with data and information. The gender specialists will ensure that the strategic and framework plans take into account gender-related issues in water resource management. The watershed management specialists will provide support on land-water interfaces.

5. An internationally recruited training specialist will train selected national experts in facilitation techniques to improve the effectiveness of workshops during planning. The experts

¹ TA 2871-VIE: *Red River Basin Water Resources Management*, for \$1,362,663, approved on 31 December 1997; completed in August 2001.

will also be trained to be trainers. The training specialists will develop and conduct the training, adapting it to local needs.

2. Public Awareness and Education Programs

6. The consultants for this component will design and help to implement mass media programs and school education programs to increase public awareness and education regarding water resource management issues, particularly issues related to watershed management, flood forecasting, water quality, water-related health and hygiene, and water allocation, rights, and permits. The internationally recruited video production specialist will design programs for television broadcasts, with the support of a domestic consultant. The designs will be implemented by the mass media specialists. The information, education, and communication (IEC) specialists will design training material and implement training programs for schoolchildren. The gender and public health specialist will help to ensure that the materials developed are useful for women in the target audience, and that water-related public health issues affecting women are properly addressed. The work will be carried out in coordination with central ministries and the provinces concerned.

3. Pilot Water Licensing System

7. The internationally recruited water licensing specialist, assisted by the domestic water resources specialist, will (i) develop decentralized institutional, organizational, and administrative processes and procedures required to manage the pilot scheme and define the overall arrangements to apply it to the Cau River subbasin (for both the surface water exploitation and wastewater discharge permit systems); (ii) formulate the administrative and organizational arrangements for a licensing scheme for assignment and modification of rights for use of surface water (via pumps or by gravity) for all relevant purposes and for permits for discharge of wastewater to the waters of the subbasin, and draft the required administrative decrees; (iii) develop appropriate organizational structures and linkages among provincial agencies and with Ministry of Agriculture and Rural Development (MARD) for successful implementation and operation of the system; (iv) build the capacity of both MARD and provincial staff to enable them to implement and maintain the systems; (v) develop functioning subsystems such as computer-based licensing and permit registers, a financial accounting system, licensing and permit scheme standard operation manuals, forms, and other documentation; (vi) propose arrangements within the rights management framework that may be introduced into the licensing system to protect public health, environmental health, economic base, and cultural values; (vii) implement the pilot schemes in the subbasin; (viii) develop a performance assessment system for the pilot schemes; (ix) after an initial trial period, review and revise the schemes based on experiences gained; and (x) plan to extend the systems to other provinces within the Red River basin.

8. The legal specialists will review the legal aspects of the pilot scheme and draft the required administrative decrees. The water quality and wastewater specialists will review water pollution problems in the subbasin and establish standards for wastewater, as a basis for permitting wastewater discharge. The information technology specialists will help set up the computerized registration databases and systems to support administration of the scheme. The financial specialist will develop the administrative procedures for issuing licenses and permits. The training specialists will conduct training needs assessment, and design and implement training programs to implement the pilot systems.

4. Water Quality Monitoring Network

9. The water quality monitoring specialists will (i) identify issues relevant to water quality and community values; (ii) evaluate available recorded data and anecdotal information to determine water quality hot spots; (iii) design a water quality monitoring program for ambient water and its management, including determinants, location, and frequency; (iv) prepare network and processing equipment specifications; (v) detail logistics management; for instance, how samples will be collected, transported, processed, and analyzed; (vi) resolve data management issues; such as where and how samples will be analyzed, who will be responsible for quality checking, filing, and dissemination of data; (vii) identify training needs, and develop and implement a training program; (viii) help to install a trial network in the Cau River subbasin; (ix) help to operate, monitor, and evaluate the trial network for over a period of one year; (x) based on the experience of the trial network, help to install a basinwide network; (xi) monitor program implementation and operation, and ongoing support over two years; (xii) monitor health impact changes of water quality change through baseline surveys; and (xiii) evaluate the program and recommend improvement or modification as needed.

10. The measurement and evaluation specialists will assist the water quality monitoring specialists in (i) evaluating and recommending measurement frequency; (ii) resolving data management solutions; (iii) identifying training needs and developing and implementing training programs; (iv) monitoring and evaluating the operation of the trial network; and (v) monitoring and evaluating the program on completion, after two years of operation. The wastewater management specialist will assist in the initial evaluation by preparing an inventory of discharges.

5. Project Management Support

11. The project management expert, assisted by the deputy project management expert, will provide the necessary management support to MARD, Asian Development Bank (ADB), and the Government of the Netherlands in consultant selection and recruitment, procurement, design, implementation, coordination, monitoring, review, reporting, quality assurance, financial management, and evaluation of the activities in part A, and to help coordinate parts A and B. The project management expert will be an experienced water resources specialist with experience in policy and institutional reform and capacity building, whereas the deputy project management expert will be a financial management specialist. The experts will help to ensure that water service investment subprojects in part B will be developed in accordance with Red River basin frameworks and plans developed in part A, and that feedback from experience in part B will be directed to the river basin planning process in part A.

B. Water Service Investment Subprojects (Part B)

1. Project Implementation Support

12. The project management expert will assist the project director for part B and the project manager in the project management office (PMO) to take on multidisciplinary responsibilities for managing part B and to coordinate activities with those in part A. The expert will build capacity in the PMO and project implementation units for (i) subproject identification according to criteria; (ii) subproject planning and design, incorporating social assessments, participatory approach, and rural development support (RDS) activities; (iii) subproject implementation support and analysis; (iv) facilitating communication among MARD, Central Project Office (CPO), and the

external financing agencies; and (v) monitoring, review, reporting progress, reporting project completion, and evaluation of activities in part B as a whole. The expert will help to ensure that water service investment subprojects in part B will be formulated in accordance with Red River basin frameworks and plans developed in part A, and that feedback from experience in part B will be directed to the river basin planning process in part A. The expert will also help to manage the subprojects and compile and analyze their performance in relation to the project objectives.

13. The expert will be an experienced farming systems specialist and will supervise the domestic farming systems specialists in (i) developing activities to improve the agricultural production performance of farmers in the project area; (ii) developing, planning, and applying farming systems models that may be adaptable to specific subproject areas so as to increase the capability of farmers to maximize the potential use of small landholdings; (iii) coordinating with the agricultural and forestry extension advisers in planning and implementing farming systems models in specific subproject areas to ensure that the models are suited to the needs of the intended farmer-beneficiaries; and advise and guide provincial, district, and commune extension agents in applying farming systems technology suited to specific areas.

14. The agricultural economists will (i) assist the project management expert in determining the economic and financial viability of farming systems models developed for specific subproject areas; (ii) advise on alternative strategies for reducing production costs so as to improve farm incomes in the project sites; and (iii) assist the training specialist in developing farmer-training programs on improving farm management, particularly production cost management.

15. The social development specialists will develop and monitor the social dimensions of part B of the Project in accordance with Government and ADB policies and the implementation guidelines prepared for the Project. The social dimensions include (i) poverty reduction focus, (ii) social assessments and mobilization, (iii) beneficiary participation in all project activities including RDS and participatory irrigation management, (iv) gender and development aspects, (v) participation of ethnic minorities, (vi) land acquisition and resettlement, (vii) poverty and benefit monitoring and evaluation, and (viii) collaboration with nongovernment organizations. The work will include preparation of the field manual, extensive subproject visits, on-the-job training of PMO and provincial staff, special training programs, and monitoring and reporting on social dimensions as part of project reporting.

16. The flood protection specialists financed by Agence Francaise de Développement will be civil engineers, and will be responsible for (i) coordination between the Department of Dykes Management and Flood Control and the CPO; (ii) quality assurance for flood protection subprojects; and (iii) further development of methods and plans for flood forecasting, warning, management, and protection.

17. CPO will recruit short-term domestic advisers as and when required during project preparation and implementation, to strengthen the PMO to inspect, advise on, and improve the quality of subproject implementation in such areas as agricultural extension, forestry extension, postharvest and marketing, training, gender and ethnic minorities, resettlement, social development, environment, and other areas as required, including developing financial management and project management information systems.

18. The domestic advisers will (i) advise and guide the PMO on how to effectively deliver agricultural extension services (access to credit, postharvest and marketing facilities) to the communes; (ii) initiate discussions on agricultural and forestry extension needs at the grassroots level; (iii) together with the relevant members of the PMO team, draft for the

subproject sites agricultural and forestry extension plans to implement under the Project; (iv) coordinate with provincial extension centers, district extension stations, and commune extension collaborators on developing and implementing Project-related agricultural extension plans and programs for each subproject site; (v) assist the CPO to finalize a field manual for RDS activities; (vi) carry out quality assurance and support work for social assessment, social mobilization, RDS, and benefit monitoring and evaluation activities at field level, including activities for women and ethnic minorities in accordance with the gender action plan and guidelines for the participation of ethnic minorities; (vii) develop and undertake training programs; (viii) monitor and support the preparation and implementation of resettlement plans where required; (ix) monitor and support the preparation and implementation of environmental assessments and management plans where required; and (x) support the design and implementation of the financial management, project management information, and communications systems.

19. An internationally recruited institutional development specialist will lead a small team of consultants (financial specialists, irrigation specialist, and human resource development specialist) in reviewing governance of irrigation services, with a view to making the service providers more autonomous and accountable and promoting the participation of water user organizations. The consultants will review the performance of irrigation and drainage management companies (IDMCs) under the Red River Delta Water Resources Sector Project (Loan 1344) as well as the case study and generic management plan prepared under TA 3050-VIE.² The review will cover organization structure, financial management, and assessment of fee structure and recovery rates; and will include advising on structures and systems (financial and human resources) required to improve efficiency, transparency, accountability performance, and autonomy of these enterprises; and streamlining their collaboration with the client water user organizations in a participatory manner. Initial studies will focus on organizations that will implement subprojects in part B of the Project. Based on the review, the consultants will make detailed, practical recommendations to increase the performance of the IDMCs and improve their collaboration with water user organizations.

Table A8. Summary of Consulting Services

Expertise	Person-Months	
	International	Domestic
Part A. Water Resources Management		
a. Capacity Building for the RRBO		
Institutional Specialist	19	12
Water Policy Specialist	11	43
Water Planning Specialist	13	16
Watershed Management Specialist	6	14
Hydrologist	9	14
Monitoring and Evaluation Specialist	8	6
Training Specialist	6	7
Environmental Specialist	8	16
Gender Specialist	3	5

² TA 3050-VIE: *Second Red River Basin Water Resources Sector Project*, for \$600,000, approved on 22 July 1998.

Expertise	Person-Months	
	International	Domestic
b. Public Awareness and Education Programs		
Gender and Public Health Specialist	3	0
Information, Education and Communication Specialist	9	24
Video Production Specialist	4	4
Mass Media/Information Specialist	9	24
c. Pilot Implementation of Water Licensing Systems		
Water Licensing Specialist	17	0
Water Resources Specialist	0	23
Legal Specialist	4	10
Training Specialist	8	8
Wastewater Specialist	7	13
Water Quality Specialist	0	4
Information Technology Specialist	11	20
Financial Specialist	0	5
d. Water Quality Monitoring Network		
Water Quality Monitoring Specialist	17	14
Measurement and Evaluation Specialist	11	13
Wastewater Management Specialist	1	0
e. Project Management Support		
Project Management Expert	66	0
Deputy Project Management Expert	0	66
Total	250	361
Part B. Water Service Investment Subprojects		
Project Implementation Support		
<i>Project Management Office in the CPO</i>		
Project Management Expert	72	0
Agricultural Economist	12	72
Social Development Specialist	0	72
Flood Protection Specialist (AFD-financed)	12	27
Farming Systems Specialist	0	72
<i>Improving Governance in Irrigation Service</i>		
Institutional Development Specialist	10	0
Financial Management Specialist	10	16
Irrigation Specialist	0	16
Human Resource Development Specialist	0	16
<i>CPO Contracts with Domestic Consulting Firms or Institutes for Advisory Inputs As and When Required^a</i>		
Forestry Extension Specialist	0	27
Postharvest/Marketing Specialist	0	24
Training Specialist	0	24
Gender and Ethnic Minorities Specialist	0	27
Resettlement Specialist	0	18
Social Development Specialist	0	54
Environment Specialist	0	18
Other Specialist as Required	0	72
Total	116	291
Total for Project	366	652

^a These contracts are not counted as consultants.

SUMMARY OF POVERTY AND SOCIAL ASSESSMENT

A. Methodology

1. A social assessment was conducted for two sample subproject provinces: Yen Bai in the uplands and Bac Ninh in the delta area. For the flood protection sample subproject, parts of provinces adjacent to Bac Ninh were included. The assessment consisted of socioeconomic surveys (600 households, about 0.8 percent coverage of total households) and participatory rural appraisal (PRA) including focus group discussions with district and commune people's committees, irrigation and drainage management companies (IDMCs), cooperatives, Viet Nam Women's Union (VWU), and female and male farmer beneficiary groups to identify the nature, causes, and geography of poverty. Random household interviews were also conducted in Bac Hung Hai irrigation system (Bac Ninh Province) in the ongoing Red River Delta Water Resources Sector Project to assess socioeconomic impacts.

B. Poverty and Socioeconomic Profiles in Sample Subproject Areas

1. Yen Bai Province (Yen Binh and Nghia Lo Districts)

2. The assessment found that 68 percent in Nghia Lo and Yen Binh districts in the uplands live below the international poverty line and 45 percent below the international hunger line.¹ However, the poverty profiles of the two districts contrast: poverty incidence in the four wards in Nghia Lo subproject area is about 37 percent due to its semiurban characteristics, while Yen Binh district is the third poorest of the eight districts in the whole province, with 64 percent of the subproject population under the poverty line. The total population of the two districts is 125,000 (723,000 for the province). Ninety-six percent of the population in the project area are farmers while 32 percent also engage in off-farm activities such as handicraft, food products, and retail activities. Although the Government has allocated land to all households, the landholdings are small and scattered (500 square meters per household in 1991). More recently, hill land was allocated to farmers under the afforestation program. In the irrigated areas (83 percent of total landholdings), the land is used to its maximum potential (two rice crops). However, there is a high potential for winter crops, as currently only 24 percent of land is used for them because of water shortage, distance of the plots from the house, shortage of labor, and difficulty in maintenance.

3. **Ethnicity and Poverty.** There is a clear linkage between ethnicity and poverty in Viet Nam. Yen Bai has a high ethnic minority population that includes the Tay (15 percent), Dao (9 percent), and H'mong (7 percent). Some communes close to the proposed infrastructure sites have much higher ethnic minority populations (e.g., the Tay, Dao, and Cao Lan comprise 70 percent of the population in Vu Linh commune in Yen Binh district). According to the poverty mapping exercises and focus group discussions with villagers, the upland Dao is the poorest among all ethnic groups in the project area. They engage in shifting agriculture, keep traditional customs, and lack knowledge/information of agricultural production techniques and productive capital. Their participation rates in community-based activities—agricultural cooperatives and water user groups, farmers association and VWU—are the lowest due to their inaccessibility.

4. **Factors Affecting Poverty.** In addition to ethnicity, the poor are more likely to have lower education, have more children, lack access to more advanced farming methods, have

¹ Using the Viet Nam living standard surveys poverty lines.

poorer infrastructure, lack water, have small land, and lack collateral for credit. Several credit programs operate for the poor, such as the noncollateral small-scale credit through the VWU for the Bank for the Poor program. However, the poor do not have the capacity to make the best use of credit to get out of poverty.

5. **Gender and Poverty.** Women are also found to be most affected by poverty. Women play multiple roles in both productive and reproductive activities. In addition, the high level of male out-migration to higher mountains for carpentry and other seasonal labor, especially during winter, brings additional work and responsibilities to women. Women do most of the agricultural work that men do, including maintenance of irrigation canals. Labor inputs for crop production are much higher for women than for men. In addition, women take care of livestock, grow tea and fruit crops, and engage in VWU activities such as family health programs. Poor domestic water quality and the long hours of work in the paddy field are strongly linked to the high incidence of reproductive tract infection among women. Although women's representation in decision-making bodies such as commune and district people's committees is still limited, upland women are generally more active in participating and articulating their opinions in meetings than their counterparts in the delta.

2. **Bac Ninh Province (Gia Thuan Irrigation and Drainage System and Duong River Flood Protection Subproject Area – Thuan Thanh, Gia Luong, and Gia Vinh Districts)**

6. **Poverty.** About 55 percent of the population in Gia Thuan Irrigation System (Thuan Thanh, Gia Luong, and Gia Vinh districts) in Bac Ninh in the delta live below the international poverty line and 26 percent below the international food poverty line. The total population of the three districts is 274,000 (938,856 for the province). As in the upland, the landholdings are small (about 300-400 square meters per households) and fragmented. The cropping patterns are similar to those of Yen Bai, with only 27 percent of land utilized for winter crops. The Duong River sample flood protection subproject also includes parts of Hanoi, Hai Duong, and Hung Yen, and some urban areas. However, the percentage of people living under the poverty line is still forty-two percent, well above the national average. Major causes of poverty identified by the villagers are lack of education, lack of land, risk-averse attitude due to the inability to cope with risks associated with a lack of water, monoculture, lack of credit to buy agricultural inputs, lack of labor, and barren soil. Unlike in upland provinces, the delta has very little population of minority groups.

7. **Gender.** As in Yen Bai women in Bac Ninh, especially the female heads of households, are most affected by poverty. In project communes, 70-80 percent of the poor households had female heads. The multiple tasks and heavy workload for women also apply. Poor women also leave home for casual labor in brick making and scavenging. Waterborne diseases including reproductive tract infection and digestive and dermatological diseases are prevalent. Women play bigger roles than men in on-farm canal maintenance work including dredging and canal digging. In fact, the periodic labor contribution for rainy season canal maintenance is done mostly by women. Women also comprise 70 percent of pump operators in the Red River delta. However, their representation in IDMC and decision-making bodies is very limited and irrigation/drainage management is widely still seen as men's domain.

C. Assessment of Beneficiary Needs and Interest

1. Yen Bai Province

8. **Irrigation Water and Watershed Protection.** In the areas that are currently not irrigated, irrigation is the community's highest priority. In communities with irrigation, the demand for rehabilitation of deteriorated irrigation systems, including repair of main and distribution canals, is high. In some areas, flash floods affect summer crops in July-August, and both male and female farmers are highly aware of the need for watershed protection.

9. To improve the situation, farmers voluntarily contribute their labor and materials to rehabilitation works, monitoring of construction works, and operation and maintenance (O&M) of the system. Once the system is rehabilitated or extended, farmers say they are willing to receive training so that they can do O&M by themselves. Strengthening water user groups below the cooperatives is strongly supported. Willingness to engage in afforestation also exists, though farmers do not know exactly what to do with hill lands the Government allocated to them.

10. Currently, the irrigation fee is set at 205 kilograms (kg) of paddy rice per hectare (ha) per year (155 kg to the irrigation company for headworks down to secondary canals and 50 kg to the commune-based irrigation management group for tertiary canals), and pumping costs are paid separately. There is no preferential treatment for the poor, but farmers do not seem to find that unfair. The water fee collection rate is almost 100 percent. Farmers feel that the level of irrigation fee is not an issue, but enough water delivered on time is most important.

11. **Agricultural Support Services.** Among productive support services, the demand for extension and training for credit utilization appear to be highest, though specific needs vary across communities. Cooperatives provide seeds, fertilizers, and pesticides at subsidized prices. Farmers pay back the cooperative after the harvest at low interest. Though not sufficient, credit is available, through Viet Nam Bank for Agriculture and Rural Development (VBARD). Credit from the Bank for the Poor program is available on VWU's recommendation. However, capacity building to utilize credit is identified as necessary. Extension workers at the lowest level are in the communes, but five out of nine cooperatives in the project area do not have extension workers. The need for training in community-based forestry was also expressed.

12. **Other Needs.** Women expressed a strong need for alternative income sources such as livestock, handicrafts, and fruit and tree crops; and credit and skills development training to support such income generation activities. Although currently some credit is available through VWU, the time-consuming procedures and the small amount available are major problems. Safe domestic water facilities are another demand of women. In some areas, women and girls have to travel far to fetch water. Where dug wells are available, the poor water quality causes health problems. Villagers also need a small footbridge to protect children from drowning and improve access to school, and rural access roads to improve access to market.

2. Bac Ninh Province (Gia Thuan Irrigation and Drainage System and Duong River Flood Protection Subproject Area)

13. In Bac Ninh, the highest felt need is access to timely irrigation water service, followed by agricultural support, off-farm income, and education. As in Yen Bai, women are concerned with lack of access to safe domestic water. Unlike in Yen Bai, access to credit does not appear to be a major issue, as 82 percent of the respondents claimed access.

14. For adequate water delivered on time, both male and female farmers are willing to contribute their labor and materials for O&M of irrigation and drainage. Twenty percent of the respondents were also willing to pay a higher irrigation fee for better irrigation and drainage services. Currently, the lowest level of irrigation/drainage management group is the agricultural cooperative-cum-water user group in the commune, covering an average population of about 2,000. Willingness to form themselves into smaller water user groups, therefore, is also high, if this means better irrigation/drainage services.

D. Capacity of Local Organizations

15. **Agricultural Cooperatives at Commune Level.** The Government has been transforming agricultural cooperatives into more market-oriented agents, directing them to (i) enter into a contract with IDMCs to manage the O&M of irrigation and drainage facilities from the headgate of the secondary canals down to the farms; (ii) tap the services of provincial and district agricultural extension service providers; and (iii) provide farmers with agriculture inputs subsidized by the Government and cheaper than at market rates. In the uplands, each commune usually has one cooperative; in the delta, some communes have more than one cooperative. The cooperatives are in most cases under the People's Committee. Each cooperative has a five-member management board, assisted by a supervising committee and irrigation management team. The irrigation management team is responsible for irrigation fee collection, equitable water distribution, minor repair of facilities at secondary or lower channels, and mobilization of voluntary labor and local materials for periodic maintenance of canals. In the case of conflicts, the commune leaders usually intervene.

16. However, not all cooperatives are functional. In Gia Thuan only 70 percent of the cooperatives are functional. In Yen Bai, the rates appear much higher. Some of the reasons include (i) lack of motivation by farmers due to top-down decision making by the commune officials, which hardly reflects cooperative members' needs and feedback; (ii) dysfunctional irrigation/drainage facilities; (iii) irrigation fee that, despite 100 percent collection, is not sufficient to cover O&M; and (iv) lack of financial and technical capacity as agricultural and irrigation/drainage service providers.

17. **Viet Nam Women's Union.** VWU is often considered the most efficient service provider with extensive grassroots networks. It is a mass organization under the Party, and is tasked to engage in the following programs: (i) household economic development, (ii) maternal and child care, (iii) reproductive health care and family planning, (iv) microcredit schemes tapping the Bank for the Poor; and (v) training in farming methods and alternative livelihood. While its activities related to women's reproductive roles have been successful, its microcredit programs often lack sufficient funds to enable women entrepreneurs to pursue alternative income-generating activities. Its skills development activities are often not responsive to women's or market needs (e.g., cosmetology given to women in Lai Ha commune, Gia Thuan).

SUMMARY OF THE GENDER ACTION PLAN

A. Basic Principles

1. The basic principles in the Project's gender action plan (GAP) are (i) ensuring gender equity in the project benefits; (ii) systemic efforts to address gender inequalities in project service delivery; (iii) special attention to ethnic women as the most marginalized group; (iv) collection of gender-disaggregated data through social assessment and monitoring and evaluation; (v) women's participation in subproject design to meet their specific needs; (vi) representation of female staff at all levels of project management and equal opportunities for training; and (vii) equal wage labor opportunities for women provided by the Project.

B. Gender Strategy in Water Resources Management (Part A)

2. In the capacity building for the Red River Basin Organization (RRBO) component, two consultants—one international and one domestic—will be recruited to assist RRBO with addressing gender issues in integrated water resources management, highlighting women's roles in irrigation, domestic water, and sanitation and hygiene management. Key gender issues will be incorporated into various action plans and implementation procedural guidelines. RRBO will be provided with the Asian Development Bank's gender checklists (water supply and sanitation and agriculture) for training and dissemination. Female representation in RRBO will be required.

3. One domestic consultant (gender and public health) will be recruited to ensure that water-related health and hygiene issues are adequately addressed through the public awareness and education programs component and the water quality monitoring network component. The linkage between water (e.g., poor water quality, heavy workload collecting domestic water and manually transporting water for agricultural use) and women's health including reproductive health has not been widely recognized. These components will address that issue. In addition, all components in part A will address female staff's representation and training opportunities. Where necessary, inputs from the technical working group on gender in the Ministry of Agriculture and Rural Development (MARD) will be sought.

C. Gender Strategy in Water Service Investment Subprojects (Part B)

4. In the upland irrigation systems and watershed protection subprojects, local women's needs and perspectives on small-scale irrigation systems, upland watershed protection activities, and rural development support (RDS) activities will be incorporated into specific designs and location of infrastructure, type of activities or species to be grown, and the management structure through participatory social assessment and village-based RDS planning. Where there is opportunity for formulating new water user groups or forest user groups, at least 40 percent of the management committee members will be women. The same rule will apply to the RDS management committees. The needs–skills development and market surveys for income-generating and safe drinking water supply—of the poorest ethnic minority women will be accorded highest priority over all other women's needs in RDS, and funding will be made available accordingly.

5. In the delta irrigation and drainage systems subprojects, the improvement of pumping stations, headworks, and sluices will be managed by irrigation and drainage management companies (IDMCs). All IDMCs will be required to provide a staff breakdown by gender and areas of competency and demonstrate how female staff will have the same opportunities as

male staff. Operation and maintenance arrangements at the community level for improving canal and drainage systems, including labor contribution, will be developed in such a way as not to overburden women. Where participatory irrigation management (PIM) is to be carried out, at least 40 percent of water user group management committees will be women. Women will have the same wage labor opportunities and equal wage with men in civil works. In RDS, women's needs will be addressed separately from men's, and the poor women's needs will be accorded highest priority. At least 40 percent of the RDS management committee will be women.

6. In the flood protection subprojects, the scope of direct beneficiary participation in general may be more limited than in the two other categories. However, wage labor opportunities and equal wage associated with riverbank protection and dike strengthening for women will be equal to those for men. In the case of any resettlement impact, the vulnerability of female heads of households and women's needs and options will be recognized in the entitlements and rehabilitation assistance. Facilitating groups for RDS, if the community prefers, will address women's participation in expression of needs, decision making, and capacity-building opportunities.

7. One domestic gender and ethnic minorities specialist and one domestic social development specialist at the Project Management Office in the Central Project Office (CPO) of MARD will give gender training to all project consultants and MARD staff (including two incremental social development staff). The trainers will ensure that the social assessment and RDS preparation and implementation by provincial implementation units (PIUs) through design companies, institutes, universities, or nongovernment organizations (NGOs) will follow the GAP. Every subproject social assessment will include gender analysis and specific measures addressing women's needs. The CPO will be responsible for monitoring and evaluating GAP implementation.

8. NGOs will carry out a separate but complementary Poverty Reduction Support Project (financed by the Japan Fund for Poverty Reduction), which will focus on identifying, testing, and replicating innovative RDS activities, including those addressing women's needs. They will also monitor the poverty reduction impact of RDS activities on women and men separately.

SUMMARY GUIDELINES FOR THE PARTICIPATION OF ETHNIC MINORITIES (GPEM) IN THE PROJECT

A. Background

1. The GPEM gives a framework of approaches that ensure that the ethnic minority population in the Red River basin will have equal access to benefits and participation opportunities from the Project. The GPEM was developed in accordance with ADB's *Policy on Indigenous Peoples* (1998) and the *Operations Manual* (OM) Section 53 (2001). Although the principles of the GPEM apply to both parts A and B of the Project, the specific approaches concern part B, especially the infrastructure development and rural development support (RDS) subcomponents of the upland irrigation systems and watershed protection subprojects.

2. There are 29 ethnic minority groups in the Red River basin. They range in size from 1,574,822 (the Tay) to 509 (the Pu Pao). These ethnic minorities accounted for 31.1 percent of the Red River basin population (excluding Hanoi) in 1999. This figure is much higher than the national average of 14.3 percent. In Yen Bai Province, where Yen Binh and Nghia Lo sample subprojects are located, the ethnic minority population is 39.7 percent. A detailed analysis of the ethnic minorities in the Red River basin is found in the complete GPEM.

3. The Project will not have any negative impact on specific ethnic minority groups in terms of their customary rights or access to land and natural resources; their socioeconomic and/or cultural integrity; health, education, livelihood, and social security status; and recognition of indigenous knowledge. That no adverse impact should result from the Project is also part of the subproject selection criteria. Rather, the Project will maximize the capacity of ethnic minority groups in the project area and address their specific cultural and economic needs, especially through the RDS activities in the upland subprojects.

B. Strategy to Address Needs of Ethnic Minorities

4. **Strategy for Participation.** Social guidelines prepared for the Project will guide the field workers and the subproject staff in the principles and techniques of local participation. The measures to ensure ethnic minorities' participation include (i) timely and adequate dissemination of correct information on the subprojects, with the use of ethnic minority language and culturally appropriate and effective means; (ii) application of the participatory rural appraisal (PRA) methodology in the subproject social assessment process, to enable ethnic minorities to identify their own specific needs; (iii) in multiethnic communes/villages, the requirement that all ethnic groups be represented at the RDS Management Committee; (iv) inclusion of village elders and indigenous midwives in the RDS Management Committee, if necessary; (v) technical and management training for ethnic minorities as part of infrastructure and RDS preparation and implementation; (vi) flexibility in the timing of RDS funds allocation, allowing culturally and socially acceptable ways of RDS implementation; (vii) participatory benefit monitoring and evaluation (BME).

5. **Specific Activities.** As this is a sector loan and RDS is demand based, the GPEM does not name specific activities. However, PRAs for Nghia Lo and Yen Binh sample subprojects identified some indicative activities that may be included in the subprojects: (i) organizing upland tree crop farmers associations; (ii) organizing small irrigation user/management groups; (iii) organizing exchange visits for farmers to share indigenous knowledge among villages with similar activities and topography, to complement the traditional agricultural extension; and

(iv) skills training and exploring the market for alternative income-generating activities for ethnic women. The parallel Poverty Reduction Support Project or action research carried out by capable nongovernment organizations (NGOs) [financed by the Japan Fund for Poverty Reduction (JFPR)] will also identify and enable exchange of innovative and culturally acceptable RDS activities for ethnic minorities across different subprojects.

C. Implementation Arrangements

6. **Organization.** The Central Project Office (CPO) of the Ministry of Agriculture and Rural Development (MARD) will be responsible for the overall implementation of the GPEM. The Committee for Ethnic Minority and Mountainous Area Affairs (CEMMA), which will be a member of the project steering committee will give technical advice. Specific implementation responsibilities at a subproject level will lie with the provincial implementation units (PIUs). Other technical agencies such as the Ministry of Labor, Invalids and Social Affairs (MOLISA) and Viet Nam Women's Union will be also consulted or used as a facilitating group. NGOs will also be invited to carry out social assessments and RDS, through which specific activities for ethnic minorities will be identified and implemented.

7. **Budget and Financing Plan.** GPEM does not have a separate budget. The budget required for its implementation will come mostly from the part B subproject budget (\$115.3 million) and project implementation support budget (\$12.4 million). Of the overall subproject budget, about one third will go to upland subprojects, and of that, 30 percent will be spent on preparing and implementing RDS. The project implementation support budget includes consulting services inputs at the project management office at CPO to ensure the implementation of GPEM. The experts will comprise one international team leader (project management adviser), one domestic gender and ethnic minorities specialist, one domestic social development specialist, and two full-time social development incremental staff.

8. **Implementation Schedule.** The schedule of GPEM implementation will be in line with overall project implementation. Each subproject will identify specific schedules to mainstream the participation of ethnic minority groups in infrastructure and RDS implementation.

9. **Monitoring and Evaluation.** MARD is responsible for overall monitoring and evaluation of GPEM implementation, assisted by ethnic minority beneficiaries themselves (participatory BME). The separate JFPR project carried out by NGOs will also be used to share the findings and replicate innovative and acceptable approaches to ethnic minorities.

DESCRIPTION AND PROJECTED ECONOMIC PERFORMANCE OF THE SUBPROJECTS

A. Introduction

1. From preliminary assessments prepared in consultation with the participating provinces, the Ministry of Agriculture and Rural Development (MARD) tentatively identified 46 candidate subprojects for implementation in part B: 22 irrigation rehabilitation subprojects in upland areas, 15 irrigation and drainage rehabilitation subprojects in the delta, and 9 flood protection subprojects. Of the 46, 4 in two representative areas of the basin were appraised by the technical assistance (TA) consultants. One area is Yen Bai Province in the upland region of the Red River basin, approximately 200 kilometers (km) northwest of Hanoi; the other is in Bac Ninh Province in the delta, in the vicinity of Hanoi. In addition, a sample feasibility study for flood protection was prepared by consultants recruited by MARD. The feasibility study covered the Duong River dikes between the Red River and the Thai Binh River in the Red River delta area, in the vicinity of Hanoi.

2. Improving irrigation services in the upland region of the Red River basin generally entails higher development costs per hectare because most of the irrigation schemes are relatively small and dispersed. Moreover, the majority are run-of-the-river schemes with unreliable water supply in the dry season because severe deforestation has reduced the water retention capacity of the watershed. The deteriorated headworks and distribution system impact especially on the poorer farmers at the tail end of the systems. In the delta, many of the irrigation schemes are large and are typically 30 years or older and are in need of repair, as they experience water shortages in winter and spring, and flooding in late summer. The rehabilitation cost per hectare is much lower than that for the upland subprojects because of the much larger command areas and flat topography. As in the upland schemes, the poorer farmers at the tail end of the systems are most severely affected by the deteriorated headworks and water distribution facilities, especially by the reduced capacity of the old and degraded main pumping stations.

B. The Sample Subprojects

1. Yen Bai Province (Uplands)

3. Several irrigation schemes evaluated in two districts are experiencing rapid sedimentation and will require repair and upgrading of irrigation infrastructure such as the headworks and related delivery facilities. Activities for these schemes will involve rehabilitating irrigation infrastructure and improving water resources and watershed management in Yen Binh and Nghia Lo districts, together with the rural development support (RDS) activities for poor farmers.

4. Investment activities for the water resources infrastructure in Yen Binh will comprise rehabilitating weirs, lining main canals, and constructing secondary canals in the following irrigation schemes: Mau Ba, Hang Luon, Ho Bang, Pho Thai, Dat Cang, and Linh Mon. In Nghia Lo, the concrete weir and associated water delivery facilities will be rehabilitated. These activities will be complemented by parallel investments in water resources and watershed management in four communes of Yen Binh—Vinh Kien, Vu Linh, Bach Ha, and Yen Binh—as well as in the town of Nghia Lo in Van Chan district. The RDS activities will include community-managed watershed improvement activities including allocation of

3,734 hectares (ha) of barren land to about 2,300 households for agroforestry purposes to increase the incomes of poor farm families.

2. Bac Ninh Province (Delta)

5. Rehabilitating and improving the irrigation and drainage infrastructure in the Gia Thuan zone will involve installing new pump facilities and upgrading irrigation canals and related structures in three districts: Nhu Quynh, Mon Quang, and Kenh Vang. The Nhu Quynh irrigation pumping station, which pumps water from the Red River into two main canals for irrigation in the Gia Thuan zone, was constructed in 1965 and is in urgent need of upgrading. Discharges are estimated to have fallen from 8,000 cubic meters per hour (m³/h) to 5,000 m³/h for each of the eight pumps. The Mon Quang irrigation pumping station, which pumps water out of the Duong River through 18 pumps, was constructed in 1990 but is already in need of major repair and upgrading. The Kenh Vang drainage pumping station is also in dire need of rehabilitation. The current irrigation system is inadequate to supply water to the northeastern parts of the system—which are mostly drought prone—affecting about 4,200 ha of irrigated land during both the spring and summer cropping seasons. The main irrigation canals must be improved to reduce maintenance costs and increase the supply of water to the secondary canals. In addition, the existing drainage infrastructure urgently needs rehabilitation to reduce flooding and waterlogging in the area. Once implemented, the subproject is expected to eliminate the present conditions of water shortage, flooding, and waterlogging and provide improved conditions for increased agricultural production throughout the command area. The need for a range of RDS activities was determined through participatory assessments in several poor communes. Participatory irrigation management activities will improve the performance and financial autonomy of the Gia Thuan irrigation and drainage management company through service agreements with water user organizations in the districts concerned.

3. Duong River Flood Protection (Delta)

6. The flood protection subproject selected for the sample feasibility study will strengthen sections of the Duong River dikes that extend east-west and connect the Red River in the west at the capital city of Hanoi to the Thai Binh River east of the Red River delta. The Duong River dikes provide flood protection to a large area of the delta that includes Hanoi City and parts of Bac Ninh, Hai Duong, and Hung Yen provinces. The dike system was built over hundreds of years, and comprises 59.6 kilometers (km) of the northern (left bank) dike and 54.0 km of the southern (right bank) dike. The dike system protects 249,387 ha, including 222,658 ha of rural agricultural land. It also protects 3.4 million people, National Highways 1 and 5, the national railway connecting Hanoi City to Hai Phong City, and the Noi Bai international airport.

7. The Duong River dike system has been regularly rehabilitated over many years. However, the dike embankments are made of local sandy soils, resulting in infiltration under flood conditions. In many dike sections, the dike crest elevation does not meet current design standards and proposed new standards. Parts of the dikes do not meet cross-section design standards. The subproject will improve the cross section to make the rehabilitated section more stable and better able to resist seepage. Grouting may also be done to reduce seepage and infiltration through the dike's foundation. The subproject will also fill up swamps and ponds at the toe of the dikes to strengthen the embankment for added stability, and to lengthen the seepage water flow path.

C. Subproject Benefits

8. The irrigation subprojects will directly increase the production of agricultural crops and forest products and subsequently raise rural incomes in the subproject areas. The living conditions and economic welfare of poor farmers are expected to improve, with positive impacts on a greater number of households living below the poverty threshold, and direct poverty reduction among the poorest farmers through the RDS activities. Direct benefits will accrue chiefly to the farmer-beneficiaries within the subproject areas, but some direct and indirect benefits will also accrue to other households through increased rural employment arising from intensified agricultural production activities and increases in marketing, distribution, and other economic activities associated with increased on-farm production. Substantial nonquantifiable benefits are likewise expected to accrue to households engaged in processing, marketing, and distribution of increased agricultural and forest products. Expanded employment opportunities, resulting from increased demand for labor in the subproject-related civil works, are also expected to increase incomes in the subproject areas. These benefits will be enhanced by RDS activities to complement infrastructure development.

9. Autonomous changes in farming conditions are difficult to predict. Therefore, the present cropping patterns and yields are assumed to continue in the future without the project. About 18,039 ha of irrigated area is envisaged to be improved and provided with irrigation water as a consequence of the rehabilitation of the irrigation facilities of the Gia Thuan (17,500 ha), Yen Binh (333 ha), and Nghia Lo (206 ha) subprojects. Incremental irrigated area is estimated at about 3,018 ha for Gia Thuan, 218 ha for Yen Binh, and 57 ha for Nghia Lo. Correspondingly, cropping intensities are expected to increase from 202 percent, 159 percent, and 151 percent without the Project, to 232 percent, 242 percent, and 232 percent with the Project when areas for rainfed rice and nonrice crops are converted into more productive, irrigated, diversified agricultural lands (Table A12.1).

10. Paddy rice yields in the subproject areas are expected to increase from the current levels of 5.0 tons (t)/ha, 3.64 t/ha, and 3.48 t/ha for spring irrigated rice in Gia Thuan, Yen Binh, and Nghia Lo, to 5.2 t/ha. Summer irrigated rice yields are also envisaged to increase from 4.5 t/ha, 3.33 t/ha, and 3.25 t/ha to about 4.7 t/ha at full development in 2006. Yields of maize, sweet potato, and vegetable crops are likewise expected to increase as a result of improved water availability and delivery (Table A12.1).

11. Incremental production in all three irrigation subprojects is projected to be derived from increased crop yields as well as additional agricultural land, which was mainly rainfed areas before project implementation, converted to irrigated agriculture. It is expected that at full development (in year 6 of project implementation), all rainfed areas in the three subproject areas will be fully irrigated. In Gia Thuan, the total incremental irrigated area is estimated at about 8,300 ha while in Yen Binh and Nghia Lo, the incremental irrigated area is estimated at about 600 ha and 160 ha, respectively.

12. An aggregate net incremental annual production of about 51,200 t is envisaged to be realized in the Gia Thuan subproject at full development in 2006, increasing from about 163,000 to 214,200 t (Table A12.2). In Yen Binh, annual crop production is expected to increase from the current level of about 2,000 to 4,200. In Nghia Lo, annual crop production is envisaged to increase from 1,100 to 2,400.

Table A12.1: Summary of Projected Area and Yield Estimates

Item	Gia Thuan Subproject		Yen Binh Subproject		Nghia Lo Subproject	
	Without Project	With Project	Without Project	With Project	Without Project	With Project
Total Service Area (ha)	17,500.00	17,500.00	333.00	333.00	206.00	206.00
Cropped Area (ha)						
Spring Cropping Season						
Irrigated Rice	13,381.00	16,800.00	116.00	320.00	110.00	195.00
Summer Cropping Season						
Irrigated Rice	14,482.00	17,500.00	116.00	333.00	105.00	206.00
Rainfed Rice	3,018.00	0.00	218.00	0.00	57.00	0.00
Winter Cropping Season						
Maize	3,437.00	3,780.00	23.00	77.00	22.00	46.00
Sweet Potato	637.00	1,134.00	29.00	38.00	7.00	15.00
Vegetables	426.00	1,386.00	29.00	38.00	10.00	15.00
Cropping Intensity (%)	202	232	159	242	151	232
Yield (t/ha)						
Spring Cropping Season						
Irrigated Rice	5.00	5.20	3.64	5.20	3.48	5.20
Summer Cropping Season						
Irrigated Rice	4.50	4.70	3.33	4.70	3.25	4.70
Rainfed Rice	2.75	0.00	2.75	0.00	2.75	0.00
Winter Cropping Season						
Maize	3.00	3.00	2.70	3.00	2.70	3.00
Sweet Potato	10.00	11.00	5.00	6.00	5.00	6.00
Vegetables	14.00	15.00	12.00	13.00	12.00	13.00

13. It is expected that, at full project development, projected yields and irrigated area for rice, maize, sweet potato, and vegetables in the with-Project situation will be attained. Vegetable crops in the projections are represented by cabbage to simplify the economic analysis.

14. For the irrigation subprojects, only direct and quantifiable benefits attributable to the rehabilitation of facilities were considered in the economic evaluation. The direct incremental benefits were derived from the difference between the future-with-Project and the future-without-Project situations. Benefits were to be derived from improved system performance due to the construction/rehabilitation of the main system facilities and tertiaries, and land development, thus increasing irrigation for both existing and newly developed areas. Therefore, evaluation was based on changes in the overall system performance. The current crop budgets for the future-with-Project and future-without-Project situations were based on data provided by the agricultural extension officers and from farmer interviews.

Table A12.2: Summary of Projected Incremental Production (t)

Item	Present Without Project	Future Without Project	Future With Project	Incremental Production^a
Gia Thuan Subproject				
Spring Cropping Season				
Irrigated Rice	66,905	66,905	87,360	20,455
Summer Cropping Season				
Irrigated Rice	65,196	65,196	82,250	17,054
Rainfed Rice	8,300	8,300	0	(8,300)
Winter Cropping Season				
Maize	10,310	10,310	11,340	1,030
Sweet Potato	6,372	6,372	12,474	6,102
Vegetables	5,966	5,966	20,790	14,824
Subtotal	163,049	163,049	214,214	51,165
Yen Binh Subproject				
Spring Cropping Season				
Irrigated Rice	420	420	1,662	1,242
Summer Cropping Season				
Irrigated Rice	384	384	1,565	1,181
Rainfed Rice	598	598	0	(598)
Winter Cropping Season				
Maize	62	62	230	168
Sweet Potato	144	144	230	86
Vegetables	347	347	498	151
Subtotal	1,955	1,955	4,185	2,230
Nghia Lo Subproject				
Spring Cropping Season				
Irrigated Rice	381	381	1,012	631
Summer Cropping Season				
Irrigated Rice	341	341	968	627
Rainfed Rice	157	157	0	(157)
Winter Cropping Season				
Maize	59	59	137	78
Sweet Potato	37	37	91	54
Vegetables	124	124	198	74
Subtotal	1,099	1,099	2,406	1,307
Total	166,103	166,103	220,805	54,702

^a Incremental production is the difference between Future with Project and Future without Project production values.

15. The economic, social, and environmental benefits of the flood protection subproject will ensure dike security, safeguard a significant area of rural agricultural land, and protect rural infrastructure (Table A12.3).

Table A12.3: Coverage of Upgraded Duong River Dikes

No.	Protected Items	Left Dike	Right Dike
1.	Population in the Dike Area	588,000	338,000
2.	Land Area (sq km)	473	322
3.	Hydraulic Works		
	• Pumping Stations (no.)	258	165
	• Irrigation and Drainage Canals (km)	2,672	1,720
4.	Districts (no.)	4	2
5.	Communes (no.)	73	44
6.	Public Buildings (no.)	200	60
7.	Schools (no.)	89	49

16. The procedure for estimating economic benefits is summarized as follows: (i) identifying the protected area; (ii) collecting commune data on population and land area; (iii) calculating population density; (iv) constructing typical commune and farm profiles based on commune household interviews; (v) estimating average farm damage based on two floods that occurred in 1945 and 1971; (vi) aggregating data into commune, district and provincial damage profiles; (vii) estimating joint probabilities of flood frequency and dike failure from data from the Center for Dike Engineering; and (viii) estimating expected economic damage under four scenarios (1945 and 1971 floods with height of 0.33-meter and 1 meter, respectively).¹

D. Subproject Costs

17. The investment costs of the Gia Thuan, Yen Binh, and Nghia Lo subprojects are estimated at about \$3.514 million (D49,196 million), \$0.716 million (D10,031 million), and \$0.757 million (D10,593 million), respectively (Table A12.4).² The investment cost for the Duong River flood protection subproject is estimated at about \$3.142 million (D44,931 million) and is based on location specific unit costs as estimated by the Department of Dike Management and Flood Control of MARD.

Table A12.4: Summary of Estimated Investment Costs^a

Item	Cost per Subproject		Targeted Service Area (ha)	Cost per Hectare	
	\$ million	D million		\$	D
Gia Thuan Subproject	3.514	49,196	17,500	200	2,811,000
Yen Binh Subproject	0.716	10,031	333	2,150	30,123,000
Nghia Lo Subproject	0.757	10,593	206	3,675	51,422,000
Duong River Dikes	3.142	44,391	79,500	–	–

–=not available.

^a Expressed in 1999 current values.

¹ TA 3050-VIE: *Second Red River Basin Water Resources Sector Project. Feasibility Study for Flood Protection Projects in the Red River Delta of Viet Nam.* Consultants' Report, February 2000.

² These estimates exclude the RDS activities that will be formulated based on priority needs of poor farmers determined at village level.

18. The economic analysis of the sample subprojects was conducted using the following assumptions (in addition to the assumptions on cultivated areas, cropping intensities, and yields). The costs include (i) actual costs of civil works (i.e., construction of the system headworks, pumps, and related irrigation facilities; and drainage, access roads, and tertiary system) including a 15 percent physical contingency; and (ii) recurrent costs associated with subproject implementation.

19. Applying the Asian Development Bank's *Guidelines for the Economic Analysis of Projects*, subproject investment and recurrent costs were first segregated into their foreign and local currency components. The foreign exchange component and about 20 percent of the local currency costs, which were assumed to consist of tradable items, were then valued in economic terms using a shadow exchange rate of D14,599 to \$1.00 (official exchange rate of D14,000 to \$1); all other local currency costs were expressed in economic values following their financial values. Finally, the projected streams of net incremental costs and benefits, which were attributable to the Project over 25 years, were quantified as the basis for calculating the economic internal rate of return (EIRR) of the subproject.

Table A12.5: Summary of Economic Prices

Commodity	Economic Prices (D/kg)		
	Gia Thuan	Yen Binh	Nghia Lo
Farm Outputs			
Paddy	2,225	2,125	2,005
Maize	2,087	1,987	1,877
Sweet Potato	975	1,000	1,000
Vegetable	1,240	1,250	1,250
Production Inputs			
Urea	1,916	2,016	1,808
Triple Superphosphate	2,788	2,888	2,573
Potassium Chloride	2,442	2,542	2,270

20. Economic border prices were derived for rice and maize as well as for agricultural inputs—urea, triple superphosphate (TSP), and potassium chloride (KCl)—associated with the agricultural development of the subproject. The prices were derived from actual average international prices of traded commodities in the World Bank's Commodity Price Projections for subsequent years (April 1999). Border prices were adopted for international freight and handling charges. Local costs for transportation, bagging, handling, and processing were included. The derived economic border prices are presented in Table A12.5. The economic prices of sweet potato and vegetables assumed to be grown in the subproject area were based mainly on their farmgate financial prices, adjusted for transportation costs.

E. Economic Internal Rate of Return (EIRR)

21. Based on the calculated incremental economic costs and benefits, the net economic benefits attributed to agricultural crop production were calculated and used in estimating the

EIRR of the three sample irrigation subprojects.³ Special attention was given to reviewing the TA consultant's analysis of benefits and costs of the sample upland subprojects in view of their higher investment cost per hectare. For the flood protection sample subproject, the EIRR was calculated for the 1945 historic flood with a depth of 0.33 meter. This scenario gives the most conservative base case estimate among the four scenarios estimated. The estimated EIRR values for the subprojects follow:

<u>Subproject</u>	<u>EIRR (%)</u>
Gia Thuan	21.8
Yen Binh	20.6
Nghia Lo	12.4
Duong River	69.0

F. Sensitivity Analysis

22. The changes in key parameters for the irrigation subprojects indicated that the calculated EIRR value is most sensitive to decreases in crop yield and in irrigated area. On the other hand, it was generally less sensitive to increases in project investment and farm-level crop production costs and decreases in crop farmgate prices (Table A12.6).⁴

Table A12.6: Switching Values (%) for Irrigation Subprojects

Parameter	Gia Thuan	Yen Binh	Nghia Lo
1. Decrease in crop yields			
a. Decrease in paddy yields	4.3	13.8	2.0
b. Decrease in vegetable yields	26.5		6.0
c. Decrease in paddy and vegetable yields	3.7	11.7	1.0
2. Decrease in crop prices	26.5	24.8	1.1
3. Increase in crop production cost	46.0	52.8	4.5
4. Decrease in irrigated area	5.0	15.0	1.0
5. Increase in investment costs ^a	250.0	72.0	3.0

^a This sensitivity analysis was carried out to indicate the extent to which the cost of the complementary RDS activities can be accommodated by each of the sample subprojects, while noting that the corresponding benefits of the RDS activities are difficult to capture as further consultations with subproject beneficiaries are needed to finalize the RDS design. The results refer to the unlikely scenario in which no benefits would arise from the RDS activities. It is however expected that the RDS activities will result in additional economic benefits, particularly for poor farmers in the subproject areas. Refer also to para. 91 of the main report and footnote 2 in this appendix.

23. Sensitivity analysis was conducted to check the robustness of the economic analysis for the flood protection subproject. When the project costs are increased by 50 percent and benefits reduced by 50 percent, the EIRR is 23 percent. The switching value for an increase in subproject costs was found to be 91 percent; that for a decrease in subproject benefits was

³ The RDS activities are expected to increase these EIRRs.

⁴ For the Nghia Lo sample subproject with an EIRR of 12.4 percent, the switching value for project benefits was greater than 50 percent.

83 percent. The high switching values indicate that the results are not sensitive to changes in assumptions made for the main components of the economic analysis.

24. Estimating the net economic benefits from a flood protection project is subject to high uncertainty. It is desirable to estimate the expected net benefits using a conservative set of assumptions. The feasibility study provides detailed recommendations for appraising subsequent subprojects, including variables to be used in sensitivity analysis. The chosen base case scenario is based on a set of conservative assumptions: e.g., choice of 0.33-meter flood of the 1945 model and 16 percent flood area of the total project land area. The result of the sensitivity analysis is in Table A12.7.

Table A12.7: Sensitivity Tests for Flood Protection Subproject

Parameter	EIRR (%)
No industrial damage included	32.0
No road damage included	67.0
Pond filling costs + 15%	60.0
Earth filling (manual) costs +15%	64.0
Project benefits - 10% and costs +10%	56.0
Project benefits - 50% and costs +50%	23.0
Delay in benefits by 1 year	47.0
Delay in benefits by 2 years	37.0

SUMMARY OF RESETTLEMENT GUIDELINES AND ISSUES

A. Introduction

1. The Project as a whole (i.e., part B subprojects¹) envisages some degree of resettlement or land acquisition, although every effort will be made to avoid and minimize negative impacts. Most subprojects will not have a significant impact (i.e., more than 200 people being permanently affected at any level), as all civil works are for rehabilitation and improvement of existing infrastructure, and absence of any significant negative social impact is one of the conditions for subproject identification. In some cases, however, especially in flood protection subprojects, the proposed works—widening the irrigation canals and drainage systems, strengthening dikes, rehabilitating pump stations, rehabilitating access roads, and land for borrow areas—may involve land acquisition that will result in partial or total loss of assets and livelihood. In accordance with the Asian Development Bank's (ADB) policy on involuntary resettlement and relevant Government laws and regulations, an appropriate compensation policy framework, procedures, implementation arrangements, and outlines for a resettlement plan (RP) has been developed in the form of Guidelines for Resettlement and Land Acquisition (GRLA) that will be applied to all subprojects. Subsequent subproject RPs will be developed in accordance with GRLA.

2. Among the four sample subprojects analyzed during the project preparatory technical assistance (PPTA), only the Duong River flood protection subproject identified some resettlement impact that does not involve any relocation of people. Therefore, an RP was prepared in accordance with GRLA.

B. Scope of Impact

3. As this is a sector loan, the overall impact of the Project on land acquisition and resettlement is yet to be assessed but it is expected to be minor. GRLA stipulates that describing the scope of resettlement and land acquisition effects will be required as part of each subproject social assessment. If a subproject is identified in involve resettlement or land acquisition, an RP will be prepared. The Duong River flood protection subproject involves twelve work sites that have been carefully selected so as to minimize the overall negative social impact. The Ministry of Agriculture and Rural Development (MARD) also agreed that, to minimize the impact, the project will not acquire land for new right-of-way expansion. Thus, the impact will be confined to areas directly affected by construction activities. A sample survey for the subproject identified about 70 hectares (ha) for permanent land acquisition and 128 ha for temporary land easement. The total number of affected households will be 443, or about 2,260 persons whose agricultural land and fishponds will be affected. Among 443 affected households, only 26 (6 percent) will be severely affected, losing more than 20 percent of their total landholdings. No residential or commercial land or structures, community assets or cultural sites will be affected. No person will lose workdays for nonagricultural income-generating opportunities.

¹ Constructing an office building is envisaged in part A, but preliminary information suggests that it will be carried out on public land or through the market without disturbing the private properties. However, in the event that is not possible, the Project policy will apply and a resettlement plan will be prepared.

4. The affected people (AP) are all farmers with average per capita income of D2.6 million. None of the affected lands have permanent land use rights; they are all temporarily allocated or leased by the communes.

C. Project Policy Framework

5. The Project's compensation policy framework was developed in the Project guidelines, based on various Government laws and guidelines and ADB's policy on involuntary resettlement. Among the Government laws and guidelines, the most recent Decree 22/CP (April 1998) provides relatively comprehensive coverage of compensation and allowances. However, some gaps still exist before ADB's policy requirements are achieved; for example, entitlements to nonlegal APs and income restoration and rehabilitation measures. To fill these gaps, MARD and ADB agreed to follow nine basic principles in all subprojects.

6. The cutoff date of eligibility for entitlement will be the dates of completion of the census of AP. The AP categories follow: (i) for agricultural land, those with legal and legalizable land use rights, those with temporary land use rights, those with leased land use rights, and nonlegal users of land (encroachers); (ii) for residential or commercial land, those with legal and legalizable land use rights, those with temporary land use rights, nonlegal users of land (squatters); (iii) for residential or commercial structures, legal owners, nonlegal owners, and tenants; and (iv) for business or other nonagricultural income-generating opportunities, business owners and laborers.

7. Compensation or allowances or both, will be given for loss of: (i) agricultural land, forestland, and fishpond; (ii) residential or commercial land; (iii) residential or commercial structure; (iv) business and income opportunities; (v) standing crops, trees, and fish crops; and (vi) public or community structure and other assets. For the severely affected (i.e., AP losing more than 20 percent of landholding, relocated AP, AP losing more than 20 percent of total income sources) income restoration measures through allowances will apply.

D. Consultation and Grievance Mechanism

8. Provincial implementation units (PIUs) under the supervision of the Central Project Office (CPO) at MARD will ensure that all potential subproject beneficiaries and AP are properly and promptly informed of the subproject activities to be carried out. Information to be disseminated should include the type of work to be implemented, opportunity for poverty reduction assistance through the rural development support (RDS) component, potential impacts, and schedules. The PIUs will also ensure that the provisions of the project guidelines are properly disclosed to potential AP, including the compensation and rehabilitation package and grievance mechanism. The Project's social guidelines give the steps in information dissemination, and public consultation and participation that will be carried out during social assessment of the subproject social assessment.

9. A grievance redressal mechanism developed in GRLA allows AP to address any complaint or grievance regarding land acquisition, income loss, relocation, compensation and income restoration, and rehabilitation assistance.

E. Institutional Framework

10. CPO has overall responsibility for coordinating and monitoring the preparation and implementation of subproject RPs. A full-time government counterpart on resettlement, supported by a domestic resettlement consultant, will be assigned to supervise all resettlement and land acquisition work in subprojects. The project management office (PMO) at CPO will also be responsible for training PIU staff as necessary. The CPO will review and approve all subproject RPs submitted by PIUs and carry out internal monitoring. CPO will provide ADB with English translations of all RPs for review and approval in accordance with the GRLA. The CPO will also approve and allocate the necessary RP budget and coordinate with other relevant central Government agencies, and report to the project steering committee and ADB.

11. PIUs will monitor and supervise the day-to-day activities of RP preparation, implementation, coordination with civil works schedule and financial management regarding resettlement. As part of the subproject feasibility study, the PIU may contract research institutes, companies, or nongovernment organizations to carry out the subproject feasibility study, including preparing an RP. Resettlement committees will also be established at provincial, district, and commune levels to implement the RPs. Provincial, district, and commune people's committees will also be involved in carrying out the necessary procedures.

F. Budget and Financing

12. The budget for land acquisition, compensation, allowances, operation costs, detailed measurement survey, and internal monitoring will be financed with counterpart funds. However, staff training and external monitoring, where necessary, can be financed with project loan funds if desired. The level of costs borne by each level of government will be determined according to the government guidelines. PIUs (and in some cases CPO) will ensure that the costs of resettlement and land acquisition will be included in the overall subproject cost estimate to be presented to CPO. The cost estimates for the Duong River flood protection subproject are about \$1.3 million.

G. Implementation Schedules

13. All stakeholders must agree on compensation schedules before construction activities in the area begin. During social mobilization as part of the subproject social assessment, all potential AP will be given the opportunity to look at the various options available, agree on compensation rates, and develop an implementation schedule that results in the least possible disruption to their households. The ground rule of the schedule states: "Payment of compensation of affected assets must be completed prior to the start of civil works of the Project" (GRLA Basic Principles [viii]). To ensure coordination with the civil works schedule, schedules for resettlement implementation will be included in the RP. For the Duong River flood protection subproject, compensation payment is scheduled to be completed before January 2002.

H. Monitoring and Evaluation

14. PIUs (and in some cases CPO), with the assistance of consultants at the PMO/CPO and in collaboration with provincial and district resettlement committees are responsible for internal monitoring of RP implementation. The PIU will carry out monitoring every three months and include the findings in its overall periodic progress monitoring report to CPO. CPO will then

report to ADB and the project steering committee. If any key problems are found, ADB will be notified by the PIU through CPO. Indicative monitoring indicators are suggested in GRLA.

15. In a subproject where a full resettlement plan is prepared, CPO will engage a qualified independent external monitoring agency to review and evaluate RP implementation. The agency will carry out extensive field visits and consultation with the AP, for which the cooperation of the provincial, district, and commune resettlement committees is required. The external monitoring report will be shared with the respective PIUs and CPO in a meeting, and necessary remedial actions will be taken. Indicative monitoring indicators are suggested in GRLA.