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Report No.: 48756

PROJECT PERFORMANCE ASSESSMENT REPORT

THE SOCIALIST REPUBLIC OF VIETNAM

IRRIGATION REHABILITATION PROJECT
(IDA-27110)

WATER SUPPLY PROJECT
(IDA-N0260, TF-29548, TF-29270, TF-20966)

INLAND WATERWAYS AND PORT REHABILITATION PROJECT
(IDA-30000)

COASTAL WETLANDS PROTECTION PROJECT
(IDA-3292)

June 22, 2009

IEGSE
Independent Evaluation Group (World Bank)

Currency Equivalents (annual averages)

Currency Unit = Vietnamese Dong (VND)

1995	US$1.00	VND 11,053	2002	US$1.00	VND 15,273
1996	US$1.00	VND 11,013	2003	US$1.00	VND 15,497
1997	US$1.00	VND 11,119	2004	US$1.00	VND 15,741
1998	US$1.00	VND 12,985	2005	US$1.00	VND 15,856
1999	US$1.00	VND 13,928	2006	US$1.00	VND 15,995
2000	US$1.00	VND 14,084	2007	US$1.00	VND 16,125
2001	US$1.00	VND 14,833	2008	US$1.00	VND 16,614

Abbreviations and Acronyms

ADB	Asian Development Bank
CMD	Construction Management Department
CPO	Central Project Office
DAO	District Agricultural Office
EIA	Environmental Impact Assessment
EMP	Environment Management Plan
ERR	Economic Rate of Return
FAO	Food and Agriculture Organization of the United Nations
GOV	Government of Vietnam
HCMC	Ho Chi Minh City
IBRD	International Bank for Reconstruction and Development
ICB	International Competitive Bidding
ICR	Implementation Completion Report
IDA	International Development Association
IEG	Independent Evaluation Group
IEGWB	Independent Evaluation Group (World Bank)
IMC	Irrigation Management Company
LCB	Local Competitive Bidding
MAFI	Ministry of Agriculture and Food Industries
MC	Ministry of Construction
M&E	Monitoring and Evaluation
MOF	Ministry of Finance
MWR	Ministry of Water Resources
O&M	Operation and Maintenance
PMB	Project Management Board
PMU	Project Management Unit
PPAR	Project Performance Assessment Report
PPC	Provincial People's Committee
PWRS	Provincial Water Resources Service
RAP	Resettlement Action Plan
SIO	Subproject Implementation Office
SIP	Subproject Implementation Plan
SPC	State Planning Committee
SPU	Subproject Management Unit
MOC	Ministry of Construction
NRW	Non- revenue water
PAP	Project Affected Population
PC	People's Committee
TOR	Terns of Reference
UNDP	United Nations Development Program
WSC	Water Supply Company
WTP	Water Treatment Plant

Fiscal Year

Government: January 1 December 31

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IEGWB Mission: Enhancing development effectiveness through excellence and independence in evaluation.

About this Report

The Independent Evaluation Group assesses the programs and activities of the World Bank for two purposes: first, to ensure the integrity of the Bank's self-evaluation process and to verify that the Bank's work is producing the expected results, and second, to help develop improved directions, policies, and procedures through the dissemination of lessons drawn from experience. As part of this work, IEGWB annually assesses about 25 percent of the Bank's lending operations through field work. In selecting operations for assessment, preference is given to those that are innovative, large, or complex; those that are relevant to upcoming studies or country evaluations; those for which Executive Directors or Bank management have requested assessments; and those that are likely to generate important lessons.

To prepare a Project Performance Assessment Report (PPAR), IEGWB staff examines project files and other documents, interview operational staff, visit the borrowing country to discuss the operation with the government, and other in-country stakeholders, and interview Bank staff and other donor agency staff both at headquarters and in local offices as appropriate.

Each PPAR is subject to internal IEGWB peer review, Panel review, and management approval. Once cleared internally, the PPAR is commented on by the responsible Bank department. IEGWB incorporates the comments as relevant. The completed PPAR is then sent to the borrower for review; the borrowers' comments are attached to the document that is sent to the Bank's Board of Executive Directors. After an assessment report has been sent to the Board, it is disclosed to the public.

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Outcome: The extent to which the operation's major relevant objectives were achieved, or are expected to be achieved, efficiently. The rating has three dimensions: relevance, efficacy, and efficiency. *Relevance* includes relevance of objectives and relevance of design. Relevance of objectives is the extent to which the project's objectives are consistent with the country's current development priorities and with current Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, Country Assistance Strategies, Sector Strategy Papers, Operational Policies). Relevance of design is the extent to which the project's design is consistent with the stated objectives. *Efficacy* is the extent to which the project's objectives were achieved, or are expected to be achieved, taking into account their relative importance. *Efficiency* is the extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared to alternatives. The efficiency dimension generally is not applied to adjustment operations. *Possible ratings for Outcome:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

Risk to Development Outcome: The risk, at the time of evaluation, that development outcomes (or expected outcomes) will not be maintained (or realized). *Possible ratings for Risk to Development Outcome:* High Significant, Moderate, Negligible to Low, Not Evaluable.

Bank Performance: The extent to which services provided by the Bank ensured quality at entry of the operation and supported effective implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of supported activities after loan/credit closing, toward the achievement of development outcomes. The rating has two dimensions: quality at entry and quality of supervision. *Possible ratings for Bank Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

Borrower Performance: The extent to which the borrower (including the government and implementing agency or agencies) ensured quality of preparation and implementation, and complied with covenants and agreements, toward the achievement of development outcomes. The rating has two dimensions: government performance and implementing agency(ies) performance. *Possible ratings for Borrower Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

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This report was prepared by Ronald Parker, who assessed the projects in December 2008. Marie Charles provided administrative support.

Principal Ratings

VIETNAM – *Irrigation Rehabilitation Project (IDA-27110); (P004834)*

	*ICR**	*ICR Review**	*PPAR*
Outcome	Satisfactory	Satisfactory	Satisfactory
Institutional Development Impact**	Substantial	Substantial	———
Risk to Development Outcome	———	———	Moderate
Sustainability***	Likely	Likely	———
Bank Performance	Satisfactory	Satisfactory	Satisfactory
Borrower Performance	Satisfactory	Satisfactory	Satisfactory

VIETNAM – *Water Supply Project (IDA-N0260, TF-29548, TF-29270, TF-20966); (P004830)*

	*ICR**	*ICR Review**	*PPAR*
Outcome	Satisfactory	Satisfactory	Satisfactory
Institutional Development Impact**	Substantial	Substantial	———
Risk to Development Outcome	———	———	Moderate
Sustainability***	Highly Likely	Highly Likely	———
Bank Performance	Satisfactory	Satisfactory	Satisfactory
Borrower Performance	Satisfactory	Satisfactory	Satisfactory

* The Implementation Completion Report (ICR) is a self-evaluation by the responsible Bank department. The ICR Review is an intermediate IEGWB product that seeks to independently verify the findings of the ICR.
**As of July 1, 2006, Institutional Development Impact is assessed as part of the Outcome rating.
***As of July 1, 2006, Sustainability has been replaced by Risk to Development Outcome. As the scales are different, the ratings are not directly comparable.

VIETNAM – *Inland Waterways and Ports Project (IDA-30000); (P004843)*

	*ICR**	*ICR Review**	*PPAR*
Outcome	Satisfactory	Satisfactory	Satisfactory
Institutional Development Impact**	———	———	———
Risk to Development Outcome	Moderate	Moderate	Moderate
Sustainability***	———	———	———
Bank Performance	Satisfactory	Satisfactory	Moderately Satisfactory
Borrower Performance	Satisfactory	Satisfactory	Moderately Satisfactory

VIETNAM – *Coastal Wetlands Protection Project (IDA-3292); (P042568)*

	*ICR**	*ICR Review**	*PPAR*
Outcome	Moderately Satisfactory	Satisfactory	Satisfactory
Institutional Development Impact**	———	———	———
Risk to Development Outcome	Moderate	Significant	Significant
Sustainability***	———	———	———
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	Moderately Satisfactory
Borrower Performance	Moderately Satisfactory	Moderately Satisfactory	Moderately Satisfactory

* The Implementation Completion Report (ICR) is a self-evaluation by the responsible Bank department. The ICR Review is an intermediate IEGWB product that seeks to independently verify the findings of the ICR.
**As of July 1, 2006, Institutional Development Impact is assessed as part of the Outcome rating.
***As of July 1, 2006, Sustainability has been replaced by Risk to Development Outcome. As the scales are different, the ratings are not directly comparable.

Key Staff Responsible

Project	*Task Manager/Leader*	*Division Chief/ Sector Director*	*Country Director*
VIETNAM – Irrigation Rehabilitation Project (IDA-27110); (P004834)			
Appraisal	William L. Cuddihy	Jeffrey Gutman	Bradley Babson
Completion	Cuong Hung Pham	Mark D. Wilson	Klaus Rohland
VIETNAM – Water Supply Project (IDA-N0260, TF-29548, TF-29270, TF-20966); (P004830)			
Appraisal	Anjum Altaf	J. Shivakumar	Javad Khalilzadeh-Shirazi
Completion	Alan Coulthart	Keshav Varma	Klaus Rohland
VIETNAM – Inland Waterways and Ports Project (IDA-30000); (P004843)			
Appraisal	Jitendra N. Bajpai	Jeffrey S. Gutman	Andrew D. Steer
Completion	Simon David Ellis	Junhui Wu	Martin G. Rama
VIETNAM – Coastal Wetlands Protection Project (IDA-3292); (P042568)			
Appraisal	Ronald Zweig	Geoffrey B. Fox	Andrew D. Steer
Completion	Binh Thang Cao	Hoonae Kim	Ajay Chihbber

Preface

This Project Performance Assessment reviews the experience of four projects: the Irrigation Rehabilitation Project (IDA-27110); the Water Supply Project (IDA-N0260, TF-29548, TF29270, TF-20966) the Inland Waterways and Port Rehabilitation Project (IDA-30000), and the Coastal Wetlands Protection Project (IDA-3292). As a building block of the forthcoming IEG study, The Effectiveness of Bank Support for Water, it also reviews the way in which the Borrower and the Bank have approached water-related issues generally, and how this approach has changed over time.

The PPAR was prepared by the Independent Evaluation Group (IEG). It is based on the Memoranda of the President (MOP), sector and economic reports, special studies, Country Assistance Strategies (CASs), Policy Framework Papers, credit documents, review of project files, and discussions with Bank staff. An IEG mission visited Vietnam in December 2008 for three weeks and discussed the effectiveness of the Bank's assistance with government officials, other development organizations, beneficiaries, and stakeholders. Their kind cooperation and invaluable assistance in the preparation of this report are gratefully acknowledged.

Four Implementation Completion Reports (Report No. ICR000004, ICR0000375, 27427-VN, 32365-VN) were prepared by the East Asia and Pacific Region. Based on field visits and interviews with officials and beneficiaries, this PPAR supports ICR findings in all important particulars and finds them to be an accurate portrayal of implementation, although it provides more updated information and explores topics not covered previously. This report reviews the country's overall approach to the water sector, especially with respect to the management of water resources. In particular, this PPAR identifies lessons learned for future in-country work with respect to the water and the environment.

Copies of the draft PPAR have been sent to the relevant government officials and agencies for their review and comments. No comments were received from the borrower.

Summary

This Project Performance Assessment reviews the experience of four projects: the Irrigation Rehabilitation Project (IDA-27110), the Water Supply Project (IDA-N0260, TF-29548, TF-29270, TF-20966), the Inland Waterways and Port Rehabilitation Project (IDA-30000), and the Coastal Wetlands Protection Project (IDA-3292).

Vietnam is rich in water resources and honeycombed with rivers and canals. It is one of the world's highest rainfall countries, having a distinct rainy season, and four to five months accounting for about 75-85 percent of the total rainfall. This concentrated rainfall causes water shortages in the dry season and flooding at other times.

Since 1990 Vietnam's economy has recorded an annual average GDP growth rate of nearly 7.5 percent, but its remarkable economic achievements in the period leading up to the global downturn have placed heavy demands on the nation's fragile natural resource base. Vast highland forests have been unsustainably exploited and have even become barren in places, and farmers have cultivated steep and unprotected terrain, leading to runoff and erosion. Deforestation contributes to flooding and siltation of waterway transport corridors and coastal irrigation systems. As demands for water grow within the expanding industrial economy and from the households of the increasingly affluent and growing urban populations, the protection of the quality of water resources and the sustainable management of water generally have not been given adequate attention.

There is general agreement that the challenges facing Vietnam's water sector include:

- Increasing competition for unpolluted freshwater resources including groundwater;
- Increasing quantities of effluent from industrial, municipal, and agricultural/aquacultural sources (water pollution);
- Increasingly severe and frequent storms and floods affecting a growing population living in low-lying and coastal zones;
- Rising costs of supplying water and sanitation. (So that tariffs do not exceed the ability of users to pay for it, several city systems operate at a deficit.)

Over the last ten years, there have been 32 water-related interventions approved or completed in Vietnam and financed by the World Bank. These programs, projects, and grants represent a total of US$2.74 billion.

This report focuses on the experience of four very different water projects. The **Irrigation Rehabilitation Project** was the first Bank-assisted irrigation project in modern Vietnam. Irrigation water in Vietnam is mostly surface water provided by the Mekong.

The **Water Supply Project** was designed to deal with the poor condition of the hydraulic infrastructure found in most cities. Dating from around the beginning of the 20th century, aging water and sewerage infrastructure had not been adequately maintained. Creating

conditions that would attract foreign direct investment was a GoV priority, but water infrastructure constraints in urban areas was a negative in the otherwise positive investment climate. Lack of safe water and upgraded sanitation facilities were the major causes of Vietnam's high incidence of water-borne and hygiene-related diseases.

The Mekong Delta is the breadbasket of the country, and **Inland Waterways and Port Improvement Project** was intended to facilitate low-cost water transport of goods and agricultural products towards the north and overseas export markets.

Increasing the productivity of the Mekong Delta, and, more specifically, creating thousands of ponds to foster seafood production devastated the seashore environment to a degree that endangered the very activities that produced steadily rising incomes. The **Coastal Wetlands Protection Project** was aimed at restoring and protecting critical coastal ecology, devastated originally by tropical storms and the pursuit of quick gains from the unsustainable farming of shrimp.

The experience and achievements of these projects are as follows. The **Irrigation Rehabilitation Project** took place at a time when the economy was fully engaged in a process of liberalization, and it rehabilitated irrigation infrastructure just as the market economy and the private sector were coming into their own. The freeing-up of agricultural commodity prices in the 1990s made rice a profitable crop indeed for farmers in the Central Coastal Plain. Increases in rice production due to a reliable supply of agricultural water contributed to improved farm incomes and reduced Vietnam's rural poverty. Vietnam went from a food deficit country to the world's second largest rice exporter. The office in charge of coordinating implementation had to oversee a number of subprojects scattered over a wide and difficult to access area, which proved to be challenging. Floods and typhoons in 1998 and 1999 in Central Vietnam and in 2000 in the Mekong Region also slowed the speed of implementation by damaging some works that had already been rehabilitated to the point where they required a second restoration. Due to cascading delays, the project closed 18 months later than expected. But the various holdups also made time which some systems used to expand the coverage provided by the canals. By credit closing, 12 provinces had been served, compared to the seven originally envisaged. Achievements in terms of the rehabilitation of irrigation schemes covered 99.8 percent of what was planned, as well as additional repairs and improvements related to the flooding.

Prior to 2008, farmers were not charged for the volume of water they used because there was no infrastructure to monitor the volume of water usage by such a large number of small-holders. They were charged a fixed fee based on the area of their irrigated crop land. In November 2007, the Government issued a Decree on irrigation fees that stipulated that from 2008 on, farmers were exempt from the irrigation fee. The decree eliminates one of farmers' biggest expenses but had impacts touched on below.

The utilities participating in the **Water Supply Project** were subsidized entities at the beginning of the project, but by the end all were able to cover their operations and maintenance costs and make payments on the Bank loan. Following loan closing some began to experience revenue shortfalls and water quality problems. In 2006, the government decided to impose price controls on urban water, which had a bigger impact

on the utilities that had been lagging behind. The first objective was to improve the quality of water service by connecting more households. The total number of connections more than doubled, going from 275,000 to 630,000. A second objective was to ensure the sustainability of the physical investments by developing institutional capabilities and staff skills, and facilitating commercialization. Since project initiation, the volume of water sold increased dramatically in Quang Ninh and Hanoi, but it remained constant in Haiphong, where coverage has been at the 100 percent level for some time. The amount of non-revenue water supplied has gone down in all three cities in the course of the project and since project closing. The most dramatic decline occurred in Haiphong which went from fifty percent to twenty percent. During negotiations, local governments gave up-front commitments to raise tariffs annually to specific levels determined at appraisal. As long as they were allowed to, water supply companies did raise tariffs to levels that permitted them to cover operating costs and debt service. Just as in the irrigation sector (with the abolition of charges for the agricultural use of water), the government's decision to freeze water tariffs is a definite complicating factor, the full impact of which will be a function of the length of time it is left in place.

The **Inland Waterways and Port Project** contributed to a huge increase in waterway traffic and transported cargo. In 1995, 23.5 million tons of cargo was carried through the inland waterway. By 2004, the last year for which data is available, 55 million tons to cargo was transported through the waterways. During the five-year period between 2000 and 2004, the annual average increase in cargo exceeded 8 percent. The project: (a) eliminated a dredging backlog; (b) prepared main routes for the routine use of large vessels and barges, (c) financed canal widening, ensuring that the required water depth was present throughout, (e) increased overhead clearances, and (f) eliminated sharp bends in waterways. On-ground towers and beacons were installed as aids to navigation. It was reported that the installation of the floating and on-land navigation aids has helped the canals to be safer for 24 hour operation. Waterway operations have also benefited from better police enforcement of rules and the accident rate has gone down. A recent government decree eliminated fees for the thousands of ships using the inland waterways.

Widening the waterways involved land acquisition, and resettling a larger than anticipated number of families slowed the implementation process. Also, no plans had been made about what to do with the spoil (dredged material) or where to deposit it. Figuring out what to do with countless tons of mud took time although it was ultimately used by local landowners to raise their holdings above the flood water level, thus reducing potential damage due to floods and enhancing building and property values. The increase in ship traffic, and especially the use of the waterways by high speed water transport, has severely eroded canal embankments. Siltation, caused by bank collapse and deforestation, is clearly reducing the time before maintenance dredging is again necessary. The project financed major improvement to Can Tho Port including the pavement of the entire port area, installation of dock bumpers and other improvements to berths, and cranes for container loading/unloading. The increased ship traffic in the project-improved canals and waterways is reflected in a dramatic increase in the Port's throughput. During project preparation Can Tho's cargo flow was originally predicted to increase to about 1.2 million tons by the year 2010. By late 2008, however, total cargo flow was already at 3 million tons; about 6 times what was to be expected at this stage. At project closing, the profitability of Can Tho Port was not up to appraisal expectations.

In the time between the ICR and PPAR missions, however, operating revenue at Can Tho grew six fold. Can Tho Port was legally merged with Saigon Port in July 2002 in order to consolidate the operation of all the port terminals in the Mekong delta. There is also a plan to set up an operation center consisting of 5 smaller satellite ports that would make up a network of Mekong Delta ports feeding Can Tho. And a follow-on project is under preparation that will create two more canal systems running through the delta to reduce pressure on the current system, and eliminate the slowdown caused by one narrow stretch which has proved to be a bottleneck for shipping.

The **Coastal Wetlands Protection Project** was very innovative, and it was one of the first IDA funded efforts in the forestry sector. Because it was a very new kind of undertaking, it took about half a decade to put together. A great deal happened during that period that made that early appraisal effort irrelevant and out of date, and it had to be repeated. Several varieties of mangroves were planted along the beach, and taller indigenous species that look like casuarinas were put in slightly inland to serve as a windbreak. About 370 million trees have been replanted along 460 kilometers of coast. Creating a capacity and willingness to protect the environment was also extremely important: Protection contracts given out to smallholders made the reforestation achievement sustainable by effectively protecting mangroves.

The project's human impacts were greatest in terms of the resettlement effort and the technical and economic support provided to the households in the project area to wean them from reliance on forest products. Average per capita incomes have increased steadily in all provinces and poverty rates have decreased significantly. Poverty rates in vulnerable communes served by the project decreased by 38 percent and average annual incomes increased by 55 percent by the end of implementation, according to survey respondents. The resettled households are much better off than they were before. People used to live on land so low and so near the sea that even slightly higher than normal tides caused flooding. The new resettlement sites are protected from the sea by dikes, and they enjoy improved access to critical infrastructure, road networks, and markets. People find it much easier to earn a living through commerce.

An ethnic minority development plan focused on 17 Khmer pagodas and their congregations. The plan, developed using participatory techniques, included the upgrading of classrooms for Khmer children, the construction of crematoria, and the procurement of musical instruments and huge Khmer racing canoes for use in traditional festivals. Khmer communes significantly improved their quality of life which helped them to better integrate into Vietnamese society. In return for project support to their pagodas, religious authorities have spoken strongly to their congregants about the importance of protecting the reforested sites. Improved land tenure was granted to farmers living in the buffer zones through the issuance of certificates granting land use rights for residential and productive lands.

Outside of the projects, important developments are happening. The National Water Resources Strategy has begun building a broad consensus around corrective measures that will ensure a more environmentally sustainable future. The Bank has worked well with the government on refining a strategic approach. Reports such as the six volume series on Vietnam's infrastructure challenge ensure that development community

investments help the country to build on a solid foundation. And the partnership of the Government with the broader donor community in the Water Sector Review has led to highly meaningful, open, and transparent communication on key issues.

In conclusion, the water sector is doing quite well in Vietnam. The four projects reviewed in this report are all rated satisfactory. All have made significant achievements and fulfilled the objectives set for them at appraisal. Monitoring and evaluation was given high attention in all four projects. The major donors (including the Bank) have established a productive relationship with the Government in the water sector.

The projects' experience suggests the following lessons:

The achievements of Bank-financed water projects in many subsectors are often constrained by environmental problems that pre-date project appraisal. In Vietnam it is increasingly likely that projects that build water infrastructure will be called on to perform environmental restoration as well as their core activities, if they are to have sustainable outcomes. The four projects studied share certain characteristics. First and foremost is the nature of their relationship to the environment. Whereas traditionally Bank water sector projects had either an institutional or infrastructure focus or both, it is becoming nearly impossible to avoid addressing environmental restoration and environmentally related land use questions in many areas of the country. In Vietnam (which is not unique in this respect) Bank-financed projects in many sectors are increasingly constrained by environmental problems that pre-date project appraisal. In the four evaluated projects it was assumed that investments in infrastructure would overcome what were in essence environmental problems. The project experience of the IRP, WSP, Inland Waterways, and CWP projects shows just how difficult it has become, even in widely different subsectors focusing on highly divergent activities, to achieve anything lasting without addressing the problems that have been caused by an extended period of environmental neglect.

Environmental restoration is challenging because the people causing the problem have to become part of the solution. If all the mangroves have been destroyed it is never enough just to plant new ones: reforestation and forest protection have to address the underlying social causes of encroachment and provide alternative sources of income if they hope to stop environmentally negative actions that produce income for the malefactors. Conversely, addressing livelihood problems can have positive environmental impacts.

Waiting to confront major issues on which the Bank and borrower disagree until after loan approval can lead to major delays, enormous costs, and foregone opportunities. While there were other factors contributing to the early-stage delays identified in this report, resolving policy differences between Bank and Borrower before Board approval is perhaps the easiest to correct.

A common problem, associated with the design of the four water-related projects evaluated in this report, is that important aspects of each project were not ready to implement after the loan was approved. High level engagement is needed to find a way to move project preparation further along and speed up implementation.

When the economic incentives shift, the priorities of water service providers will follow with negative effects on the environment. As users become accustomed to not paying fees, service providers become accustomed to not thinking about them as clients. Although the country was moving towards integrating user charges and fees to support institutional and service sustainability, the recent suspension of most user charges for the use of irrigation water and river transport, as well as the freezing of urban water tariffs are quite an about-face. Subsidized water for urban users further strains existing supply and treatment problems, and the removal of incentives to conserve water use in irrigated areas has several pernicious results, including higher levels of agricultural chemicals that make their way to the rivers, which are tapped for drinking water, and so on.

Water resources are difficult to manage efficiently and effectively when there is no mechanism for involved agencies to communicate, much less coordinate. The four projects point to a number of challenges which Vietnam needs to overcome to progress towards integrated water resources management. First, that key players have a long way to go before they integrate. Agencies that should be talking to each other and planning ways to maximize synergies are not yet at that point. Second, there is still greater emphasis and attention given to end of pipe solutions that increase the available supply than to managing the watershed in ways that will make the delivery of water services easier in the next year and during those that follow. Water utilities are more concerned with getting pollutants out of the water they deliver than they are about stopping polluters. And around the major cities new factories open at an alarming rate. Third, the abolition of economic incentives to conserve and make services economically sustainable (use charges and tariffs in line with costs) poses risks for water quality and river health going forward, and increases the likelihood that conflicts over access to water between various user groups will increase; and this in a future where climate variation looks likely to reduce supply.

Vinod Thomas
Director-General
Evaluation

1. Water in Vietnam

1.1 This Project Performance Assessment reviews the experience of four projects: the Irrigation Rehabilitation Project (IDA-27110), the Water Supply Project (IF-N0260, TF-29548, TF-29270, TF-20966), the Inland Waterways and Port Rehabilitation Project (IDA-30000), and the Coastal Wetlands Protection Project (IDA-3292). As a building block of the forthcoming IEG study, *The Effectiveness of Bank Support for Water*, it also reviews the way in which the Borrower and the Bank have approached water-related issues generally, how this approach has changed over time.

COMING TO TERMS WITH CONSTRAINTS

1.2 Since 1990 Vietnam's economy has recorded an annual average GDP growth rate of nearly 7.5 percent,[1] but its remarkable economic achievements in the period leading up to the global downturn have placed heavy demands on the nation's fragile natural resource base. As demands for water grow within the expanding industrial economy and from the households of the increasingly affluent and growing urban populations, the protection of the quality of water resources and the sustainable management of water generally have not been given adequate attention.

1.3 Rapid industrial and commercial development around major cities has led to the loss of some natural drainage channels and floodplains. As has happened almost everywhere else on the planet, one of the first casualties of development are swamps and wetlands (the natural coastal protections from storms and floods; see the discussion in the 2007 IEG publication *Development Actions and the Rising Incidence of Disasters*).

1.4 There is general agreement that the challenges facing Vietnam's water sector include:

- Increasing competition for unpolluted freshwater resources including groundwater;
- Increasing quantities of effluent from industrial, municipal, and agricultural/aquacultural sources (water pollution);
- Increasingly severe and frequent storms and floods affecting a growing population living in low-lying and coastal zones;
- Rising costs of supplying water and sanitation. (So that tariffs do not exceed the ability of users to pay for it, several city systems operate at a deficit.)
- Increasing saltwater intrusion, loss of wetlands and their filtering capacity, and deforestation with concomitant siltation of rivers and canals.

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1 Staykova and Kingdom, *Water Supply and Sanitation Strategy: Building on a Solid Foundation*; World Bank (2006), Report 37189.

Box 1. Some Good News

The Government has made substantial progress in water sector reforms since 1995. Specific reforms include:

Passage of the Law on Water Resources in 1998.
Establishment of the Ministry of Natural Resources and Environment (MONRE) in 2002.
Establishment of the National Water Resources Council (NWRC) as the water sector apex body.
Adoption of the sustainability concept in the following important documents:

- National Strategy for Environmental Protection
- Strategic Orientation for Sustainable Development (Agenda 21)
- National Water Resources Strategy (NWRS)
- Law on Environmental Protection
- Rural water supply and sanitation strategy (2005).

A task force reviewing water sector issues concluded that these actions signal an important shift toward recognition of the importance of the sustainability of the natural resource base to the Government's efforts to achieve sustainable socioeconomic development

Source: http://vnwatersectorreview.com/detail.aspx?pid=105&r=2

1.5 The National Water Resources Strategy prioritizes "The protection, efficient exploitation, and sustainable development of water resources on the basis of integrated and unified water resources management."[2]

ONCE AMPLE WATER RESOURCES ARE STRESSED

1.6 Vietnam is rich in water resources and honeycombed with rivers and canals.[3] It is one of the world's highest rainfall countries, having a distinct rainy season, and four to five months account for about 75-85 percent of the total rainfall. This variability causes water shortages in the dry season and flooding at other times. The country's water resources are also not evenly distributed in terms of where they fall. About 60 percent of river water is concentrated in the Mekong River and its vast delta.

1.7 The country has 13 river basins with catchment areas over 10,000 km^2, 10 of which are international. The out of border basin area is over 3 times bigger than what is in-country. The quality of water that flows through industrial zones and major cities gradually deteriorates. Lakes and canals in and around urban areas gather sewage and other effluents, which has a strongly detrimental impact on downstream surface water and groundwater.

1.8 Vast highland forests have been unsustainably exploited and have even become barren in places, and farmers cultivate steep and unprotected terrain, leading to runoff and erosion. Deforestation contributes to flooding (see Box 2) and siltation of waterway transport corridors and coastal irrigation systems.

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2 National Resources Water Strategy, 2006
3 National Resources Water Strategy, 2006

Box 2. Some Bad News: Flooding and Tropical Storms All Too Common

Vietnam is exceptionally disaster-prone in ways that further stress water resouces. The 2006 IEG natural disaster evaluation noted that the country was fifth in the world in terms of GDP at risk from two or more hazards. More than 80% of the population live at risk from water-related natural disasters. In the 10 years to 2006, natural disasters caused nearly 5,000 deaths, and destroyed more than 6,000 fishing boats, nearly 300,000 houses, 3.9 million hectares of paddy rice, with the total cost of damage surpassing 50 billion VND. Most impacts are in the central region. While the Government has a good record of responding to flooding and storm events and providing assistance to stricken communities, it is just beginning to become less reactive, and to pursue environmental restoration measures to mitigate the adverse impacts of water-related disasters, in part through the World Bank Natural Disaster Risk Management project.

Embankments and dikes provide but modest protection from typhoons and surge events, yet they require considerable investment in their maintenance and repair, especially when they are not stabilized by trees, grasses, and plants capable of holding the soil together and protecting it from the full onslaught of heavy rains. Non-structural measures such as risk identification, community-based disaster management and preparedness generally can also help people to better cope with their current risk profile as well as prepare them for what is to come with climate change.

Nevertheless, the approach to natural disasters has been largely reactive with insufficient attention given to the avoidance of disasters or the inclusion in development planning of measures that would prevent natural phenomena from becoming disasters. There has also been little attention given to the role of affected communities in the planning, implementation and management of disaster risk reduction measures. Although the frequency and severity of natural disasters are increasing and there is now a need to incorporate climate change implications such as sea level rise, guidance for improving disaster risk management at the national and provincial levels is provided by the new National Strategy for Natural Disaster Prevention, Control and Mitigation until 2020.

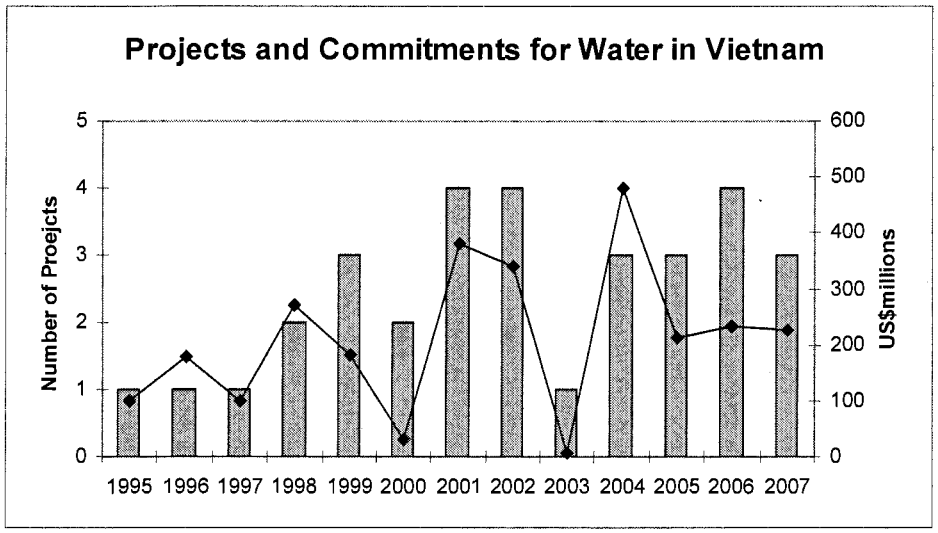
Sources: IEG; VNwatersectorreview.com; National Resources Water Strategy, 2006.

Bank Involvement: The Water Portfolio in Vietnam

1.9 Over the last ten years (since FY 1997), there have been 32 water-related interventions approved or completed in Vietnam and financed by the World Bank. These programs, projects and grants represent a total of US$2.74 billion (see Figure 1.1).[4] As happens with water projects everywhere, water-related efforts are often mainstreamed into the work of other sectors and sometimes implemented by staff without a traditional water background, without any ill-effects on project outcomes. The Rural sector board has implemented nine of these operations, the most in the portfolio. Water Supply and Sanitation has six projects/grants, and the Energy and Mining sector has 5 projects (mostly hydropower). The Environment, Urban and Transport sectors each have two. Three of the projects involve the Global Environmental Facility.

4 Almost US$2.38 billion were traditional Specific Investment Loans and Adaptable Program Loans and US$350 million were for development policy and PRSC loans. Grants and trust fund monies total just over $3 million.

Figure 1. The Water Portfolio in Vietnam



Source: IEG Water Database. (Note: One project was approved in 2003 in the amount of 5.5 million)

1.10 Like the overall portfolio in Vietnam which tends to perform well, IEG ratings have been very good for water projects. Eight projects have been completed and rated and all have been rated Satisfactory in Outcome and Borrower Performance. All but one had a Satisfactory rating for Bank Performance. Six of them were rated as Likely to be Sustainable and had Substantial Institutional Development Impact. The two most recently closed projects were evaluated for the new rating for Risk to Development Outcome, and both were rated as Moderate. They are also rated as Likely to be Sustainable and have Substantial Institutional Development Impact.

1.11 Of the eight Bank-financed interventions approved during the five-year period between 1995 and 1999, there were two hydropower projects, and one loan each for irrigation, water supply, urban sanitation, and transport. And there was one grant for the environment.

1.12 The next five year period saw a shift: There was more attention to the environment— two loans and two grants. There were quite a few multi-purpose projects, which combined two or more water related activities – such as flood protection and water infrastructure, or irrigation and water supply. And one development policy loan in the form of a PRSC.

Recent Water Lending in Vietnam

1.13 The last three years have seen a continued attention to development policy lending and a slight return to sector-specific lending. Of the ten interventions approved, three are considered development policy lending, while two are classed as urban sanitation and two are overall WS&S. There is one environment project and a disaster mitigation project as well as one trust fund grant.

Table 1. Bank Water Lending

World Bank Water Interventions in Vietnam				
Approval Year	**Project Name**	**Project ID**	**Instrument**	**Total Amt**
1995	IRRIGATION REHABILITATION PROJECT	P004834	IBRD/IDA	100.00
1996	POWER DEV	P042236	IBRD/IDA	180.00
1997	VN-WATER SUPPLY	P004830	IBRD/IDA	98.61
1998	VN-INLAND WATERWAYS	P004843	IBRD/IDA	73.00
1998	VN-TRANSMISSION & DISTR	P045628	IBRD/IDA	199.00
1999	VN - MEKONG DELTA WATER	P004845	IBRD/IDA	101.80
1999	VN-3 CITIES SANITATION	P051553	IBRD/IDA	80.50
1999	WATER RESOURCE MGMT	P053924	IDF Grant	0.39
2000	VN - COASTAL Wetl/Prot Dev	P042568	IBRD/IDA	31.80
2000	VN-ENV. INFORMATION MANAGEMENT	P070493	IDF Grant	0.30
2001	VN-Mkg Transp & Flood Protection	P042927	IBRD/IDA	110.00
2001	VN-HCMC ENVMTL SANIT.	P052037	IBRD/IDA	166.34
2001	VN - COMMUNITY BASED RURAL INFRA.	P062748	IBRD/IDA	102.78
2001	VN - MARINE PROTECTED AREA PILOT	P067804	GEF Med Size	1.00
2002	VN -Northern Mountains Poverty Reduction	P059936	IBRD/IDA	110.00
2002	VN-SYSTEM ENERGY, EQUITIZATION & RENEWAB	P066396	IBRD/IDA	225.00
2002	VN-GEF-System Energy Equitization-Renewal	P073778	GEF	4.50
2002	IDF ENVIRONMENTAL AND SOCIAL SAFEGUARDS	P077947	IDF Grant	0.21
2003	VN-GEF DEMAND SIDE MGMT & ENERGY	P071019	GEF	5.50
2004	VIETNAM WATER RESOURCES ASSISTANCE	P065898	IBRD/IDA	157.80
2004	VN-URBAN UPGRADING	P070197	IBRD/IDA	222.47
2004	VN- PRSC III	P082759	Dev Pol Lend	100.00
2005	VN-WATER SUPPLY DEV.	P073763	IBRD/IDA	112.64
2005	VN - PRSC IV	P086360	Dev Pol Lend	100.00
2005	VN-TF Pilot Design Build Lease	P087699	Trust Fund	0.94
2006	VN -Natural Disaster Risk Mngt Project	P073361	IBRD/IDA	86.00
2006	VN-RRD RWSS	P077287	IBRD/IDA	45.87
2006	VN-PRSC V	P086361	Dev Pol Lend	100.00
2006	VN Water Pollution Control	P099405	IBRD/IDA	0.30
2007	VN-COASTAL CITIES ENVMT SANIT.	P082295	IBRD/IDA	124.70
2007	VN - Program 135 Phase 2 Support Credit	P104097	Dev Pol Lend	50.00
2007	VN-HIFU DEVELOPMENT	P104848	IBRD/IDA	50.00

Source: IEG Water Database

INTEGRATION OF THE BANK WATER PRACTICE AND RESOURCE MANAGEMENT AT THE COUNTRY LEVEL

1.14 Until 2006, the Bank dealt with water and sanitation issues through a number of units mapped to two networks (infrastructure and Environmental and Socially Sustainable Development, ESSD). The integration of the Sustainable Development Network in FY07 introduced one Water Sector Board. Across the regions there is substantial variation in terms of whether the various subsectors remain within different units within the Sustainable Development Network, or whether they have integrated.[5] Staff in the Vietnam field office admitted that they are only just beginning to sit down together and that they rarely find the time to look more broadly at water resources management and services.

1.15 In 1993 the Bank's Board of Executive Directors endorsed a Water Resources Management Policy Paper. This paper reflected the broad global consensus that modern water resources management should be based on the "Dublin Principles." The Bank's 2003 Water Resources Sector Strategy is based on experience with implementing the Dublin Principles[6]. The two documents are closely related, with the latter supplementing rather than supplanting the former. In general terms, the World Bank's water strategy seeks to provide effective, tailored assistance to client countries to improve water resources management and enhance water services, in order to enhance growth and reduce poverty. The strategy is anchored in the premise that most developing countries need to be active in both management and development of water resources infrastructure.

AN OVERVIEW OF THE FOUR PROJECTS COVERED BY THIS PPAR

1.16 Well conceived water investments provide the basis for overall regional development and associated economic opportunities for the poor. This report focuses on the experience of four very different water projects to track the approaches used by the water sector and how they are evolving.

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5 Over time, the move toward one water Sector Board is expected to ensure that social, economic, environmental, and technical dimensions are taken into account in the management and development of water resources and water services, and appropriate trade-offs made and mitigated.

6 The Bank has taken on three Dublin principles, dealing with gender differently than some other agencies: (1) the ecological principle—that water should be managed by various water-using sectors at the river basin level; (2) the institutional principle—that water resources management is best done when all stakeholders participate at the lowest appropriate level, and that women need to be included; (3) the instrument principle—that water is scarce and that greater use needs to be made of incentives and economic principles in improving allocation and enhancing quality.

Box 3. The Government Water Sector Review Task Force

Water-related responsibilities are found in many Ministries and at nearly all levels of government. In 2005 the GoV decided to conduct a comprehensive review of the Water Sector, contributing $50,000 of its own resources to the Review. The World Bank is contributing by conducting the Irrigation and Drainage sub-sector review, as an integral part of the overall Water Sector Review. The process is strongly supported by ADB with a grant of $310,000 and co-financing from the Netherlands ($160,000), Australia ($60,000), Denmark ($50,000). Additionally, the Cooperation Fund for the Water Sector is a major contributor ($200,000 from a fund administered from ADB headquarters with contributions mainly from the Netherlands and Norway). The Task Force operates under the auspices of the National Water Resources Council (NWRC) and it is supported by representatives from key Ministries.

1.17 The **Irrigation Rehabilitation Project** was the first Bank-assisted irrigation project in modern Vietnam.[7] Irrigation water in Vietnam is mostly surface water provided by the Mekong and, to a much lesser degree, 108 other "main" rivers.

1.18 The **Water Supply Project** was designed to deal with the aging hydraulic infrastructure found in most cities. Creating conditions that would attract foreign direct investment was a GoV priority, but water infrastructure constraints in urban areas was a negative in the otherwise positive investment climate. Lack of safe water and upgraded sanitation facilities were the major causes of Vietnam's higher incidence of water-borne and hygiene-related diseases and childhood morbidity and mortality. Dating from around the beginning of the 20th century, aging water and sewerage infrastructure had not been adequately maintained.

1.19 The Mekong Delta is the breadbasket of the country, and **Inland Waterways and Port Improvement Project** was intended to facilitate the low cost water transport of goods and agricultural products towards the north and overseas, to export market.

1.20 Creating thousands of ponds in fragile coastal areas to produce shrimp devastated the mangrove forests along the coast and the shoreline's natural environment to a degree that endangered the very activities that produced steadily rising incomes. The impossibility of controlling shrimp disease close to the sea led producers to move shrimp farming more inland, but it left an environmental wasteland behind. The **Coastal Wetlands Protection Project** was aimed at restoring and protecting critical coastal ecology, devastated originally by tropical storms and the pursuit of quick gains from the unsustainable farming of shrimp. By doing this, it made a more sustainable approach to shrimp farming possible further inland.

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7 Although there was some investment way back in the early 1970s.

2. The Four Projects: Objectives and Components

THE IRRIGATION REHABILITATION PROJECT

2.1 Lying to the north of Vietnam's highly productive Mekong Delta is another important agricultural area, the Central Coastal Plain (CCP). In the late 1980s and early 90s food production on this plain was severely constrained by lack of water, and the available rice was often insufficient to feed the local population. Poverty and malnutrition were endemic.

2.2 After reviewing the situation in the field, the appraisal team concluded that a major rehabilitation was what was needed. Most of the irrigation systems serving this plain date back to colonial times, and by the early 1990s, it was clear that most of them had deteriorated considerably. Most damage was due to inadequate maintenance and the failure to make timely repairs, although severe weather events over the years had taken a toll. Within each system most canals, earthworks, buildings were crumbling, and pumping and electrical equipment were in urgent need of repair or replacement. Many existing canals were no longer a part of an operable system—they had no water at all flowing through them. Construction or repair of sluices was indispensable for maintaining the proper salinity, whether for shrimp production or rice cultivation.

2.3 The Irrigation Rehabilitation project was focused on the restoration of irrigation schemes in the CCP (and in a few cases their expansion). Specific problems the project attempted to overcome included: irrigation canal siltation, insufficient pumping capacity; frequent breakdowns of pumps and lifts, an intermittent electric power supply; and major losses of canal water due to leakage and seepage. Farmers' cooperatives, the direct beneficiaries, prepare irrigation schedules, run the systems, and collect water fees and agricultural taxes.

2.4 The provinces are responsible for the construction of minor canals,[8] and they are also responsible for the O&M of the main irrigation and drainage systems. For these purposes they generally use the Provincial Water Resources Services (PWRS) and Irrigation Management Companies (IMCs). Intense farmer participation in the construction, operation and maintenance of irrigation facilities is the norm in Vietnam, and water users operate and maintain tertiary systems. Each irrigation scheme is comprised of one or more cooperatives, grouping from a few hundred to several thousand hectares, organized around a branch of the canal system. As part of a broader increase in private ownership individual land leases have been introduced, giving farmers more say over cropping and marketing, but thereby weakening the cooperatives. They are essentially reduced to the organization and supervision of maintenance tasks at the present.

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8 Minor canals are defined as those serving less than 150 hectares.

Box 4. Objectives and Components

The development **objectives** of the project were to increase agricultural production (primarily of rice for food) and farmer incomes, and to reduce poverty in selected rural areas of Vietnam.

The project consisted of three **components**:

(1) **Rehabilitation and completion of seven irrigation schemes** (estimated cost US$108.1million, actual cost US$95.3 million). This component included rehabilitation and completion of seven irrigation schemes comprising a gross area of around 130,000 ha located in the south, central and northern regions of Vietnam. The main works would be rehabilitation of diversion and head-works, main canals, structures and pumping stations, and completing construction of main, secondary and tertiary canals and on-farm works.

(2) **Institutional development** (estimated cost US$4.6 million, actual cost US$7.0 million). This component included institutional development through: (a) the transfer of technology for engineering design, procurement and construction of irrigation works through technical assistance and on the job training; (b) the improvement of operation and maintenance practices and cost recovery mechanisms; (c) the strengthening of irrigation management companies and farmer user groups through training; and (d) support for accounting and auditing; and

(3) **Resettlement and rehabilitation** (estimated cost US$7.4 million, actual cost US$3.9 million). This component included resettlement and rehabilitation of families whose land and/or assets are acquired by the state for the project.

Source: VIETNAM – Irrigation Rehabilitation Project (IDA-27110); (P004834); PAD

THE WATER SUPPLY PROJECT

2.5 When the Water Supply Project was approved in FY 97, about 20 percent of Vietnam's population was urban (about 15 million). In 2005, over 22 million people lived in urban areas and of these over 8.5 million people did not have access to clean water. By 2010, it is estimated that the urban population may be more than 30 million. The cities of Hanoi, Danang, Ho Chi Minh City, and Haiphong are predominant, while the rest of the urban population is highly dispersed, scattered in 500 other small cities and towns. At the outset of the WSP project, it was already quite clear that continuing rapid growth in the larger cities could easily overwhelm existing water supply and sanitation facilities, and lead to social dissatisfaction at a level that could have a drastic impact on foreign investment and tourism.

2.6 Piped water was only available to about 50 percent of the urban population; and people living in the larger cities were better served than those in the smaller towns. An estimated 80 percent of the water supplied did not meet national water quality standards. Distribution systems leaked so much that service was available only at low pressure. Sewers mixed sewage with rain water, making treatment expensive.

2.7 The Government adopted a ten-year plan[9] that focused on three priority areas: *Hanoi*-Haiphong-Quang Ninh; *Ho Chi Minh City*-Bien Hoa-Vung Tau; and the *Danang* area. The Plan proposed decentralizing implementation to local governments. Additional priorities were: 1) using the development of infrastructure to promote investment; 2)

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9 *The Socio-Economic Stabilization and Development Strategy to the Year 2000.*

improvement of management within state enterprises, and 3) where possible, transforming state water enterprises into private companies.

2.8 Privatizing the firms would not be easy. State water enterprises had long provided basic services free or nearly so to as many as possible. Billing had long been neglected. Physical water loss and non-collection of user accounts yielded non-revenue water of over 50 percent in some WSCs.

2.9 Increased cost recovery was to take place through the more strict imposition of user charges and gradual elimination of central government subsidies.

2.10 The IDA approach was based on the Country Assistance Strategy. Transition to a market economy and reform of State Enterprises were important goals. While the project was originally conceived so as to include waste water components, in the event the project was focused entirely on water supply, and a sanitation project followed later.

Box 5. Objectives and Components

The Water Supply project's **development objectives** were as follows:

- To improve the quality of water supply services in Hanoi, Haiphong, Quang Ninh and Danang through renovation of existing facilities in order to satisfy the demand of about 2.5 million people up to the year 2000.
- To ensure sustainability of the physical investments by developing the institutional capabilities of the Provincial Water Supply Companies (WSCs), facilitating their commercialization and upgrading their staff skills through training.
- To assist in preparation of a future investment program to satisfy water demand after 2000.

Components identified at appraisal were:

(1) **Renewal and upgrading of water supply facilities** (estimated cost US$87.58 million, actual cost US$73.16 million).[10] This component included investments in raw water extraction; water treatment; primary, secondary and tertiary distribution networks including bulk water meters; new and replacement water connections including consumer water meters; and equipment, materials and vehicles for Operations and Maintenance (O&M).
(2) **Institutional measures to ensure sustainability**: (estimated cost US$9.19 million, actual cost US$2.67 million). This component included upgrading accounts receivable systems; improving customer management; preparation of guidelines for O&M and related budgets; and development of corporate plans.
(3) **Support activities including construction management, training and various studies**: (estimated cost US$15.85 million, actual cost US$9.25 million). This component included construction management; studies to assess raw water quality and to identify actions to protect water quality; identifying, quantifying, reducing and monitoring, non-revenue water; periodic dam safety audits; staff training; and studies for future investment beyond 2000.
(4) **Compensating, resettling and rehabilitating people affected by the project**: (estimated cost US$5.2 million, actual cost US$3.82 million). This component included acquisition of land and relocation of affected households.
Source: VIETNAM – Water Supply Project (IF-N0260, TF-29548, TF-29270, TF-20966); (P004830); PAD

10 The ICR lists project costs by city, not by component. However, it provides the percentage of appraisal costs spent by component. The actual amount provided here is therefore IEGs best estimate of actual component costs. In this case 82.3 percent of total project cost of US$88.9million, which is US$73.16 million.

THE INLAND WATERWAYS AND PORT REHABILITATION PROJECT

2.11 Vietnam has approximately 41,000 km of inland waterways extending to almost all populated areas and four international seaports.[11] Before the project, waterway capacity had declined due to the silting of channels, largely a function of watershed-wide deforestation and inadequate bank stabilization. As the higher elevations began to lose their forest cover, they were poorly protected from heavy rains. Floods are common in the wet season, but as water levels drop in the dry season, they can fall below sea level, impeding navigation and leading sea water to intrude farther than normal into rivers and man-made water courses.

2.12 Waterway safety was compromised by inadequate navigation aids, sharp bends, shipwrecks, and other obstacles. Only about a fourth of waterways were capable of supporting transport through prolonged periods of no rainfall. And only one tenth was deep enough to allow passage of large commercial vessels. The dredging backlog was estimated at 25 million cubic meters.

2.13 The Inland Waterways and Port Rehabilitation Project was designed to overcome these problems by widening and deepening the Mekong Delta routes; replacing and or improving bridges; treating canal-side slopes, constructing landings, and upgrading navigation aids. Excavating and dredging sections of two main waterways south of Ho Chi Minh City was expected to provide increased vessel haulage capacity. Improvements to Can Tho Port were expected to provide for better cargo handling, cargo storage, and treatment/disposal of ship wastes.

Box 6. Objectives and Components

The project's overarching development objective was to enhance the capacity, efficiency and safety of inland waterway transport in the Mekong Delta. Its specific objectives were to:

- Enhance the safety and traffic carrying capacity of the two main inland waterway routes connecting the Mekong Delta with Ho Chi Minh City (HCMC);
- Rehabilitate and improve the Port of Can Tho to improve the efficiency of cargo transshipment and distribution; and
- Improve the institutions involved so they can better plan, administer, operate and maintain the inland waterway system in the Mekong Delta.

The project comprised of three components.

(1) **Waterway Improvements** (estimated cost US$56.3 million, actual cost US$57.1 million).
This component included the improvements of the two main inland waterway routes (Ho Chi Minh City to Kien Luong and Cho Lach to Ca Mau) totaling 546 km.

(2) **Can Tho Port Improvements** (estimated cost US$1.6 million, actual cost US$1.6 million).
Improvements of Can Tho Port through: (i) replacing fenders along the berth of 144 meters; (ii) providing facilities for the collection of vessel bilge water and chemical spills; (iii) supplying cargo handling equipment (one 40-ton mobile crane, one 40-foot self loading/unloading trailer and a prime mover/tractor)

11 Ho Chi Minh City, Can Tho, Haiphong, and Danang.

to improve cargo flows and reduce waiting time; and (iv) providing technical assistance and staff training to Can Tho Port Enterprise to strengthen port management in marketing, financial management, and business development.

(3) **Institution Building** (estimated cost US$10.7 million, actual cost US$19.7 million).
Following the mid-term review, the scope of the project was extended to include: sections of the waterways from Ca Mau to Nam Can and from Kien Luong to Ha Tien (a total of 97 km), a feeder section of the canal from Ganh Hao to Gia Rai (40 km), six additional landing stages, further upgrading of Can Tho Port consisting of a perimeter road and a paved container/open cargo storage yard, and supplementary institution building activities that included technical standards for inland waterways, a river management information system (RMIS), improving navigation on the Bassac river and simulators for training.

Source: VIETNAM – Inland Waterways and Ports Project (IDA-30000); (P004843); PAD

THE COASTAL WETLANDS PROTECTION PROJECT

2.14 Mangrove forests provide a variety of economic and environmental benefits, even when they are simply left alone. Mangroves support fisheries by providing breeding, feeding, and nursery grounds for commercially important fish and shellfish, and they lessen the impact of toxic substances on water and soil by serving as natural filters. Equally important, mangrove forests serve as buffer zones that protect against typhoon/flood damages and limit salinity intrusion. Mangrove belts help to prevent sea dike breaching and coastal abrasion—as much as 25 meters of shore get washed away by storms and tides every year along some 20 percent of Vietnam's coastline. But they are rarely left unmolested: to people living near them they are a source of low (or no) cost wood products, food, and even roofing thatch and traditional medicines. So, in spite of all their contributions, coastal inhabitants' cavalier disregard of the need to preserve them along the seaside had led to their widespread eradication in many areas.

2.15 The project was designed to preserve and restore wetland ecosystems. Lessons learned from experience with natural resource management projects in the Southeast Asia Region highlighted the need to implement forest protection *while addressing the underlying social causes of encroachment.* In this case, it was understood that a lack of income-producing opportunities had led to the over-exploitation of forest resources, and thus the project would have to help the poorer families to become more economically self-sufficient. Restoring the environment would contribute to this process: better protected areas would inevitably increase coastal and marine productivity, the latter especially in areas close to the shore where the smaller boats used by the poor could safely go.

2.16 The project was designed to balance environmental protection with the livelihood needs of people dependent on natural resources. Improving the income status of the adjoining communities, (particularly the more vulnerable poor) was seen to require a combination of extension, credit and social support. This in turn would be tied to contractual measures that created the incentives necessary to assure that environmental protection would take place. Implementation was decentralized to the provincial level, but the seven components identified during project design proved to be too complex

institutionally for provinces with weak absorptive capacity, and they were ultimately allowed to pick and choose to some degree.

Box 7. Objectives and Components

The objective of the project, which covers the Southern Mekong Delta provinces of Ca Mau, Bac Lieu, Soc Trang and Tra Vinh, is to reestablish the coastal mangrove wetland ecosystems and protect sustainably their aquatic nurturing and coastal protection functions. Progress towards this objective was to be measured and monitored based on:

- minimization of land losses to and maximization of land gains from the sea through reduced erosion and increased accretion,
- decline in the barren areas in the full protection zone (FPZ), and
- increased coastal and near-shore marine productivity.

A formal restructuring of the project, with amendments to the Development Credit Agreement, was approved by the IDA Board on November 23, 2004 on a "no-objection" basis. It did not change the nature of the components. The total financing of the Project was reduced from US$65.6 million equivalent to USS55.4 million equivalent. It was determined that mangrove reforestation was no longer feasible in many areas because dramatic increases in land values had occurred, increasing the risk that poor households would become increasingly marginalized. The Project was refocused on poverty reduction by prioritizing assistance to the poorest households. Approximately US$6.0 million were reallocated to the Vietnam Bank for Agriculture and Rural Development (VBARD) so that it could provide loans to support smallholders in the project area. Specific reforestation targets were eliminated although the activity continued. [12]

(1) **Mangrove Planting, Rehabilitation and Protection** (estimated cost US$13.9 million, actual cost US$3.8 million). This component consisted of three sub-components: (a) reforestation in the FPZ and the buffer zone (BZ); (b) protection of newly-planted and existing forests in the FPZ; and (c) protection and management of priority key protected areas in the FPZ, including two nature reserves (Dat Mui and Ong Trang Nature Reserves) and one fish sanctuary (Bai Boi Fish Sanctuary), which were subsequently merged into the Mui Ca Mau National Park.

(2) **Technology Development and Transfer in the BZ** (estimated cost US$15.9 million, actual cost US$14.5 million). This component had two sub-components: (a) implementation of the technology development and transfer (TDT) program; and (b) the provision of credit to local farmers through VBARD.

(3) **Social support program (SSP) for vulnerable communes and commune villages receiving re-settlers including ethnic minorities** (estimated cost US$10.2 million, actual cost US$6.5 million). This component had two sub-components: (a) the development and implementation of CAPs; and (b) the establishment and implementation of (i) Social Support Funds (SSFs) operated at commune and village

12 The PDO and the original number of project components remained unchanged after restructuring but the project was substantially reduced in size, especially the TA inputs to take into account the absorptive capacity of each project province and the remaining time for implementation. Also, the relative importance of the project's components also changed significantly and several components were adjusted accordingly, in particular Component 1 (Mangrove Planting, Rehabilitation and Protection), Component 3 (Social Support Program) and Component 5 (Resettlement Program) as explained in Section 1.7 below. As a result the Key Performance Indicators to measure progress towards the PDO were adjusted. Indicators covering marine productivity and coastal erosion were formally replaced by the following: (a) the increase in mangrove plantation and protection areas; (b) the decline in the barren areas in the FPZ; and (c) an improvement in the management and protection of the Mui Ca Mau National Park. In addition, the risk of future encroachment into protected areas was to be reduced through alternative sustainable livelihood development of vulnerable groups in priority communes and resettlement sites and measured based on the reduction of absolute poverty in the vulnerable communes.

levels for the very poor households and (ii) the EMDF for the communes with a high population of the Khmer minority (above 20 percent), to provide them with additional support to meet their special needs through the preparation and implementation of EMDPs.

(4) **Policy and institutional development** (estimated cost US$2.1 million, actual cost US$1.4 million). This component supported activities for: (a) carrying out land and water use zoning; (b) improving the security and allocation of long-term land-use rights to farmers in the BZ; and (c) restructuring selected SFEs.

(5) **Resettlement of FPZ occupants** (estimated cost US$16.2 million, actual cost US$17.5 million). The component was designed to support the relocation of the FPZ occupants into the BZ with safer living places (i.e., not directly exposed to sea surges or rising sea levels, strong winds and typhoons) and better living conditions (i.e., with improved access to basic infrastructure such as schools, health care, drinking water and transport).

(6) **Project monitoring and evaluation** (estimated cost US$2.3 million, actual cost US$0.8 million). This component consisted of five groups of activities: (a) water quality monitoring; (b) aquatic productivity monitoring; (c) coastal areas and land use monitoring; (d) biodiversity monitoring; and (e) socioeconomic monitoring.

(7) **Project coordination and management** (estimated cost US$13.9 million, actual cost US$3.8 million). This component provided the necessary resources, including the required technical assistance, for effective project coordination and management at all levels.

Source: VIETNAM – Coastal Wetlands Protection Project (IDA-3292); (P042568); PAD

3. Project Experience and Achievement of Objectives

THE IRRIGATION REHABILITATION PROJECT

3.1 The project took place at a time when the economy was fully engaged in a process of liberalization, and it rehabilitated irrigation infrastructure just as the market economy and the private sector were coming into their own.[13] The freeing-up of agricultural commodity prices in the 1990s made rice a profitable crop indeed for farmers in the Central Coastal Plain. Increases in rice production due to a reliable supply of agricultural water contributed to improved farm incomes and reduced Vietnam's rural poverty. Vietnam went from a food deficit country to the world's second largest rice exporter. The total irrigated area increased from 67,000 hectares to 133,889 hectares; total rice production rose from 518,000 tons to 926,000 tons with average rice yields going from 3.0 to 4.8 tons per hectare.

3.2 The Central Project Office was in charge of coordinating implementation, which meant that it had to oversee a number of subprojects scattered over a wide and difficult to access area, which proved to be challenging. Floods and typhoons in 1998 and 1999 in Central Vietnam and in 2000 in the Mekong Region also slowed the speed of implementation by damaging some works that had already been rehabilitated to the point where they required a second restoration. Due to cascading delays, the project closed 18

13 The annual average income for farm households served by irrigation in the original subproject areas increased by about US$66.8 (about 112% of expected) for those households that adopted project-promoted agricultural technologies, according to ICR data.

months later than expected.[14] The various holdups also made time which some systems used to expand the coverage provided by the canals. By credit closing, 12 provinces had been served, compared to the seven originally envisaged. Despite an expansion of the project's scope, the actual costs of civil works and goods were only 75 percent of the original estimate (owing to a more favorable exchange rate and the introduction of competitive bidding). The ICR reported that:

1. the overall ERR was 19 percent (compared to the 17 percent forecast at appraisal).
2. 25 district-level agricultural extension centers had been constructed and staff had been extensively trained, which led to the delivery of effective extension services to farmers.
3. an Environmental Action Plan was satisfactorily complied with.
4. the Resettlement Action Plan, the first ever executed by the Ministry of Agriculture, was successfully implemented—22,104 families were ultimately served, compared with the 8,451 projected at appraisal.
5. the project helped three of the largest SOEs belonging to the Ministry of Water Resources to privatize, and used them effectively for the construction of dams, canals and hydraulic structures.

3.3 The IEG mission made field visits to an irrigation system located on the periphery of Ho Chi Minh City.[15] All aspects of the operating irrigation system were inspected including bridges, locks, sluice gates and state and private farms. The system is in good operating condition and, more importantly, unquestionably delivering water that permits the production of high value crops such as soy beans that farmers were often afraid to plant before. During the project (from 1995 to 2003) corn yields increased from 1.2 to 3.6 tons per hectare, and peanut yields have increased from 1.3 to 2.5 tons per hectare in the project area.[16] Animal husbandry is taking place in ways not previously possible because of intermittent access to water. Not only were pigs, chickens, and cattle to be seen, but even alligators and bats were being raised (the former for meat and leather, the latter because they produce an excellent fertilizer). Small but valuable increases in fruit production have taken place that were not anticipated, the mission observed pineapples, pomelos (a citrus fruit), and papayas.

3.4 The entity responsible for continuing operation of the system, the provincial Irrigation Management Company, is clearly more focused on the industrial consumers of the system's water than on farmers, however. The growth of the economy generally, and Ho Chi Minh City specifically, has led to rapid urbanization and sprawl. Many industries

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14 The financial and organizational arrangements for project management were between the central project office and several other MARD departments which resulted at times in delays in project decision making, and it contributed to the implementation delays. The East Asia financial crisis between 1997 and 1999 reduced the availability of counterpart funding—an additional contributor to delays. Since actual subproject costs were much lower than anticipated, savings were reallocated to an expanded scope of work in 1998. The funds were ultimately used to repair flood damage, and to finance complementary works associated with the original subprojects or flood-damaged structures.

15 For comparison purposes, and to see how the approach had evolved over time, another system constructed by the follow-on project was visited in the Bac Lieu province.

16 ICR, page 12.

requiring uninterrupted access to water have chosen to move into (formerly) rural areas served by the irrigation project, and these industries pay fees, at a much higher rate than farmers were charged, that essentially underwrite the activities of the IMC. This is true to the degree that income from the sale of water for agricultural purposes is more of an afterthought than raison d'être for Company staff, more so now when there are no longer such charges, of course (see Box 8). While there are areas where industrial use is not the predominant purpose of water supplied by the Irrigation Rehabilitation project infrastructure, the abolition of water tariffs for most agricultural users of water has made the sustainability of systems significantly more precarious and managers jobs that much more difficult.

Box 8. The Abolition of Irrigation Tariffs

Prior to 2008, farmers were not charged for the volume of water they use because there was no infrastructure to monitor the volume of water usage by such a large number of small-holders. They were charged a fixed fee based on the area of their irrigated crop land. In November 2007, the Government issued a Decree on irrigation fees that stipulated that from 2008 on, farmers will be exempt from the irrigation fee. The decree cuts one of farmers' biggest expenses. After joining the WTO, irrigation fee exemption became a vital component of the Government's assistance policy for farmers. An annual exemption of VND1,000 billion (US$625 million) is expected. However, this exemption has raised a number of concerns: that it may lead to water shortages, efficiency of water usage will drop, effectiveness of irrigation companies will be compromised, and water transferred to other usages by irrigation companies, etc. "At present, there are 121 companies engaged in irrigation. As the irrigation companies are public entities, the revenue shortfalls have generally required government subsidies. The size of these subsidies has increased in recent years. Over time, the monopoly position of these companies and expectations of government assistance have contributed to a culture of poor cost management: insufficient competition and accountability have contributed to operational inefficiencies that affect water management. A further consequence is that irrigation companies do not retain sufficient revenue to cover their requirements for infrastructure maintenance and development. This has led to a decline in the physical assets used for water distribution (e.g. canals, off-take gates). Inadequate maintenance reduces the reliability of the irrigation system and contributes to operational inefficiencies that affect water management."

Source: Excerpt based on WATER RELATED ECONOMIC ISSUES: Status Report Prepared by: Pham Ngoc Thang, Economist, 14 March 2008, Prepared for the Water Sector Review.

3.5 Achievements in terms of the rehabilitation of irrigation schemes (US$108.1 million appraised, US$95.3 million actual) covered 99.8 percent of what was planned, as well as additional repairs and improvements related to the flooding.

3.6 Institutional Development (US$4.6 million appraisal; US$7 million actual) activities had significant achievements. Financial management and maintenance plans for the IMCs were prepared for the first time, and basic equipment was purchased. A project management information system proved capable of tracking project transactions for accounting and auditing purposes. Among the ID achievements:

- furnishings for the extension centers were provided
- 550 participants completed irrigation-related training courses
- a total of 10 overseas training programs were organized

- training of extension agents and farmers took place in 25 districts
- dam safety inspections were carried out, and additional dam safety features were incorporated including (typically): installation of additional spillways and spillway gate-hoists complete with fail-safe emergency actuators

3.7 The IRP dates from 1995 and, as often happened back then, an effective performance monitoring and evaluation system was not developed. One problem was that the contract for international consultants was signed much later than planned. This delayed the preparation of O&M plans, financial management support including the MIS system, environmental monitoring, bidding documents and bid evaluation procedures, and may have contributed to an M&E system not being developed. Environmental monitoring of compliance with the action plan was undertaken, and no detrimental physical, chemical or socioeconomic impacts were reported. The resettlement component (US$7.4 million appraised; US$3.9 million actual) supported 312 project-affected households that were relocated (175% of the SAR estimate), as well as 22,104 project-affected households. The latter received compensation for loss of land (both permanent loss and temporary loss of use).

WATER SUPPLY PROJECT

3.8 In a sense, the WSP grew out of several Government-prepared strategic documents that were put together in the early 1990's with donor assistance.[17] These documents stressed the importance of upgrading existing water supply systems over the coming decade. A second strategic priority at the time was to strengthen the management capacity of the urban Water Supply Companies (WSCs) so that they would be able to steadily increase water delivery capacity in a financially sustainable manner.

3.9 Starting out as subsidized entities at the beginning of the project, all three WSCs were able to cover their operations and maintenance (O&M) costs and make payments on the Bank loan,[18] according to the ICR. And Hanoi and Haiphong WSCs built up substantial financial reserves.

3.10 Following loan closing the Hanoi WSC merged with another WSC and began to experience revenue shortfalls and water quality problems while Haiphong went from success to success. In 2006, the government decided to impose price controls on urban water, which, as will be seen, had a bigger impact on the utilities that had been lagging behind.

3.11 During the preparation of this PPAR, field visits were undertaken to selected Water Supply project sites. These included visits to the offices of the Haiphong and Hanoi Water Supply Companies, with side trips to the Nam Du and Haiphong water treatment plants (plants serving Hanoi and Haiphong respectively), and network expansions under construction. In addition visits were made to the ongoing Kien An

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17 (1991) *The Socio-Economic Stabilization and Development Strategy to the Year 2000.* There was also a UNDP/World Bank Water Supply and Sanitation Sector Study (1990) and a Finnish-funded National Urban Water Supply Strategy (1994).

18 The Bank Credit was on-lent by Government to the WSCs at commercial terms.

water supply project to discuss the achievements of the closed projects in light of current practice. The WSCs kindly provided updated data (on what has happened since project closing and the ICR mission). Unless otherwise stated, this is the source of information used in this section.

3.12 Although one objective was to improve the quality of water services in four cities through renovation of existing services, the city of Danang did not, in the end, participate in the project. The Danang sub-project was cancelled prior to any expenditure on actual infrastructure due to misprocurement.[19] The estimated cost of the project at appraisal was US$142.6 million. The actual cost of the project (in the three remaining cities) was US$88.9 million. The closing date was extended by two years resulting in an overall project period of seven years. Not taking Danang into account, targets and performance indicators for each participating city were exceeded.

3.13 ***Connections:*** The primary way in which the quality of water service was improved by the project was by connecting more households. Anecdotally, residents in the three cities also benefited from a higher level of water treatment, generally increased pressure and 24 hour water supply service, although quantitative data was not made available on these parameters.

3.14 The total number of connections for all three cities more than doubled since initiation of the project, from 275,000 to 630,000 (see Figure 2). Quang Ninh quadrupled its connections from 24,000 in 1999 to 100,000 in 2007. Since before appraisal, Hanoi has had a problem with the presence of ammonia in the groundwater it taps for system use from a series of wells near the Red River (a contaminant presumably due to some amount of untreated wastewater reaching the aquifer).[20] The solution was to install special ammonia removing units at the treatment plant. Under the project, equipment with a cost of $2.4 million had been installed in the water plant to remove this contaminant from the water. International consultants had supported its early use. During the field visits, however, the mission noted that the facility has not been used in quite a while. It had been completely dry for months, and significant quantities of airborne dust had settled on the treatment media. Staff declined to provide the date that it went out of service, but agreed that the equipment had been decommissioned for a while, stating that it had been disabled for maintenance; but they admitted that the chemicals that were required for its use were expensive for the utility at the current tariff levels.

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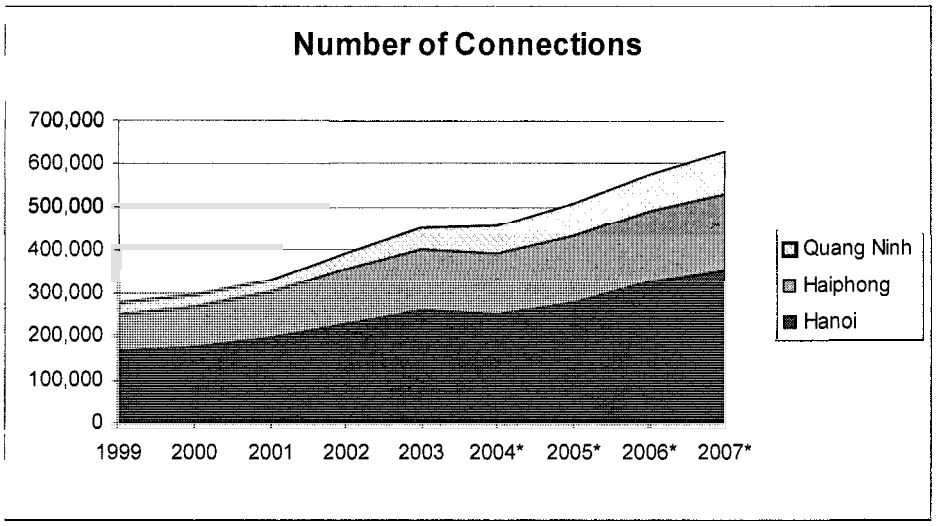
19 Danang city insisted on using its own procurement procedures rather than following Bank guidelines. Of the original Credit of SDR 71.3 million, SDR 24.5 million was cancelled due to the misprocurement, and a further SDR 2.25 million was cancelled at project completion.

20 "Ground water in some regions has been contaminated by Ammonia and Nitrogen, especially in Hanoi region. The research showed that: In south of Hanoi and Gia Lam district, the concentration of Ammonia is higher than standard for domestic use. The result of sample analysis of some operating wells showed that the concentration of Ammonia is increasing with time. Currently, there is no conclusion for the preseason of Ammonia contamination. However, the research show that, the south of Hanoi is the wastewater storage discharging from Hanoi." Department Of Water Resources Management, Water Sector Review Project, ADB-TA- 4903 VIE. GENERAL ON GROUNDWATER RESOURCES, Groundwater Specialist, Dr. Dang Dinh Phuc, Hanoi, March/2008.

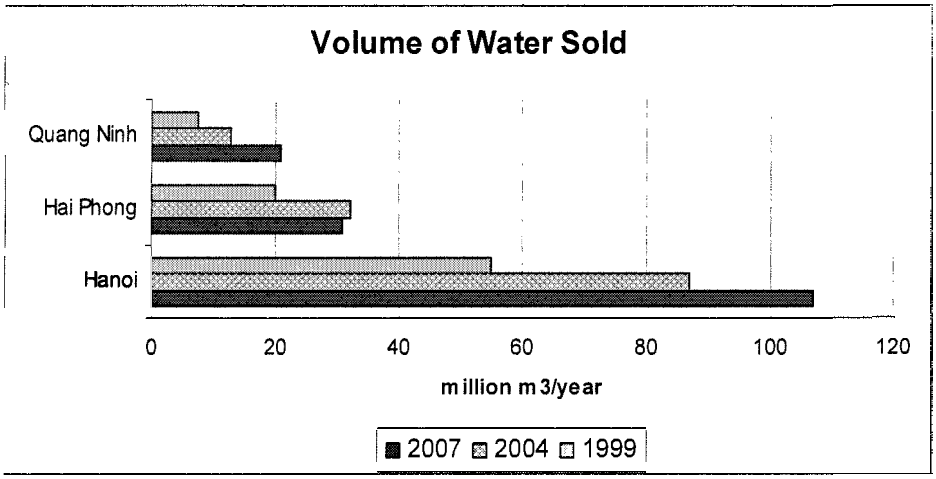
Figure 2. Households Served Increasing in the Three Project Cities



** 2004 and later numbers provided by the WSC and the RM in 2008. The 2004 number is not consistent with the ICR, showing a slight decrease relative to the projection made at that time.*

3.15 ***Water Sold:*** A second objective was to ensure the sustainability of the physical investments by developing the WSCs' institutional capabilities and staff skills, and facilitating commercialization. Since project initiation, the volume of water sold increased dramatically in Quang Ninh and Hanoi, but evened out at close to 30 million m^3/year in Hai Phong, where coverage has been at the 100 percent level for some time (see Figure 3).

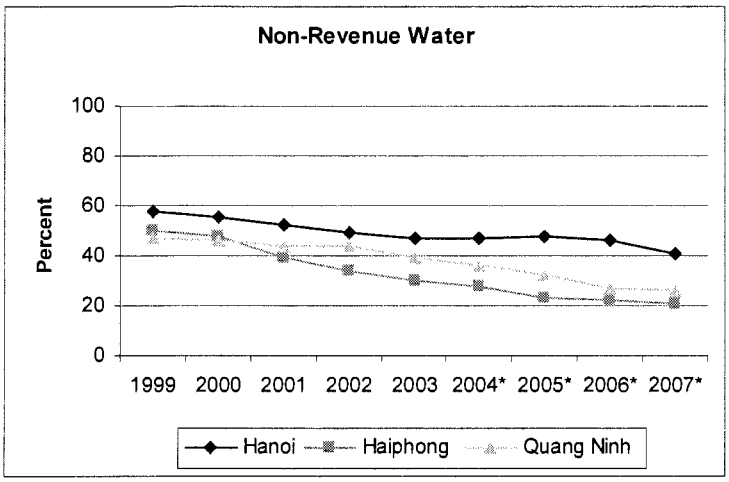
Figure 3. Commercialization in the Project Cities



Note: 1999 and 2004 numbers are from the ICR. The 2007 numbers are from updated information, provided by the WSC and the RM in 2008.

3.16 ***Non-Revenue Water:*** The amount of non-revenue water supplied has gone down in all three cities in the course of the project and since project closing (see Figure 4). The most dramatic decline occurred in Haiphong which went from fifty percent to twenty percent.

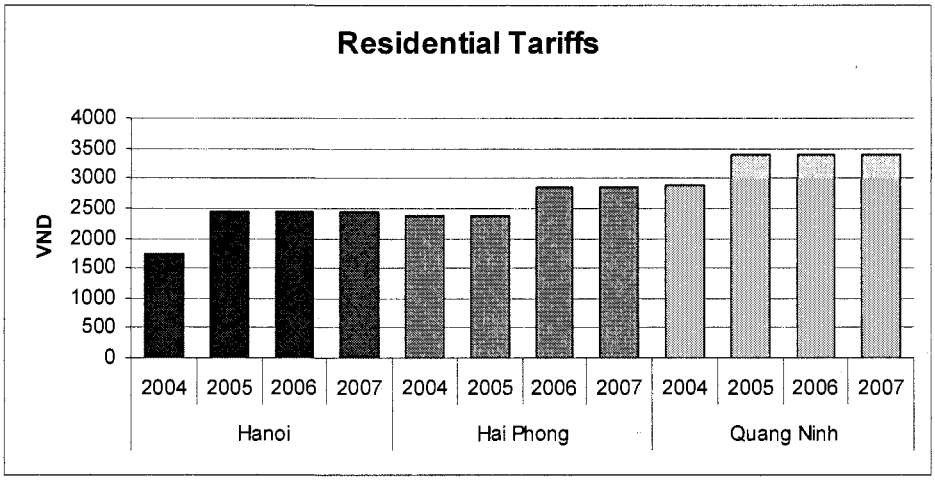
Figure 4. Improvement in Delivery Efficiency in the Project Cities



*Note: * Indicates numbers updated since project closing.*

3.17 ***Water Tariffs:*** During negotiations, local governments gave up-front commitments to raise tariffs annually to specific levels determined at appraisal. The WSCs did not actually meet these targets, but for as long as they were allowed to, they did raise tariffs to levels that permit them to cover operating costs and debt service. Tariff increases intended to keep revenues in line with rising costs to protect the financial sustainability of WSCs did not take place as anticipated because, following a period of inflation, the government froze the water tariff at their 2006 levels as a safety net measure. Figure 5 below shows how residential water tariffs went up following project closing but soon after were frozen by the government.

Figure 5. Water Tariffs Since Credit Closing



Note: Data provided by the WSC and the RM in 2008.

3.18 The following innovations to help the WSCs to function on a more commercial basis were introduced during the project: computerized billing and collection systems, customer management systems, a GIS water management and monitoring system, O&M manuals, and standardized budgeting procedures. The customer network management systems in Haiphong and Hanoi, the largest companies can integrate customer and GIS data to identify the abnormal consumption patterns associated with leakage or meter tampering. During visits to the Haiphong WSC, the mission spent time with the staff responsible for these various systems and it could be perceived that they were highly motivated and competent. In exercises observed by the mission it was clear that they have been well trained and are capable of responding to all eventualities. They can even pinpoint the causes of highly unusual system malfunctions. Reportedly, staff skills were initially improved through training, and further-upgraded by project-financed study tours to other utilities abroad.

3.19 A third objective was to assist preparation of a future water investment plan. Only Haiphong prepared an investment plan, however. The other two cities opted to use the intended funds for institutional development instead. Each company was also assisted to plan for and prepare annual performance agreements by using a corporate planning system as a basis for agreements with city authorities. The system that was produced under the project is based on detailed operation and maintenance manuals with costing procedures for preparing annual budgets. The studies on raw water quality and source protection in Haiphong led to the establishment of protection zones around the river intakes to minimize the risk of contamination, and contingency plans were developed to deal with accidental spillages of hazardous materials. Hanoi developed a computerized model of water quality in the aquifer and monitored ground levels to detect signs of over-exploitation of the aquifer.

3.20 The mission did not visit Quang Ninh. Reforestation was also actively promoted there to protect water quality. Reportedly, the authorities were forced to take measures to reduce pollution stemming from mine tailings, and they ultimately acted to stop illegal mining in the Cao Van reservoir catchment. The Cao Van Dam was subject to dam safety related modifications, including the widening of the spillway, thereby preventing catastrophic failure.

3.21 The WSP required resettlement of 130 households, and the ICR states that appropriate compensation was provided. Many informants stated that Bank procedures had greatly improved the way resettled families were now treated.

Box 9. Recent Modifications to Practice in WSS Work in Vietnam

The Urban Water Supply Development Project, the second IDA-supported water supply project in Vietnam, adopted a more demand-responsive approach. Potential consumers in the smaller cities where it usually works are informed in advance of the likely monthly bill they would have to pay when they are connected to the system. Sub-projects proceed only if over 60% of households sign a written commitment to connect to the system at the projected tariff level and even then, only if the local government approves the tariff level required. This seems a good approach where the existing coverage is limited, but it would be of little use where coverage levels are already high and consumers have become used to subsidized prices.

In 2001, the Bank and the Vietnam Water and Sanitation Association carried out a benchmarking exercise of all (68) of Vietnam's WSCs. Encouraging a subsector-wide commitment to the generation and transparent sharing of key statistics helps water supply companies to understand how they compare with other similar organizations and highlight the best places to go for field visits, advice, and consultants familiar with national conditions. Furthermore, this exercise revealed the strengths and weaknesses of the sector and resulted in positive exchanges of knowledge amongst the companies. Many companies have, or are in the process of, replicating the initiatives and innovations introduced through the project by Haiphong WSC.

Source: Bank project documents.

3.22 ***Staffing:*** Staffing became much more efficient, compared to the 1995 baseline before the project began (see Table 2). In Quang Ninh the number of staff per 1000 connections went from 35 to 8.4 – more than a fourth less. In Hanoi and Hai Phong, the number is less than half what it was before the project.

Table 2. Staffing

	Staff per 1000 connections				
	1995 Baseline	2004	2005	2006	2007
Hanoi	13	7.5	6.8	5.8	5.7
Hai Phong	11	5.6	5.3	5	4.8
Quang Ninh	35	10.7	9.1	8.7	8.4

Note: Data provided by the WSC and the RM in 2008.

3.23 ***Coverage:*** The total population in the three cities has doubled since project approval, from 1.8 million to 3.7 million people. The experience of the three cities in

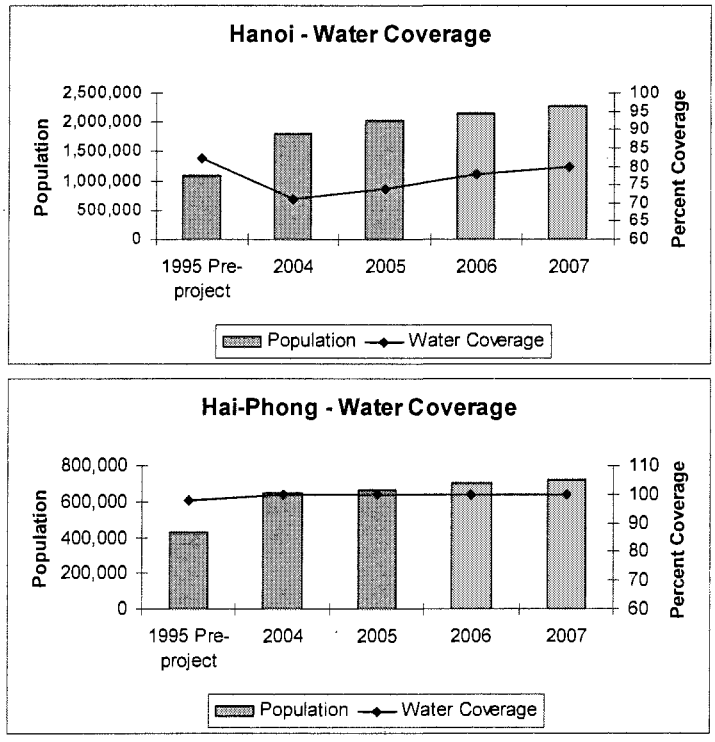
meeting the increased demand, however, has been quite different (see Table 3). Hai Phong has maintained the 100 percent coverage it achieved in the course of the project. Hanoi however has not been able to keep up with its population growth and has kept close to coverage levels it had before the project. This is due in part to the enlargement of Hanoi city, and the merging of Hanoi Water with another company that had historically provided quite low coverage levels. Quang Ninh has more than kept up with its doubled population and gone from 16 percent coverage to 57 percent (see Figures 6).

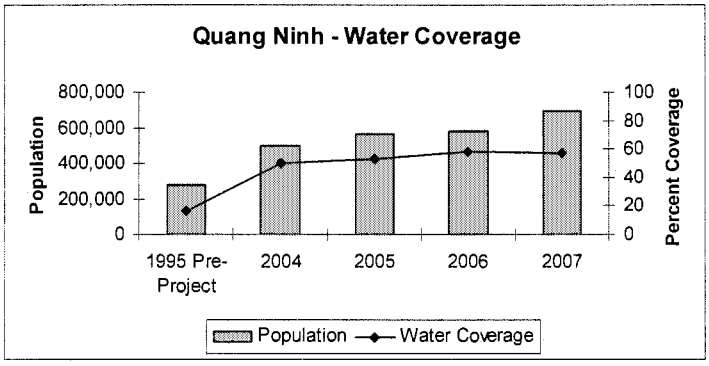
Table 3. Water Coverage

	Percent Water Coverage				
	1995 Baseline	2004	2005	2006	2007
Hanoi	82	71	74	78	80
Hai Phong	98	100	100	100	100
Quang Ninh	16	50	53	58	57
	Population Served				
Hanoi	1,100,000	1,818,000	2,025,000	2,160,000	2,286,000
Hai Phong	430,000	650,000	664,000	699,000	721,000
Quang Ninh	278,000	496,125	564,116	580,185	696,686

Note: Data provided by the WSC and the RM in 2008.

Figure 6. Population and Water Coverage by City

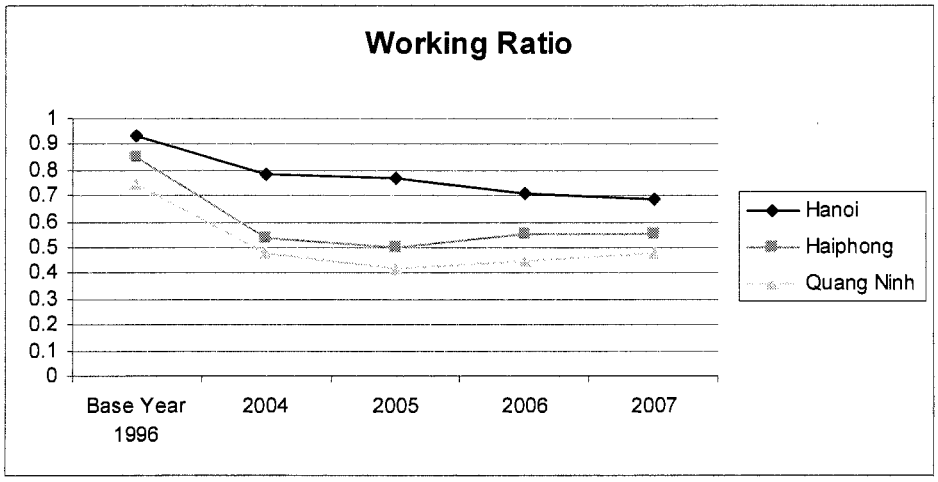




Note: Data provided by the WSC and the RM in 2008.

3.24 ***Working Ratio:*** The working ratio is an important indicator of financial sustainability. By definition it is calculated by dividing the total operating expenses by the net revenue. It has decreased significantly for all three cities, although less dramatically in Hanoi, where it went from 0.93 to0.69 (see Figure 7).

Figure 7. Operating Expenses Divided by Net Revenue



Note: 1999 and 2004 numbers are from the ICR. The 2007 numbers are from updated information.

3.25 Commercialization of water was intended to support the goal of poverty alleviation by redirecting existing subsidies to activities with higher social returns. Just as the mission found in the irrigation sector, with the abolition of most charges for the agricultural use of water for irrigation, the GoV's decision to freeze water tariffs for the major WSCs is a definite complicating factor, the full impact of which will be a function of the length of time it is left in place. It is true that the tariff freeze has little effect on the Haiphong WSC: water quality remains high, the utility is making a profit, helped immeasurably by huge reductions in non-revenue water. In fact, as intended during

appraisal, the Haiphong utility is preparing to "equitize" and in the process of doing due diligence for an IPO.

INLAND WATERWAYS

3.26 The PPAR mission (accompanied by officials from the Ministry of Transport, Waterways Department) traveled by boat from Ho Chi Minh City to the port of Can Tho, a journey of about 100 kilometers through the Mekong Delta. During the trip the mission could confirm that ship traffic was heavy. In places congestion caused the mission's boat to wait for a lull in traffic before proceeding. The most recent statistics bear out this observation. In 1995, 23.5 million tons of cargo was carried through the inland waterway. By 2004, the last year for which data could be found, 55 million tons of cargo was transported through the waterways. During the five-year period between 2000 and 2004, the annual average increase in cargo exceeded 8 percent.[21]

3.27 As the voyage unfolded it became clear that the project accomplished what it intended to do. It: (a) eliminated the dredging backlog; (b) prepared main routes for the routine use of large vessels and barges, (c) it financed canal widening, ensured that the required water depth was present throughout, (d) where necessary it increased overhead clearances, and (e) it eliminated sharp bends in the waterway. On-ground towers and beacons were installed as aids to navigation. It was reported that the installation of the floating and on-land navigation aids has helped the canals to be safer for 24 hour operation.[22] Waterway operations have also benefited from better enforcement of rules. Equipment and vessels of the types purchased under the project were observed at work: buoy-laying craft could be seen servicing navigation aids and police boats were observed in action.

3.28 A recent government decree eliminated fees for the thousands of ships using the inland waterways. Staff from the Waterways Department interviewed noted that fees had been small and tedious to collect. And they said that their agency receives the same amount as before for their work, only now it is entirely from the national budget. The governing legal document for the inland waterway sector is the Vietnam Inland Waterway Law. According to a report prepared for the Water Sector Review, this Law has not developed sufficiently to deal with environmental issues. It established a range of fees for captains licenses and certain permits, but it did not specify the amount for the "channel fee" which was intended to cover the cost of regular maintenance by charging this toll. That the amount was not regulated in any legal documents, is a situation termed in the report as "not reasonable."[23]

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21 Mr. Ton That Lam (Undated) Inland Navigation Status And Issues. Vietnam Water Sector Review. http://vnwatersectorreview.com/files/Inland_navigation_EN.pdf

22 Although the SAR did not provide a specific accident reduction target, the ICR reported project commissioned research that showed that the number of accidents on project waterways dropped from 0.0034 per hundred vessels in 2000 to 0.0023 in 2005, a 32 percent decline.

23 Mr. Ton That Lam (Undated) *Inland Navigation Status And Issues*. Vietnam Water Sector Review. http://vnwatersectorreview.com/files/Inland_navigation_EN.pdf

3.29 The project experienced delays attributable to land acquisition: the number of households that required resettlement was 7,215 (compared to 5,000 estimated at appraisal). Having a larger than anticipated number of families to resettle slowed the implementation process.[24] No plans had been made about what to do with the spoil (dredged material) or where to deposit it. Identification of a disposal site had been postponed until implementation, and figuring out what to do with countless tons of mud[25] took time; albeit an unforeseen partial solution proved to be a win/win: In many small towns the spoil was used by local landowners to raise their holdings above the flood water level, thus reducing damage due to floods and enhancing building and property values. Delays in the implementation of the project were caused by two other issues: 1) the failure of the government and the Bank to reach agreement on the eligibility of state owned enterprises to participate in civil works contracts; and 2) a larger number of people needing resettlement than anticipated as well as the failure to identify a mechanism for assessing and paying compensation prior to project start-up. Both of these topics are covered in adequate detail in the ICR and, since the mission found no new information on these topics, this history will not be repeated in this report.

3.30 Because one of the main concerns related to the dredging was its potential impact on fisheries and agriculture, during implementation the environmental management requirements for dredging work were integrated into the contracts as a part of technical specifications.[26] The PPAR mission did not detect and it was not made aware of any environmental problems stemming from the dredging process.[27] Regarding cargo movements on the waterways, a key performance indicator, sampling at three sites at project closing showed increases in traffic ranging from 48-237 percent.[28]

3.31 The ICR noted that: "The operational phase of the waterways and the Thoi Binh Lock will cause increased erosion and the collapse of canal banks..." The mission could not help but note that this is, in fact, what has happened on a massive scale. The increase in traffic, and especially the use of the waterways by high speed water transport,[29] has had a deleterious impact on canal embankments—the bulk of which were either severely

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24 The ICR states that all resettled families were compensated in accordance with Bank guidelines.
25 The total amount of spoil that needed to be removed by dredging was estimated at about 12 million cubic meters in the SAR. This amount was a multiple of the annual maintenance dredging requirement (estimated to be 1.5 million cubic meters), and it is largely due to the drainage backlog. Dredging activities were overseen by three entities: (a) Vietnam Waterway Construction Corporation, a state-owned company; (b) Dredging Company No. 1 and DRECONT under the Ministry of Water Resources; and (c) VIETDREDGE, a joint venture between Vietnamese dredging companies and the Netherlands Port and Delta Consortium.
26 The ICR notes that due to the mitigation measures employed, adverse impacts from dredging were lower than expected.
27 Only catastrophic impacts would have been detectable so many years after civil works were completed.
28 The volume of shipping and cargo carried on the waterways was obtained through a physical count of vessels at nominated spots over a period of a few days while the volume of cargo is determined by the vessel operators' declarations.
29 Hydrofoil and other high speed passenger vessels have recently been prohibited from using the waterways for regularly scheduled runs in order to stop bank erosion. This mission could not ascertain when the ruling went into effect or how long it will last, but there are still quite a few such craft at wharfs or at anchor.

eroded or collapsed. In some instances as much as 10-20 meters of land have been lost to the canal. Very little bank stabilization was carried out under the project, and the stabilized areas we examined carefully were quite poorly done, essentially just covered in small stones held in place by sheets of torn and rusted chicken wire.[30] Although the mission asked to see the landing sites constructed under the project, and we were assured that we would visit some, in spite of repeated promptings during the journey none were ever identified. It can be safely assumed that they were a casualty of bank instability. A number of towns have invested their own resources in bank stabilization, mostly using steel reinforced concrete, but again, these stretches of the canal are highly notable exceptions.

3.32 Siltation caused by bank collapse and deforestation is clearly reducing the time before maintenance dredging is again necessary, although, according to some informants, in some areas sand mining by private contractors provides a costless solution. The areas where the river bottom is sandy enough for commercial use are limited, however, and because miners are a hazard to navigation the places they are allowed to work is controlled by the authorities. The maintenance dredging requirement is estimated at an annual average of a little over one million cubic meters for the project rehabilitated canals, although it is unclear how often a given area will receive maintenance. Irrigation staff said that the time between required canal dredging is now four years, but this figure was never confirmed by the Waterways Department.

3.33 The Inland Waterways and Ports project financed major improvement to Can Tho Port including the pavement of the entire port area, bumpers and other improvements to berths, and cranes for container loading/unloading etc. The mission visited the port and was given a presentation by the manager in charge. Port development has continued steadily since project closing in 2006, financed wholly by the port's operating profits. The projects' provision of a new paved yard, the upgrades and replacements to cargo handling equipment, new facilities for the collection of vessel bilge water and chemical spills, staff training time in Demark and technical assistance, have provided a solid capacity increase and they have led to clearly improved port management at Can Tho Port.

3.34 The increased ship traffic in the project-improved canals and waterways is reflected in a dramatic increase in the Port's throughput. During project preparation Can Tho's cargo flow was originally predicted to increase to about 1.2 million tons by the year 2010. By late 2008, however, total cargo flow was already at 3 million tons; about 6 times what was to be expected at this stage. At project closing, the profitability of Can

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30 Gabions are wire fabric containers, uniformly partitioned, of variable size, interconnected with other similar containers and filled with stone at the site of use, to form flexible, permeable, monolithic structures such as retaining walls. Mattresses are used in sea walls, revetments and weirs for earth retention. Mattresses are relatively small in height in relation to the lateral dimension of a gabion and are generally used for channel linings. For optimal wear and durability, welded and stiffened mattresses are generally preferred over those made with twisted wire. Gabions and mattresses will revegetate over time as the structure collects soil and the airborne or waterborne seeds of locally occurring plant life. This spontaneous growth will create a very natural environment and will increase the efficiency of a gabion structure as the plants enhance the soil stability. http://www.gabions.net/mattresses.html

Tho Port was not up to appraisal expectations (expected increase 25 percent, actual 0.5 percent). In the time between the ICR and PPAR missions, however, operating revenue at Can Tho grew from 15 billion (VND) in 2000 to 6 times that amount (over 90 billion VND, without taking into account some December income [the mission took place before the closing of the month's accounting had taken place]). Surprisingly, while the economic downturn has led to drops in cargo volume at Vietnam's other major ports, volume is rising unabated in Can Tho.

3.35 An increase in the price of oil coincided with the economic downturn. According to officials at the port, the upsurge has created a market for oil contaminated bilge water. At least at the time of the mission visit, bilge water was no longer being treated because it was being sold to entrepreneurs. It is beyond the remit of this report to ascertain what happens to this liquid when it leaves the port and/or to comment on the advisability of this practice.

3.36 Most of the cargo that was observed going through Can Tho Port are loose goods: construction material such as sand, clay, clinker, timber. Containers are filled with frozen seafood; and rice for the Asian markets. Worker wages are rising along with shipping activity. In 2000-2001, the average monthly wage was about 800,000 (VND), while in 2008, it is 3.5 million (VND).

3.37 Training provided to port staff in Demark brought about a total restructuring of business procedures and services at the port, as it began focusing more on its comparative advantages in the search for new business. Instead of marketing to all shippers across the board, the port has identified shippers by the craft making up their fleets. As a shallow water port well-located in terms of Delta resources, staff have carefully marketed port services to companies running flat bottomed sea barges up to 12,000 tons and ocean ships below 5,000 tons. Can Tho also increased its competitiveness by offering free short-haul transport and, thanks to the yard expansion, 5 months of free storage. Saigon and other nearby ports typically offer only 1 month. In the near future, Can Tho is looking to deepen the channel to the sea and further enlarge its cargo handling capacity so it can attract larger container ships currently forced to use the port at HCMC.

3.38 Can Tho Port was legally merged with Saigon Port in July 2002. The purpose of the merger was to consolidate the operation of all the port terminals in the Mekong delta under the management of the director of Can Tho port. There is also a plan to set up an operation center consisting of 5 smaller satellite ports that would make up a network of Mekong Delta ports feeding Can Tho. And a follow-on project is under preparation that will create two more canal systems running through the delta to reduce pressure on the current system, and eliminate the slowdown caused by one narrow stretch which has proved to be a bottleneck for shipping.

3.39 A dredging industry is essential to regular maintenance activities. Given the state of the canal banks it seems that finding sufficient funding for maintenance—an estimated $1,900 per kilometer of waterway annually—has been problematic. But without regular allocations, private sector providers will find it difficult to be financially stable. While the rehabilitation of major waterways performed by this project gave the domestic dredging

industry an opportunity to flourish through an infusion of capital in new equipment, the capacity it represents needs to be used regularly for it to be sustained. Budgetary allocations to the Inland Waterways Administration - Southern Department in 2005, the last year for which there is data, were $870 per kilometer lower than estimates of the amount needed.

PROTECTION OF COASTAL WETLANDS

3.40 The PPAR mission traveled to Soc Trang and Bac Lieu provinces to visit sites served by the Coastal Wetlands Protection project. Little new data has been collected since credit closing, and, unless otherwise stated, the PPAR uses ICR data for project achievements while relying on visual observation for the descriptions of the results on the ground.

3.41 By credit closing, monitoring data confirmed that, because of reforestation efforts, the coastal erosion area was substantially reduced and the accretion zone had been increased. Because of the replanted mangroves, coastal erosion was reduced by 40 percent in Ca Mau and the length and the area of coastline accreting was increased by 20 percent during the same period. It was not possible for the mission to visit Ca Mau, but it is reported to be the province where the reforestation effort went best. The project office in Hanoi reported that 370 million trees had been replanted along 460 kilometers of coast. Site visits confirmed that an increase in mangrove and casuarinas plantation (and therefore protected area) took place in the FPZ—staff stated that under the project forest coverage increased from 48 percent to 96 percent in those zones. The mission sees no reason to question these assertions. But stakeholders pointed out that this result is only partially attributable to the project as both NGOs and Program 661 worked in the same areas during the same time period. In fact, Program 661 is probably responsible for 80 percent of all that was accomplished in terms of reforestation in the project areas.[31]

3.42 There was an improved institutional capacity for mangrove planting and protection at the local level due in part to the up-grading of forest guard stations with the necessary equipment provided by the project; and improved protection awareness among local communities led to a decline in forest law violations in the project area. The objective regarding the sustainable protection of the aquatic environment and coastal protection functions was partially achieved in the areas visited, confirmed by the reappearance of shellfish near the shore and (anecdotally) improved fishing. But arguably where the project impacts were greatest was in terms of the resettlement effort and the technical and economic support provided to the households in the project area.

3.43 The CWP project was very innovative, and it was one of the first IDA funded efforts in the forestry sector. Because it was a very new kind of undertaking, it took about half a decade to put together. It will be recalled that the early 1990s was a period when Vietnam was just beginning to gain experience with Bank-financed projects and

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31 In the fully protected and buffer zone areas 126,245 hectares of forest were replanted. Of those, Program 661 was responsible for about 100,000 (79.2 percent).

procurement procedures. The upshot was that project preparation was based on a forestry and land use reconnaissance that (unfortunately) took place five years before the loan was actually approved. A great deal happened during that period that made that early appraisal effort irrelevant and out of date. First, shrimp farming all but replaced rice paddies. Then, an outbreak of shrimp disease devastated family incomes and led to uncontrolled exploitation of forestry resources. Luckily for the coastal environment and the people's disaster vulnerability, the disease outbreak forced farmers to abandon their shrimp ponds in the tidal areas and to move further inland, where there was less chance of contaminating shellfish in the wild.[32] Having shrimp farmers move away from the seashore opened coastal areas to reforestation. Adding to the complexity, some of those areas that had been mapped as deforested had been replanted by State Forestry Enterprises supported by the Government's Program 661. Others that had been reforested five years earlier had been chopped down as aquaculture moved inland. By the time project staff started work, the forestry and farming situation had changed so much that the reconnaissance was highly unreliable and it had to be done again. Yet not knowing exactly *where* to work was just part of the problem, there were also issues regarding *how* to work.

3.44 Project staff interviewed admitted that the way they began replanting mangroves did not give good results in the most environmentally fragile areas. Several varieties of mangroves were planted along the beach and, slightly inland, taller indigenous species that look like casuarinas were put in to serve as a windbreak. The mangroves were planted in a two-stage process, seedlings spending their first months in project-managed nurseries and then, when they reached a height where they no longer needed special attention to survive, they were still short enough that they could essentially be just shoved into the sand along the beach. For this approach to work required good luck and, more importantly, good weather. But the project area is a storm-tossed coast, with frequent rough seas, high tides, and strong along-shore currents. The mission visited one coastal zone in Bac Lieu province where mangroves had been replanted. Not only was there not a single surviving mangrove to be seen, without the mangroves to hold the beach in place, there were many areas where, over the years, the coast had washed/worn away. Sometimes as much as 100 meters seemed to be gone where sea action found a weak spot and worked its way inland. Without further actions the sea dikes protecting the resettlement zones could soon be at risk. As long as the land did not wash away, the casuarinas seemed to do all right. Villagers indicated to the mission how far out onto the mud flats mangroves had been replanted, and also pointed out pieces of the sign that had been put up to draw attention to the replanted area. The sign had been knocked down by wave action, it was splintered into many pieces, and it would soon be indistinguishable from driftwood.

3.45 To be really successful replanting in the more challenging areas requires letting the mangrove seedlings spend more time in the nursery, according to staff that accompanied the mission. When they eventually become too big to be put into the sand

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32 Farmers have discovered that removing all the water from the ponds and letting them sun dry between harvests effectively sanitizes the ponds and kills of the pathogens.

manually, they can (and should) be planted using a hand augur to set them deep enough to resist wave action. But even then a severe storm that came before the roots could take a firm hold in the sand would take out enough of them to require yet another replanting. In some places, replanting took place twice before the trees took hold, although in others zones project staff gave up: no replanting with larger trees took place and little or nothing is left of the work that was done. Reforestation was not the only project activity that was difficult to get right, however, and then there was the question of who was actually going to be doing the work.

3.46 The project involved a whole range of activities that were unfamiliar to local institutions. To compensate for weak institutional capacity and complex tasks, the project design called for the employment of 500 new staff to support community organization, resettlement, technology transfer, and the reforestation effort. Staff from the central to the provincial and even village levels were to be hired together under a single TA contract.

3.47 After Board approval, having the loan proceeds available for project activities did not really help to get things started as long as 500 critical positions remained unfilled and the geographic areas where work was to take place could not be clearly defined. A DANIDA grant was to cover the staffing aspect, but in the event it only became effective some 15 months after the credit approval (February 2001), causing serious implementation delays. The project has many significant achievements to its credit, but being ready to implement was not one of them.

3.48 As could be seen from the experiences of the other water projects described earlier in this report, there were huge differences in the level of achievement between project areas, with Soc Trang achieving far more than Bac Lieu in terms of environmental and livelihood restoration. The stabilization of the beach with mangroves along the coast in Soc Trang has turned the coast into an accretion zone, and the re-established mangroves have caused hatchlings to return, improving catches using artisanal fishing methods. In contrast, in the areas of Bac Lieu visited by the mission the replanted mangroves have largely been washed away and the coast is eroding rapidly. The mission was strongly discouraged from visiting the resettlement sites in that province. In Soc Tran, in contrast, resettlement has been a resounding success: most houses have been improved since handover with the beneficiaries' own funds, and most householders earn a good living from agriculture and aquaculture in the lots they have received under the project.

3.49 Creating a capacity and willingness to protect the environment was an extremely important achievement. It has been noted there was a decline in barren coastal areas as a result of project activities in Soc Trang. Protection contracts given out to smallholders made this achievement sustainable by effectively protecting mangroves. As long as the trees remain, the zones around their roots are protected from the violence of the sea, creating breeding grounds for fish and shellfish. Sea crabs and clams re-appeared in some places and increased in others (most obviously at My Long Nam commune in Tra Vinh).

3.50 The Dat Mui Nature Reserve (which was merged with Ong Trang nature reserve and Bai Boi fish sanctuary) was upgraded to national park status, and a park management

plan was prepared. Improved environmental awareness among local forest rangers helps protect the park area.

3.51 The project permanently resolved landlessness and livelihood problems for about 2,000 families. Average per capita incomes have increased steadily in all provinces and poverty rates have decreased significantly. According to surveys undertaken shortly before the project closed, poverty rates in vulnerable communes had decreased by 38 percent and average annual incomes had increased by 55 percent. So, although the first year and a quarter was devoid of progress, having hundreds of new staff come on board meant that the last four years of implementation led to significant positive environmental and social impacts, and new employment opportunities. Cottage industries established under the project, including a women's basket making project visited by the mission, that incorporates several villages and uses invasive plants (hyacinths) to good purpose. Poultry and fish farming projects were other major income earning successes, and a pig-raising project is in its early stages, although results look promising.

3.52 Social aspects of the project created the enabling environment that protected the reforested area. In the sites visited, there is no question that the resettled households are much better off than they were before. People showed the mission where they used to live. It was on land so low and so near the sea that even slightly higher than normal tides caused flooding. Numerous families visited in their new homes mentioned that the quality of their lives in the new resettlement sites is much better now. With improvements in access to critical infrastructure, road networks, and markets, it is much easier to earn a living through commerce. There are many small stores in the resettled villages, some providing distinctive products such as veterinary medicine, yard goods, and cosmetics. Most resettled households have ponds that are used for fish or shrimp cultivation. And many have poultry. A few village leaders have gone into pig production. Women received special training on livestock raising and credit was made available to them under the project. Improvements in health and sanitation conditions, literacy and other social aspects particularly benefited women and children.

3.53 An ethnic minority development plan focused on 17 Khmer pagodas and their congregations. The plan, developed using participatory techniques, included the upgrading of classrooms for Khmer children, the construction of crematoria, and the procurement of Khmer traditional racing boats and musical instruments used in festivals. In total, an estimated 5,000 Khmer minority households have benefited. Site visits revealed that the effort was well received by the community and highly appreciated by local Khmer religious leaders. Khmer communes significantly improved their quality of life which helped them to better integrate into Vietnamese society. In return for project support to their pagodas, religious authorities in some sites have spoken strongly to their congregants about the importance of protecting the reforested sites. A monk in one site mentioned to the mission that in his village, people still are not convinced and they cut down more trees than they should.

3.54 Improved land tenure was granted to farmers living in the buffer zones through the issuance of certificates granting land use rights for residential and productive lands. The mission wanted to make sure this had happened and asked several household to

produce their certificates—all were able to do so. Access to commercial credit from various sources was improved. Altogether, the RF provided loans of around a total of VND 14.2 billion (equivalent to US$0.9 million) to more than 5,200 poor households in the project area. The project made a particular effort to ensure that land certificates included the names of husband and wife, which gave them an equal say over the use of the land and the decision on whether it should be used for collateral. Diversifying crops and animal husbandry (especially the increased attention to fish production, which is subject to less production risks and market vagaries), not to mention the reduced vulnerability to storms and the sea, has reduced the risks to which all project beneficiaries are now subject.

4. Ratings for the Irrigation Rehabilitation Project

RELEVANCE

4.1 The current Bank Group Country Partnership Strategy (CPS) was designed to be fully aligned to Vietnam's tenth Socio Economic Development Plan (SEDP). The SEDP sets out four broad objectives, which in turn are the organizing principles of the CPS:

(a) Improve the business environment;
(b) Strengthen social inclusion;
(c) Strengthen natural resource and environment management; and
(d) Improve governance.

4.2 As organizing principles they are known as pillars. This project can be seen as providing support for Pillar 1. According to the strategy, improving the business environment will involve improved competitiveness with full integration of Vietnam in the world economy, including enhanced agricultural competitiveness, and more efficient and reliable provision of infrastructure services. Not only is this integral to the project, project funded activities can also be seen as providing support for Pillar 2: Strengthening Social Inclusion. Priorities for Bank Group currently include increasing access to quality, basic infrastructure services for the rural poor.

4.3 The relevance of project objectives is rated **high**. The project objectives were consistent with GoV priorities for the sub-sector as well as the Bank's first CAS at the time of approval. The 2002 CAS and the Comprehensive Poverty Reduction and Growth Strategy (CPRGS, as the PRSP is called in Vietnam) developed three themes, two of which were highly relevant to this project: 1) high growth through a transition to a market economy; 2) an equitable, socially inclusive, and sustainable pattern of growth; and 3) adoption of a modern public administration, legal, and governance system. The CAS notes that around the three cross-sectoral themes, the Bank Group program should continue to operate at the sectoral level, and continue to promote rural and urban development, and investment in human resources and physical infrastructure. Activities

were clearly aligned with the objectives, and the project design incorporated lessons from previous experience.

4.4 The relevance of project design is rated **substantial**. Project design took account of the organizational arrangements and capacities of the State Owned Enterprises and the implementing agencies that were emerging and helped their transition to the market economy.

4.5 In light of the above, the PPAR rates relevance as **substantial**.

EFFICACY

4.6 Objective - *to increase agricultural production (primarily of rice for food) and farmer incomes, and to reduce poverty in selected rural areas of Vietnam*: **substantial**.

4.7 The project produced substantial socioeconomic benefits, although it was clearly fortuitous that it coincided with a liberalization of markets and the empowerment of individual farmers in terms of cropping decisions. The final agricultural production achievements generally exceeded the appraisal targets: the irrigated area was 103 percent of the target: the increment in annual rice output was 144 percent of the target; and maize produced was 150 percent of the target. The project benefited 338,000 families (108 percent of the target). The impact of the project on farm incomes has been substantial. At the ICR, the incremental net annual income of farm households which adopted improved irrigation and technology under the project has been raised by US$86 (about 246% of SAR) in Cam Thuy, US$12.4 (about 17.2% of SAR) in South Nghe An, US$52.1 (about 75.6% of SAR) in Linh Cam, US$69 (about 82.1% of SAR) in An Trach, US$152 (about 175% of SAR) in Thach Nham, US$17 (about 188.9% of SAR) in Dong Cam, and US$78.9 (not available in SAR) in the Hoc Mon - North Binh Chanh subproject area. The overall average net farm income for farm households in 7 original subproject areas has increased about US$66.8 (about 112% of SAR). This indicates strong financial incentives for farmers to participate in the project. While average incomes of farmers went up substantially, it is not clear the extent to which overall poverty was reduced in this area.

4.8 In addition, the project provided numerous, non-quantifiable social and environmental benefits, including an increase in the reliability of water delivery, enhanced drainage, improved road access to communities, and improved dam safety. Repair to flood-damaged irrigation systems in 1998, 1999 and 2000 was an additional benefit. The project was also expected to provide salinity intrusion protection, and although it could have done so, it did not: the emergence of aquaculture and what is known as the rice-fish approach—fish thrive in rice fields irrigated with slightly saline water—made that no longer relevant.

EFFICIENCY

4.9 Economic analysis conducted following credit closing showed an overall ERR of 19 percent for the seven original subprojects (compared with the 17 percent at SAR) and an ERR of 20 percent for the seven additional subprojects, leading this PPAR to conclude that the project's efficiency was **substantial**.

OUTCOME

4.10 The overall project outcome is rated **satisfactory** (Table 4). As was noted above, the overall economic rate of return was 19 percent. The Borrower overcame a number of significant challenges including unfamiliarity with Bank procedures, and the challenge of managing a large number of subprojects. The provision of technical assistance to geographically-dispersed farmers achieved considerable agricultural production gains with a direct impact on rural incomes. Careful project management led to substantial cost savings, and permitted implementers to expand the scope of the project.

Table 4. Development Objective and Outcome for the Irrigation Rehabilitation Project

Development Objective	Relevance	Efficacy	Efficiency
To increase agricultural production (primarily of rice for food) and farmer incomes, and to reduce poverty in selected rural areas of Vietnam.	Substantial	Substantial	Substantial
Overall Project Outcome		**Satisfactory**	

RISK TO DEVELOPMENT OUTCOME

4.11 Water use fees for most farmers have been abolished. In the face of a government decision to pay budget support directly to the IMCs, institutional sustainability for future operations is considered adequate. The PPAR notes, however, that results of this decision has been that the IMCs are much more concerned with supplying the industrial users than farmers. Non-farm users still pay them directly, and at high rates. As long as the GoV keeps the amount it pays the IMCs in line with expenses, and especially energy costs, risks for the continued delivery of O&M and water management services through the IMCs are controlled. In light of the impacts of training given, current trends in food prices, and continued attention to maintenance, the risk to development outcome is considered to be **moderate**.

BANK PERFORMANCE

4.12 Bank performance in ensuring quality at entry is rated **satisfactory**. The preparation work culminating in appraisal built on the best available knowledge. The ICR notes that the attention paid to managing resettlement issues at entry and during implementation was more than adequate, and that the RAP was a model for subsequent projects and even for non-Bank efforts. This could not be verified by the mission because it had taken place more than a decade previously and the character of the areas visited had been dramatically altered by the expansion of HCMC and industrialization that had taken place in the interim. Attention to the special environmental conditions in the Mekong Delta Region was also commendable. Bank performance during project preparation is rated as satisfactory.

4.13 Quality of Bank supervision during implementation is rated **satisfactory**. Reportedly Bank missions were regular and timely, cooperation with the implementing agency was good, especially in terms of bringing key staff up to speed with Bank

procedures which were totally new to them. Supervision performance is rated as satisfactory.

4.14 The overall Bank performance is rated **satisfactory**. Having key members of the project task team in the Hanoi Resident Mission facilitated their frequent access to the field, and direct communication with the borrower facilitated timely mid-course corrections and avoided problems.

BORROWER PERFORMANCE

4.15 Government implementation performance is rated **satisfactory**: Although the Borrower was unfamiliar with the Bank, its involvement in and contributions to project preparation were fully satisfactory. Relevant technical, institutional, environmental and social issues were systematically addressed, and the planning and coordination of activities was well handled.

4.16 The implementing agency's performance is rated **satisfactory**: Bank staff note that the Central Projects Office (CPO) performance improved steadily. On-the-job learning needed to take place and it did. Financial management still needed further strengthening by project closing, however.

4.17 The overall Borrower performance is rated **satisfactory** because the Ministry of Agriculture and Rural Development, the Central Projects Office, the Sub-project Implementation Office and Irrigation Management Company showed commendable flexibility. Their determination and commitment to successful outcomes carried the day. Most project targets have been achieved at or below budget and to an acceptable standard of quality. Numerous additional tasks were also completed due to unforeseen risks and natural hazards.

M&E DESIGN, IMPLEMENTATION, AND UTILIZATION

4.18 The overall quality of project monitoring and evaluation is rated **substantial.**

4.19 *M&E Design.* The Central Project Office (CPO) was expected to monitor, evaluate and report project physical and financial progress of activities to be implemented under the project. As designed at the outset, the M&E system could only provide decision-makers with information on the status of inputs and outputs and not on outcomes or impacts. No performance measurement framework was included in the SAR that demonstrated the results chain, linking project objectives to outputs, outcomes, and impacts. However, provisions in the SAR elucidate how the M&E system needed to be established during project implementation. Baseline information and key indicators were to be identified in Subproject Implementation Plans (SIP) and the CPO was to develop and implement a computerized monitoring, evaluation and reporting system (M&E). The focus was on progress and impact of works construction, implementation of resettlement and environmental action plans. O&M costs and irrigation fees, water use and efficiency, crop areas, yields and production and farmer incomes were also to be monitored. The information was to be collected at the provincial level. In addition, on the job training in monitoring and evaluation was to be provided by consultants.

4.20 *M&E Implementation.* A detailed performance measurement framework with output and outcome indicators was developed during implementation. The framework links outcome indictors to objectives and output indicators to components, thus demonstrating a clear results chain. The plan was fully implemented, providing support for sustainable improvements in agricultural productivity as well as social benefits. In addition, the project's environmental action plan helped to mitigate the impacts during construction and operation.

4.21 *M&E Utilization.* A specific Environmental Monitoring Program was carried out for the Hoc Mon-North Binh Chanh sub-project as part of the safeguards policy activities because of special soil and groundwater conditions prevailing there. Reports from the environmental monitoring contractor showed that soil salinity and water pollution levels had been reduced, although they were inconclusive on soil acidity due to cyclical fluctuations in observed values.

OTHER ISSUES (SAFEGUARD COMPLIANCE, FIDUCIARY COMPLIANCE, AND UNINTENDED POSITIVE/NEGATIVE IMPACTS)

4.22 The project triggered three safeguards: 1) OP/BP 4.01 on the environment, 2) OP/BP 4.12 on involuntary resettlement, and 3) OP/BP 4.37 on the safety of dams. They were fully complied with.

4.23 *OP/BP 4.01 – Environmental Assessment.* An Environmental Action Plan was approved by the Bank. Environmental monitoring of compliance with the action plan and water quality in the Hoc Mon-North Binh Chanh subproject was requested by the Bank. Monitoring was undertaken to determine potential physical, chemical and socioeconomic impacts. It was determined that civil works did not measurably affect the environment, plants or domestic animals; and that ultimately the completed structures helped to improve water quality by reducing levels of metals and flooding.

4.24 *OP/BP 4.12 – Involuntary Resettlement.* A Resettlement Action Plan (the first of its kind to be executed by the Ministry of Agriculture) was successfully implemented. The principles of the Resettlement Action Plans were largely complied with in a timely and efficient manner by the organizational structures and systems established for this purpose. Eligibility criteria for beneficiaries were followed.

4.25 *OP/BP 4.37 – Safety of Dams.* A dam safety improvement activity that was included at appraisal was expanded following the acute floods of 1998 and 1999. Specifically, the project provided dam safety inspection of the Thung Bang, Dau Tieng, Lower Yazul and Hinh dams. A technical evaluation by an independent panel of experts was provided by Hanoi University of Water Resources experts. It determined that national and World Bank dam safety standards had been met. Following the 1998 floods, it was decided to support further improvements in dam safety and associated irrigation systems in Phu Ninh, Liet Son, Hoa My and Vuc Tron, as part of the additional scope of work. International technical expertise was provided for this activity, which was paid for by the Government of Italy.

4.26 Reservoir rehabilitation and improved dam safety features typically included: installation of additional spillways and spillway gate-hoists with fail-safe, emergency actuators to increase flood retention and spill capacity. Dam slope erosion protection was addressed, as was improved drainage.

5. Ratings for the Water Supply Project

RELEVANCE

5.1 At appraisal, the WSP was closely aligned to the 1997-2001 CAS that identified the need to upgrade infrastructure to tackle bottlenecks to development, the need to transition to a market economy, and the need for reform of state enterprises. The 2002-2006 CAS continued these objectives. With regard to the current Country Partnership Strategy (CPS), this project can be seen as providing support for more efficient and reliable provision of infrastructure services, improving infrastructure to address the needs of the urban poor, and reducing vulnerability to adverse shocks, including diseases. These are all strategic priorities.

5.2 The relevance of project objectives is rated **high**. The project objectives fully supported the Government's sector strategy for urban water supply which was based on analytical and advisory (AAA) work supported by the World Bank and the United Nations Development Programme (UNDP) in 1990 and the Finnish Government in 1994. The main thrust of the strategy was to consolidate and expand access to basic water supply services to meet the demands of rapid urbanization, and to facilitate growth in foreign investment and tourism.

5.3 The relevance of project design is rated **substantial**. The design of the project was conventional for the sector and included a mix of activities shown to be effective for agencies in similar Bank-supported projects. The design recognized that the WSCs had very limited experience of implementing international contracts and attempted to ameliorate this by including all construction in a single contract for each city and providing significant construction management support by international consultants.

5.4 In light of the above, the PPAR rates relevance as **substantial**.

EFFICACY

5.5 Objective 1 - *to improve the quality of water services* – had **substantial** achievement. The three participating cities met their physical targets and all performance indicators for each city were exceeded (see Table 3 and *paras* 3.13-23). The PPAR accepts the ICR reasoning for not including Danang in the assessment—that is, that Danang never started and received no Bank financing.

5.6 Objective 2 – *to ensure sustainability of the physical investments by developing the WSCs' institutional capabilities and staff skills, and facilitating commercialization of*

the WSCs – had **high** achievement (see Figures 3-5). Institutional capabilities and staff skills improved substantially. The following were introduced: computerized billing and collection systems, customer management systems, a GIS water management and monitoring system, O&M manuals, and standardized budgeting procedures. Training included study tours to other utilities abroad. A corporate planning system was also developed as a basis for future annual work plan agreements with city authorities. These developments, together with the financial achievements described in the previous chapter, provide a strong base for the WSCs' future sustainability.

5.7 Objective 3 – *to assist preparation of a future water investment plan* – had **modest** achievements. Only Haiphong prepared an investment plan, the other two cities preferring to use the intended funds for institutional development instead. However, the additional funding for institutional development contributes to Objective 2.

5.8 Based on the above, this PPAR rates efficacy as **substantial**.

EFFICIENCY

5.9 The project's overall economic rate of return (ERR) as recalculated in the ICR was 13.9 percent, compared with 16.7 percent as estimated at appraisal. The ICR's re-estimated ERRs by individual cities were 17.9 percent for Hanoi, 12.2 percent for Haiphong and 2.1 percent for Quang Ninh. The ERRs by city estimated at appraisal were 19.2 percent, for Hanoi, 24.4 percent for Haiphong, and 12 percent for Quang Ninh. The reduced ERRs were due to the extension of the actual construction period and, in particular, the higher than expected operating costs. Therefore, the PPAR rates efficiency as **substantial**.

OUTCOME

5.10 The overall project outcome is rated **satisfactory** (Table 5). The project addressed Vietnam's need to expand access to basic water supply services. During implementation, the total number of connections more than doubled, going from 275,000 to 630,000. The sustainability of physical investments was ensured by developing institutional capabilities and staff skills, and by facilitating commercialization. While utilities were subsidized in the beginning, by the end they were all able to recover their operations and maintenance costs and make payments on the Bank loan.

Table 5. Development Objective and Outcome for the Irrigation Rehabilitation Project

Development Objective	Relevance	Efficacy	Efficiency
(a) To improve the quality of water supply services in Hanoi, Haiphong, Quang Ninh and Danang through renovation of existing facilities in order to satisfy the demand of about 2.5 million people up to the year 2000. (b)To ensure sustainability of the physical in-vestments by developing the institutional capabilities of the Provincial Water Supply Companies (WSCs), facilitating their commercialization and upgrading their staff skills through training. (c) To assist in pre-paration of a future investment program to satisfy water demand after 2000.	Substantial	Substantial	Substantial
Overall Project Outcome		**Satisfactory**	

RISK TO DEVELOPMENT OUTCOME

5.11 Risk to development is rated **moderate**. Water sector policies have been reformed, Water Supply Companies (WSCs) had their institutional capacity strengthened, and their O&M capacity improved. However, although WSCs demonstrated solid financial performance, the assumption made on the national government's willingness to allow them to raise tariffs was overly optimistic, given the inflationary spiral that ensued, and the GoV's desire to protect the poor from the worst effects of the economic downturn. It is assumed that the tariff freeze will be of short duration, however, and that the government's longer-term interest is in ensuring the utilities self-sufficiency.

5.12 The measures introduced to protect and monitor the quality of raw water supplies are an important first step. The risks posed by an accidental spillage of hazardous materials still loom, and in the longer term establishing protected areas around water intakes and in the catchment areas will not be sufficient without a broader and more inter-sectoral push to reduce pollutant discharges. The measures carried out on Cao Van Dam in Quang Ninh to bring it up to international design standards are important in terms of increasing the reliability of the water source, as well as protecting the lives of people living downstream from the dam.

BANK PERFORMANCE

5.13 The overall Bank performance is rated **satisfactory**. The project benefited from staff continuity from preparation through supervision. Multi-sector teams covering a range of critical activities were made available to the water companies at critical stages of the project. Coordination was good with the three bilateral co-financiers. The team also arranged information exchange workshops to enable the companies to learn from one another. The work carried out on this project, and the establishment of the water team in the Resident Mission, were both influential in the Bank's productive long-term engagement in Vietnam's water sector, and this has delivered benefits well beyond the objectives of this initial intervention.

5.14 Bank performance in ensuring quality at entry is rated **satisfactory**. The project was based on an appropriate and effective sector strategy. And more importantly, by the time the project was presented to the Board detailed designs and bidding documents were available for around 70% of the works.

5.15 Quality of supervision is rated **highly satisfactory**. The project benefitted from staff continuity and decentralization of the supervision function to the country office. Remedial measures, if needed, were quickly carried out because the team was able to follow up by phone and short visits. Mission reporting was regular with richly detailed back-to-office reports with sound recommendations produced for each subproject in both English and Vietnamese.

BORROWER PERFORMANCE

5.16 The overall Borrower performance is rated **satisfactory**. The WSCs can bee seen as both the borrowers and the implementing agencies in this project. The WSCs were effective and proactive, and consultant inputs were used effectively. Haiphong in particular performed very well. Contract implementation was generally carried out within budget and on time. Resettlement and land acquisition was carried out in accordance with the approved resettlement action plans. Long procurement delays were a result of GoV procedures that involve sequential and often redundant reviews of designs and contract awards at the local and central levels. The Ministry of Planning and Investment (MPI), acted on behalf of central government to oversee implementation was effective in coordinating project supervision, chairing wrap-up meetings for supervision missions, and providing guidance to the implementing agencies. Counterpart funds were provided on time.

5.17 Government performance is rated **moderately satisfactory**. This moderately satisfactory rating is justified because of the long procurement delays at the central level. These were a result of GOV's procedures which require multiple, often redundant, reviews of designs and contract awards at local and central levels prior to submission to the Prime Minister for approval.

5.18 The implementing agency's performance is rated **satisfactory**. Implementation was generally carried out within budget and on time. Counterpart funds were allocated on time and resettlement and land acquisition was carried out in accordance with the approved resettlement action plans.

M&E DESIGN, IMPLEMENTATION, AND UTILIZATION

5.19 The overall quality of project monitoring and evaluation is rated **substantial**.

5.20 *M&E design.* Performance was to be monitored against an implementation schedule and a project implementation plan, while the agencies' operational, financial and managerial performance was to be assessed against monitoring indicators. The key performance indicators are percentage of NRW, number of household connections, and the working ratio. These relate, respectively, to the desired project goals of rehabilitating the networks, expanding coverage, and improving financial performance of the WSCs.

5.21 *M&E implementation and utilization.* During project implementation, the three WSCs developed good management information systems to monitor all aspects of water supply, performance, billing and financial and corporate management, and their systems were also able to monitor the performance indicators. And they have continued to use them post-closing, and for that reason were able to provide current figures for the PPAR.

OTHER ISSUES (SAFEGUARD COMPLIANCE, FIDUCIARY COMPLIANCE, AND UNINTENDED POSITIVE/NEGATIVE IMPACTS)

5.22 The Vietnam Water Supply Project triggered the following two safeguards: 1) OP/BP 4.12 on involuntary resettlement, and 2) OP/BP 4.37 on the safety of dams. They were fully complied with.

5.23 Resettlement required relocation of only 130 households, and the ICR indicates that appropriate compensation was provided, which was anecdotally confirmed. A dam that risked overtopping is reported in the ICR to have been brought up to international design standards.

6. Ratings for the Inland Waterways and Ports Project

RELEVANCE

6.1 Relevance of project objectives is rated **high**. The project objectives were highly relevant at the time of preparation. Inland waterways in Vietnam's Mekong Delta carried over 70% of the total freight traffic, however the waterways' capacity and safety was declining. The Bank's Country Assistance Strategy (1995) prioritized the rehabilitation of the basic transport infrastructure and strengthening the public sector institutions responsible for infrastructure provision and management. Project objectives continue to be relevant when judged against the current Country Partnership Strategy which aims at reducing logistics and transportation costs and improving transport efficiency.

6.2 The project was consistent with the Government's Mekong Delta Master Plan which identified the priority investments for rehabilitating the main inland waterways of the Mekong Delta as well as the regional port.

6.3 The relevance of project design was **substantial**. The project components were clearly linked to the achievement of project objectives. Appropriate performance indicators were developed except for tracking safety where targets were not set. The design of the project took into account the potential negative environmental impacts and the need for resettlement. However, the method of payment of compensation for resettlement was not addressed during preparation which caused substantial delays during implementation.

6.4 This PPAR rates relevance of the Inland Waterways and Ports Project as **substantial** in view of the high relevance of project objectives and moderate shortcomings with respect to project design.

EFFICACY

6.5 Objective 1 – *to enhance the safety and traffic carrying capacity of the two main inland waterway routes connecting the Mekong Delta with Ho Chi Minh City (HCMC)*: **high**. Safety was improved and the accidents on project waterways dropped from 0.0034 per hundred vessels in 2000 to 0.0023 in 2005, a 32 percent decline. The traffic carrying capacity of the two main inland waterway routes has increased significantly.[33] The throughput of the Can Tho Port increased commensurately. The travel distance of the two main routes was shortened by 50 km thereby reducing the transport costs by an estimated US$2 per ton.

6.6 Objective 2 – *to rehabilitate and improve the Port of Can Tho to improve the efficiency of cargo transshipment and distribution*: **high**.

6.7 The entire area at Can Tho Port was paved. Bumpers were implemented and berths and cranes were improved. This facilitates transshipment of the mostly loose goods, such as construction material, seafood, and rice. Fees for the thousands of ships using the inland waterways were eliminated. This increased efficiency since fees were small and tedious to collect.

6.8 Objective 3 – *to improve the institutions involved so they can better plan, administer, operate and maintain the inland waterway system in the Mekong Delta*: **substantial**.

- The project financed the development of a River Management Information System to better plan and manage the waterways network in the Mekong Delta.
- The staff skills were improved through training in waterways and port management.
- Training simulators were provided for the Inland Waterways Training School to train vessel and port handling equipment operators.
- The project financed equipment for more efficient operations and maintenance of the waterways systems. This included vessels and workshop equipment to support maintenance of navigation aids and other waterways facilities.
- A feasibility study on improving the navigation at the Bassac River was carried out.

6.9 Based on the above, this PPAR rates efficacy as **substantial**.

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33 The average daily cargo traffic increased 237 percent at Cho Gao, 48 percent at Rach Gia and 180 percent at Vi Thanh.

EFFICIENCY

6.10 The ex-post ERR for the two main corridors HCMC to Ha Tien and Cho Lach to Nam Can are >50 percent and 29 percent respectively compared to appraisal estimates of 27 percent and 24 percent. For the waterways improvement component the ex-post ERR is >50 percent, much higher than expected than the appraisal estimate of 26 percent. These very high rates of return for HCMC to Ha Tien corridor and the waterway component are largely because of the high traffic growth in the Chao Canal, the main route from the Delta to HCMC. The ex-post Financial Rate of Return is 24 percent compared to the appraisal estimate of 17.8 percent. Therefore, the PPAR rates efficiency as **substantial.**

OUTCOME

6.11 The overall project outcome is rated as **satisfactory** (see Table 6). Before the project, inland waterways in Vietnam's Mekong Delta carried over 70 percent of the total freight traffic; however, the waterways' capacity and safety was declining. In response, the Inland Waterways and Port Project improved Can Tho Port, canals, and waterways, and contributed to a large increase in waterway traffic and transported cargo. In 1995, 23.5 million tons of cargo was carried through the inland waterway. By 2004, the last year for which data is available, 55 million tons of cargo was transported through the waterways. During the five-year period between 2000 and 2004, the annual average increase in cargo exceeded 8 percent. On-ground towers and beacons were installed as aids to navigation. Waterway operations have also benefitted from better police enforcement rules, and the accident rate has gone down. A recent government decree eliminated fees for the thousands of ships using the inland waterways, which increased efficiency. At project closing, profitability of Can Tho Port was not up to appraisal expectation. In the time between the ICR and PPAR missions, however, operating revenue at Can Tho grew sixfold.

Table 6. Development Objective and Outcome for the Irrigation Rehabilitation Project

Development Objective	Relevance	Efficacy	Efficiency
The project's overarching development objective was to enhance the capacity, efficiency and safety of inland waterway transport in the Mekong Delta.	Substantial	Substantial	Substantial
Overall Project Outcome		**Satisfactory**	

RISK TO DEVELOPMENT OUTCOME

6.12 Risk to development is rated **moderate**. Most of the planned outcomes were achieved by project completion although the Can Tho port's journey to profitability took a few years longer. The project's primary risk continues to be the inadequacy of funding for maintenance. Proper maintenance of the waterways requires an estimated US$1,900 per km annually. Budgetary allocations to Vietnam Inland Waterways Administration - Southern Department are lower than the amount needed, and more attention to bank stability is required if maintenance costs have any hope of remaining at the current level.

On the other hand, the likelihood of the government allowing the canals to return to their former condition is negligible. They will be kept in operational condition and economies will be made by leaving the canal banks in poor condition, which is an inconvenience but not a serious threat.

BANK PERFORMANCE

6.13 The overall Bank performance is rated **moderately satisfactory**. The project objectives were highly relevant for improving Vietnam's inland waterways and their management. The Bank team paid adequate attention to environmental and social aspects. However there were few shortcomings. During preparation full agreement was not reached between the government and the Bank on the eligibility of state owned enterprises to participate in civil works contracts. Compensation issues could have received more attention.

6.14 Bank performance in ensuring quality at entry is rated **moderately satisfactory**. The design of the project and the approach taken in planning its implementation was highly relevant to the development strategy for improving the country's inland waterways and their management. However, during preparation full agreement was not reached between the government and IDA on the eligibility of state owned enterprises to participate in civil works contracts. This was to prove a significant cause of delay in subsequent implementation and as such this rating is lower than the QAG quality at entry review, which rated the project as excellent at entry for the attention paid to environmental and social issues.

6.15 The quality of Bank supervision was **satisfactory**. Issues that emerged during implementation were attended efficiently and promptly. Compliance with safeguard and fiduciary policies was closely monitored. Regarding the merger of Can Tho and Saigon Ports the supervision team could have been more proactive in addressing the unexpected merger by advising on its viability. The profitability issue surrounding the port thankfully resolved itself.

BORROWER PERFORMANCE

6.16 The overall Borrower performance is rated **moderately satisfactory**. This rating is based on the Borrower's commitment to the project, its oversight and monitoring of project implementation and the nature and timing of its interventions in support of the project. One weakness was the lack of advance information to the Bank, as a key financier of the port, for the Can Tho port expansion plans and the subsequent merger with Saigon port.

6.17 Government performance is rated **moderately satisfactory**. The Government failed to provide the Bank with advance information on Can Tho port expansion plans and the subsequent merger with Saigon port. The performance of the implementing agency was satisfactory.

6.18 The implementing agency's performance is rated **satisfactory**. The project management unit (PMU-W) was newly established. It successfully managed 36 civil

works and equipment supply contracts and some 30 contracts relating to resettlement and the monitoring of environmental and social impacts over a wide geographical area. The PMU-W completed the project with outputs in excess of planned targets and at a cost that was less than estimated. Although the project was completed later than expected, the delay was largely not attributable to any shortcoming on the part of PMU-W.

M&E Design, Implementation, and Utilization

6.19 The overall quality of project monitoring and evaluation is rated **modest**.

6.20 *M&E Design.* M&E design was satisfactory. The indicators developed at appraisal were appropriate for monitoring the outcome of the project. These included: (a) increase in average daily cargo traffic at selected locations along the project waterways; (b) increase in throughput of the Can Tho Port; and (c) financial performance of Can Tho Port, in terms of increased operating profits. How improvements in traffic safety would be monitored was not adequately addressed.

6.21 *M&E Implementation.* M&E implementation was inadequate largely because the data collection was weak. The volume of shipping and cargo carried on the waterways (used by the ICR) was obtained through a physical count of vessels at nominated spots over a period of a few days while the volume of cargo is verbally declared by the vessels' operators and then projected to arrive at the annual traffic volume. Had channel fees been collected data gathering would have been automatic.

6.22 *M&E Utilization.* According to the ICR, the River Management Information System financed under the project will provide a more systematic approach to data collection and analysis. The proposed Mekong Transport Infrastructure Development Project (MTIDP) will follow through on the development and use of this system with the aim of providing even more reliable planning data.

Other Issues (safeguard compliance, fiduciary compliance, and unintended positive/negative impacts)

6.23 The assignment of Category A was appropriate as the project involved a waterways improvement component that could adversely affect agriculture, fisheries and aquatic life. Also, waterway widening and related disposal would involve land acquisition which would require resettlement of affected households. At appraisal an environmental assessment (EA) was carried out for the Waterways Improvements Component, an environmental analysis was conducted for the Can Tho Port component, and a Resettlement Action Plan was prepared.

6.24 During implementation the environmental management requirements for dredging work were integrated into the contracts as a part of technical specifications. One of the main concerns related to the dredging of acid sulphate soil and its potential impact on fisheries and agriculture. The ICR notes that the mitigation measures were good and, in general, adverse impacts were lower than expected. The PPAR mission heard not complaints, and found no visual evidence a decade after dredging took place. The

Environmental monitoring was carried out in accordance with the Environmental Management Action Plan (EMAP).

6.25 Resettlement was carried out in accordance with the Resettlement Action Plans. A total of 7,215 (compared to 5,000 projected at appraisal) project affected families were compensated in accordance with Bank guidelines and governmental stipulations. This is largely due to the increase in the scope of work and as a result of limited identification of spoil disposal sites at the time of appraisal. There were some complaints at a resettlement site where utilities had not been installed in a timely fashion but these issues were resolved before project completion.

6.26 Fiduciary: Compliance was satisfactory.

6.27 Unintended Impacts: At selected sites the dredged material was used by local communities to raise their land above the flood water level, thus reducing potential damage due to floods and enhancing its value.

7. Ratings for the Coastal Wetlands Protection Project

RELEVANCE

7.1 Relevance of project objectives is rated **high**. The objective of the project has maintained its overall relevance and remained fully consistent with the country's development priorities and the Bank's Country and Sectoral Assistance Strategies. With regard to the current Country Partnership Strategy (CPS), this project can be seen as providing support for strengthening social inclusion, one of the four pillars. Priorities for Bank Group support include the mainstreaming of gender issues and this project provided land title and income generation to women. Empowering ethnic minorities in the development processes is another CPS priority. Also, reducing vulnerability to natural hazards is called for in the strategy. Even more important, another Pillar is Strengthening Natural Resource and Environmental Management. This project was entirely focused on a range of challenges related to land, forestry, and water resources.

7.2 The Bank's Country Assistance Strategy (CAS) for Vietnam in the 1990s identified five areas in which the Bank Group would need to shift support to: (a) a deeper focus on poverty and social issues; (b) clearer links between projects and policy dialogue; (c) broader partnerships and decentralized implementation; (d) redirection of lending towards rural development; and (e) better aid coordination and a transition towards program financing. The project contributed to this shift in all five areas.

7.3 The relevance of project design is rated **modest**. There were two key weaknesses in project design: (1) a poor appreciation of the institutional arrangements of the forest sector especially in terms of what Program 661 was going to do. Procurement delays in

turn contributed complexity to what was already a challenging implementation environment; and (2) the lack of reliable land survey on which to base the assessment of mangrove planting needs. The project design was too complex institutionally for provinces with weak absorptive capacity. Moreover, it called for the employment of 500 new staff under a single TA contract. Virtually all of the project implementation depended on one contract, which only became effective some 15 months after the approval of the IDA Credit, thus severely handicapping implementation.

7.4 In light of the above, relevance is rated as **substantial**.

EFFICACY

7.5 The Project Development Objective (PDO) called for action in two areas: 1) the re-establishment of the coastal mangrove wetland ecosystems and 2) the sustainable protection of the aquatic environment and coastal protection functions. The project achieved its development objective and met the revised targets.

7.6 Objective 1 - *to increase mangrove plantation and protection areas and decrease the extent of the barren areas in the zones requiring full protection*: **substantial**. An increase in mangrove plantation and protection areas took place in the FPZ. In the fully protected and buffer zone areas, 126,245 hectares of forest were replanted. Of those, Program 661 was responsible for about 100,000 (79.2 percent), while the rest was replanted under the Coastal Wetlands Protection Project. There was an improved institutional capacity for mangrove planting and protection at the local level due in part to the up-grading of forest guard stations with the necessary equipment for effective forest protection. Improved protection awareness among local communities led to a decline in forest law violations in the project area. Because of the replanted mangroves, coastal erosion was reduced by 40 percent in Ca Mau and the length and the area of coastline accreting was increased by 20 percent during the same period. Forest cover, which exercises a coastal protection function, increased from around 50 percent in 2000 to 96 percent in 2007 as a result of the project. Replanting in Bac Lieu was less successful, mostly because of heavy storms and flooding and poor planting techniques.

7.7 Objective 2 - *a decrease in barren areas in the FPZ*: **substantial**. There was a decline in barren coastal areas as a result of project activities. Protection contracts given out to smallholders effectively protected mangroves, and the zones around mangrove roots that were protected from the violence of the sea created breeding grounds for fish and shellfish. Sea crabs and shellfish re-appeared in some places and increased in others (most obviously at My Long Nam commune in Tra Vinh).

7.8 Objective 3 – *to improve the management and protection in the Mui Ca Mau national park*: **substantial**. The Dat Mui Nature Reserve was upgraded to national park status, and a sound management plan was prepared for the Park. Improved environmental awareness among local forest rangers helps protect the park area.

7.9 A reduction of the incidence of absolute poverty in the target area was caused by the implementation of an effective technology development and transfer program and the implementation of Resettlement Area Social Development Action Plan in those

communes that received re-settlers. According to surveys undertaken shortly before the project closed, poverty rates in vulnerable communes had decreased by 38 percent and average annual incomes had increased by 55 percent. Improved land tenure was granted to farmers living in the buffer zones through the issuance of certificates granting land use rights for residential and productive lands. Many informants noted that livelihoods became more sustainable after agriculture and aquaculture practices were improved for vulnerable groups in those zones. In the two resettled villages visited, all informants strongly stated how much better off they were after the project. Access to commercial credit from various sources was improved. The implementation of the SSP and EMDP in poor and Khmer communes significantly improved the quality of life for vulnerable groups and the Khmer minority.

7.10 Based on the above, this PPAR rates efficacy as **substantial**.

EFFICIENCY

7.11 An economic analysis carried out just before closing showed an Economic Rate of Return (ERR) for the overall project of 17 percent and a Net Present Value (NPV) of US$14.2 million compared to the ERR of 14 percent calculated at appraisal. The higher ERR is due principally to a combination of the reduced project costs (which were scaled down by US$10.2 million), the increased investments in smallholder credit and the impact of the technology transfer program. The long-term benefits from the increase in the land area (from reduced erosion and increased accretion) and the restoration of the mangrove systems in the project area (which are difficult to quantify) are not reflected in this analysis. A sensitivity analysis indicated that the ERR is quite robust. With a reduction in benefits of 20 percent for all categories, the ERR estimates remain at 14 percent. However, the project is sensitive to a reduction in the price of shrimp as a 10 percent decrease in prices reduces the ERR to 15 percent. The poor institutional design of the project was the fundamental cause of implementation delays.

7.12 Local political and religious leaders noted that environmental awareness had greatly increased in the general populace as a result of project activities. Unquantifiable benefits generated by the project include the improved restored and improved biodiversity, secure land tenure that facilitates credit access (and the mission confirmed the issuance of land certificates). The spill-over effect from project-supported research is that it will be used by other development projects and by the government extension service for the benefit of all farmers.

7.13 Taking these factors into consideration, efficiency is therefore rated as **substantial**.

OUTCOME

7.14 The overall project outcome is rated **satisfactory** (Figure 7). The project has maintained its overall relevance and remained fully consistent with the country's development priorities and the Bank's Country and Sectoral Assistance Strategies. Institutional development was significant and local institutional capacity was developed notably, particularly in terms of environmental enforcement. By the Credit's closing,

monitoring data showed that: (a) the coastal erosion area was substantially reduced and the accretion zone was increased; (b) natural near-shore aquatic resources reappeared; and (c) the incidence of poverty decreased--average per capita incomes have increased steadily in all provinces and poverty rates have decreased significantly.

Table 7. Development Objective and Outcome for the Irrigation Rehabilitation Project

Development Objective	Relevance	Efficacy	Efficiency
The objective of the project, which covers the Southern Mekong Delta provinces of Ca Mau, Bac Lieu, Soc Trang and Tra Vinh, is to reestablish the coastal mangrove wetland ecosystems and protect sustainably their aquatic nurturing and coastal protection functions.	Substantial	Substantial	Substantial
Overall Project Outcome		**Satisfactory**	

7.15 Based on the revised targets accepted following the MTR and the Board-approved restructuring, and the fact that the preponderance of disbursements took place post-restructuring, the project is rated satisfactory.[34] Although the initial period was fraught with delays, these were overcome to the degree that the last four years of implementation resulted in significant positive environmental and social impacts, poverty reduction in the poorest areas, increasing household incomes and new employment opportunities. In any event, the Board approval of the restructuring changes the standards to which this projects can be held. As revised, the project directly benefited about 20,000 local households and indirectly 100,000 households through research and extension, training and dissemination.

Risk to Development Outcome

7.16 Risk to development is rated **significant**. While the project had positive environmental impacts (inter alia on mangroves) and brought about significant poverty reduction, these achievements are nascent and still fragile. They will need maintenance and other types of institutional support. Especially the project-established linkages between forest protection/conservation and livelihood development will need nurturing for some time. On the positive side, significant achievements have been made in institutional development and capacity building and there is a strong commitment of the provinces to maintaining these hard-won outcomes. The rating of significant is not the result of any project deficiencies but rather a situation that is generally true for most environmental restoration and conservation projects, which often require the passage of time and consistent effort over the intermediate term to create a sustainable impact.

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34 The level of disbursement before and after the restructuring was calculated based on the formula in Appendix B of the OPCS ICR Guidelines (2006) where 2 refers to an Unsatisfactory rating, US$6.3m is the disbursement amount before restructuring (see ICR, p. xi), US$55.4m is the total amount disbursed by closing, 5 refers to a Satisfactory rating, and US$49.1m is the amount disbursed after restructuring. The result is [2 x [6.3/55.4]] + [5 x [49.1/55.4] = 4.7 (which rounds up to 5, equal to a Satisfactory rating).

BANK PERFORMANCE

7.17 The overall Bank performance is rated **moderately satisfactory**. This rating is given because of a successful corrective restructuring following the MTR which allowed the project to achieve the project development objective in a little less than four years.

7.18 Bank performance in ensuring quality at entry is rated **moderately satisfactory**. The main weaknesses of project design included: (a) poor assessment of the mangrove planting needs target, with little coordination with the ongoing national reforestation effort working in the same areas, Program 661; and (b) too much reliance on external TA (about 500 positions from the central to commune levels to be packaged under one single contract with a total cost of above US$7 million). The poor institutional design of the project was the fundamental problem causing serious implementation delays.

7.19 The quality of supervision is rated **satisfactory**. Although the quality of project design was poor and there were significant shortcomings in the initial years of project supervision, the Bank made substantial efforts to turn around performance and provide effective support toward the achievement of development outcomes. With the change of the TTL location from Washington DC to the Hanoi Country Office, corrective actions were taken by the Task Team and Bank Management and the quality of supervision was significantly enhanced as a result of the more proactive field missions and timely review and responses, which accelerated the pace of implementation dramatically and resolved threats to the achievement of the project's development objective.

BORROWER PERFORMANCE

7.20 The overall Borrower performance is rated **moderately satisfactory**. The PDO and restructured targets were achieved with an extension of the project's life of less than one year. The IDA Credit and DANIDA Grant funds have also been fully disbursed. The concerned ministries, central agencies and implementing agencies cooperated closely with the Bank during project implementation and supervision.

7.21 The government's performance is rated **moderately satisfactory** after restructuring, which, since the Board approved the changes, is all IEG considers. That said, it should be noted that borrower and implementing agency performance was moderately unsatisfactory before the restructuring. The government was unable to negotiate and conclude the TA contract in the first two years, which resulted in extremely slow implementation and eventually the restructuring of the project.

7.22 The performance of the implementing agencies is considered as **satisfactory**. After restructuring, the performance of all PPMUs was good. The implementing agencies, through successful decentralization by MARD, made excellent efforts and improvements in implementation after project restructuring.

M&E Design, Implementation, and Utilization

7.23 The overall quality of project monitoring and evaluation is rated **substantial**.

7.24 *M&E Design.* The monitoring indicators were presented in the PAD. A separate component was dedicated to M&E (which was largely TA-dependent). It covered a base-line survey, environmental and socioeconomic monitoring and evaluation studies. During the project restructuring, the indicators were reviewed and revised to be more practical and measurable during the remaining period, though these were rather too simple to capture all project impacts as they did not measure the quality of mangrove planting and the linkages between poverty reduction and forest protection. A revised log-frame was discussed and agreed upon during the MTR.

7.25 *M&E Implementation.* A practical and effective MIS was established to provide timely data for project monitoring and management. It was based principally on the output indicators reflected in the project log-frame, supplemented by others that provided progress and feedback information to assist in managing the project. The MIS was eventually incorporated into a monthly commune-level report that allowed timely response to local issues. Based partly on the information in the MIS, monthly, quarterly and annual reports from the Central Project Office (CPO) and PPMUs were prepared using a standard format. Reporting showed continuous improvement throughout the project.

7.26 *M&E Utilization.* The use of the project M&E system was delayed by the late arrival of the 500 staffers but was well utilized to support the supervision of the project. The TA team prepared an Interim Project Evaluation Report: (a) to report on the existing data and the current state of knowledge on the evaluation of project activities; and (b) to develop recommendations and an Action Plan for future project evaluation activities and a relevant guide to future project implementation activities. The 2006 Action Plan was implemented in the first half of 2007, including the collection of primary and secondary data in relation to project evaluation indicators. Supplementary data was collected through surveys of resettled households.

Other Issues (safeguard compliance, fiduciary compliance, and unintended positive/negative impacts)

7.27 Project implementation was in compliance with safeguard and fiduciary requirements. The construction of small works and all resettlement sites were closely monitored for treatment of waste-water and solid waste disposal. They were fully in compliance with GoV and Bank requirements. In terms of Social safeguards, the EMDP and the RAP were prepared in accordance with the Bank's OD 4.20 on Indigenous People and OP 4.30 on Involuntary Resettlement. The former not only helped improve the social life and spiritual value of the local Khmer but also contributed to improving social stability and integration. Most procurement activities took place at the provincial level, they were mostly for small-value contracts and they were largely well handled. One case of collusion in bidding for small works was found in Ca Mau in 2004. It was investigated by the PPMU and three colluding bidders were banned from participating in

all procurement under the project. An Action Plan for dealing with collusion in procurement was developed and closely followed up to the end of the project.

8. Conclusions and Lessons

8.1 The water sector is doing quite well in Vietnam. The four projects reviewed in this report are all rated satisfactory. All have made significant achievements and fulfilled the objectives set for them at appraisal. But Vietnam is doing well in a broader sense as well. It is on target to meet Millennium Development Goal 7, halving the number of persons without access to safe water and sanitation in urban areas.

8.2 The major donors (including the Bank) have established a productive relationship with the Government in the water sector. One example of the trust established was the Ministry of Construction's request to the Bank in mid 2005 for assistance with drafting Vietnam's first Urban Water Supply Decree.[35] The decree promotes improvements in water supply by creating an enabling environment for the mobilization of domestic savings and private sector participation. The ongoing Water Sector Review (see http://vnwatersectorreview.com) is an enormously promising GoV and multi-donor initiative, and the links with different ministries and agencies' websites when followed reveal important steps towards transparency and information sharing.

Environmental Restoration

8.3 While this PPAR only looks at a small part of a larger water portfolio, the four projects studied share certain characteristics. First and foremost is the nature of their relationship to the environment. Whereas traditionally Bank water sector projects had either an institutional or infrastructure focus or both, it is becoming nearly impossible to avoid addressing environmental restoration and environment-related land use questions in many areas of the country.[36]

8.4 The Irrigation Rehabilitation project can be seen as a response to a series of environmental problems. Deforestation and poor land use patterns in fragile areas lead to erosion, which scours away precious topsoil and deposits it as silt in the canals. Runoff after heavy rains contributes to flash flooding which strains or even overwhelms project-built canals, sluices, lifts, and bridges.

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35 The Bank mobilized a private sector specialist and an institutional specialist and arranged for the drafting team to visit regulators and policy-makers in Europe.

36 "Of 122 countries evaluated for environmental sustainability, Vietnam ranked at 114th, and with respect to environmental systems, Vietnam ranked at 108th (Environmental performance measurement: the Global Report 2002). Vietnam (with some other Southeast Asian countries) is reported to have the worst water pollution, with "very severe" ranking for fecal coliforms, biochemical oxygen demand and lead, and severe for suspended solids." WATER RELATED ECONOMIC ISSUES: Status Report Prepared by: Pham Ngoc Thang, Economist, 14 March 2008, Prepared for the Water Sector Review.

8.5 The Inland Waterways and Port Rehabilitation project faces the exact same problem, except that the silting of the transport canals is more rapid because of the enormous increases in freight and passenger traffic that produce waves that accelerate bank collapse. The affordable longer-term solution to the problems of both projects is not just perpetual dredging at $2,000 or more per kilometer. To reduce maintenance costs, canal maintenance should also encompass increased use of gabions and mattresses and the planting of vegetation to stabilize the banks. Of course problems tend to occur outside of high population concentration areas because, in many towns, property owners and local governments have already invested in bank stabilization for convenience and flood protection purposes. But bank maintenance will never happen without government assistance in the rural areas. Attention to the reforestation of hillsides in relevant watersheds would also reduce maintenance costs and help to protect waterways from the ravages of severe weather.

8.6 The Coastal Wetlands Protection project is a textbook example of the benefits of environmental restoration, and the costs of postponing it. Where reforestation was successful, land is accreting, biodiversity is being restored, and farming and other economic activities are protected from storms, wind, and salt. In contrast, where mangrove seedlings were planted too small, at too shallow a depth, and not carefully monitored (to replace plants washed away or dead), the coastline is moving inland, sweeping away solid ground and endangering the dikes built to protect the resettled areas. The piece of the sign that the mission found on the beach (*para.* 3.44) is an apt symbol for what happens to project achievements when the environment is not restored in a sustainable manner.

8.7 The Water Supply Project has its own complex relationship with the environment, and it highlights the environmental tasks that need to be addressed going forward. Hanoi developed a computerized model of water quality in the aquifer. It also uses this model to monitor ground levels (to detect signs of over-exploitation of the aquifer). Attention to aquifer is critical because the groundwater that Hanoi relies upon for much of its supply has suffered because of wastewater infiltration. Haiphong has had to establish protection zones around the river intakes to limit contamination, and accidental spillages of hazardous materials in the industrial area upstream are a persistent worry. In Quang Ninh it was necessary to promote reforestation to protect water quality, but the new forests were not adequate to keep the pollution seeping out of mine tailings from entering the water supply. It ultimately proved necessary to close down the mines in the reservoir catchment area. While both Hanoi and Haiphong are fortunate in that they have access to river water that still is of treatable quality, increasing pollutant loads in the rivers mean that extraction points need to be carefully chosen and protected as much as possible. But industrial growth and the (sometimes clandestine) release of untreated effluents into the river pose huge risks, especially now that groundwater is no longer a reliable fallback option.

8.8 In conclusion, attention to the environment in Bank projects used to focus on avoiding or mitigating adverse impacts that might be expected to occur from project-financed activities. Worldwide, Bank-financed projects in many sectors are increasingly constrained by environmental problems that pre-date project appraisal. According to the

National Water Resources Strategy, environmental protection is a problem that the GoV intends to devote more attention to as the country's industrialization and modernization proceeds. Industry is not the only problem, however. Aquaculture and agriculture also emit chemicals that are a major factor in river pollution, and spread waterborne diseases which can put seafood stocks in the wild in peril.

8.9 This PPAR found reason to believe that providing sufficient quantities of water at national quality standards will become a challenge in certain urban areas. In the four evaluated projects it was assumed that investments in infrastructure would overcome what were in essence environmental problems. The project experience of the IRP, WSP, Inland Waterways, and CWP projects (as analyzed in this section) shows just how difficult it has become, even in widely different subsectors focusing on highly divergent activities, to achieve anything lasting without addressing the problems that have been caused by an extended period of environmental neglect.

MORE ATTENTION TO INTER-AGENCY COORDINATION WOULD BE BENEFICIAL AT THE PROVINCIAL LEVEL

8.10 Related to the environmental problems described above, but with ramifications that go far beyond them, is the institutional framework. When staff of the Irrigation Management Companies or the Waterways Department were asked why attention was not given to vegetative soil and water conservation measures that would check runoff and control sedimentation, their reply was always that it was someone else's responsibility. Yet while Agriculture or Forestry staff are undoubtedly very aware of the deforestation problem at the national level, and doubtless have mapped it quite thoroughly, it may never have occurred to provincial staff to prioritize areas that contribute to the specific problems of provincial irrigation and transport canals.

8.11 Water management in Vietnam is subject to considerable institutional overlap in spite of positive steps at the highest levels. The (1998) Water Resources Law introduced the River Basin Management concept for the first time and proposed the establishment of a National Council on Water Resources. It also called for a comprehensive review of the water resources sector and a strategy intended to reduce inter-agency conflict. The promised review is nearly complete (see Box 3), but it is too early to predict its outcome or impact.

8.12 The law includes provisions on water rights, water use and disposal, water quality, construction and maintenance of water works, and water resources management. In terms of coordination, in the opinion of some observers during the intervening years conflict has been avoided by an unfortunate retreat back into silos to some degree. Irrigation and shipping canals continue to fill with silt because no vegetative soil stabilization has been done. But the Irrigation Management Companies and Inland Waterway people do not often talk with Forestry and Agriculture staff about what needs to be planted, and where reforestation and bank stabilization would best support the sustainability of the irrigation and waterways. Recent floods in Hanoi might have a positive side effect if they ultimately help to promote integration.

INTEGRATED WATER RESOURCES MANAGEMENT

8.13 What do the four projects show about Vietnam's progress toward integrated water resources management? First, that key players have a long way to go before they integrate. This was especially apparent in the inland waterways and irrigation projects. Agencies that should be talking to each other and planning ways to maximize synergies are not yet at that point. Resource management is sector based, and not only is there little sign of interest in working across sectors, only the Coastal Wetlands Project exhibited interest in integrating stakeholders and community social values. Knowing that traditional water management approaches simply don't work in the long term, as the pressures on water resources from rapid urban growth and industrial development continue to increase making the work of the WSCs ever more challenging, the cost of not managing resources in an integrated way pose high economic, social and ecological costs on communities and on the environments upon which they depend. Second, there is still greater emphasis and attention given to end of pipe solutions than to managing the watershed in ways that will make the delivery of services easier next year. This is one area where the Coastal Wetlands Protection Project offers clear lessons to the other studied projects. Water utilities are more concerned with getting pollutants out of the water they deliver than they are about stopping polluters. And around the major cities new factories open at an alarming rate. The irrigation management companies running the infrastructure created by the IRP project seem more concerned with providing aquaculture with saline water than evaluating the impacts on soil and groundwater of bringing ever more salty water inland. Decision-making weighs water demand now more heavily than identifying options to reduce threats in the future. Third, the abolition of economic incentives to conserve and make services economically sustainable (use charges and tariffs in line with costs) poses risk for water quality and river health going forward, and increases the likelihood that conflicts over access to water will increase, and this in a future where climate variation looks likely to reduce supply.

8.14 Outside of the projects, enlightened approaches to the management of water resources are being formulated. The National Water Resources Strategy identifies all the problems mentioned in this report and many more. And it has begun building a broad consensus around corrective measures that will ensure a more environmentally sustainable future. The Bank has worked well with the government on refining a strategic approach. Reports such as the six volume series on Vietnam's infrastructure challenge ensure that development community investments help the country to build on a solid foundation. And the partnership of the Government with the broader donor community in the Water Sector Review has led to highly meaningful, open, and transparent communication on key issues, and the preparation of a huge range of technical inputs that will inform actions going forward.

WATER SECTOR PROJECTS HAVE NOT BEEN READY TO IMPLEMENT

8.15 A common problem, associated with the design of the four water-related projects evaluated in this report, is that important aspects of each project were not ready to implement after the loan was approved. The Irrigation Rehabilitation Project had not really gotten government ownership for the hiring of (what were perceived as expensive) international consultants. Thus there were delays in preparing the contract for the

consultants, and ultimately the contract was signed much later than planned, delaying the preparation of bidding documents and bid evaluation procedures, O&M plans, the MIS system and related financial management plans, the initiation of environmental monitoring, to name a few.

8.16 The Coastal Wetlands Protection project was far less ready to implement. The project was based on a reconnaissance of the area that was five years out of date. When reforestation was about to commence, some areas that had been covered by forest no longer were, and other areas that had been deforested had been reforested thanks to the government reforestation project. Even more problematic was the reliance on DANIDA to fund critical staff, and the time that was lost waiting for the money to come on line and the 500 positions to be filled. Also, the government decision-making process is highly sequential, so even though expeditious implementation was clearly going to be contingent on the hiring of the consultants, it still took 14-15 months to hire the first international consultants to update the project planning once the money was there. This begs the question of why decision-making could not have commenced before the date funds were be made available.

8.17 There are more examples. In the waterways project, important policy differences between the Bank and the Borrower on the eligibility of state owned enterprises to participate in civil works contracts had not been resolved prior to Board approval and reaching a workable agreement led to unnecessary delays during implementation. Further, during appraisal it had never been resolved what to do with massive quantities of spoil. Also in the IWPR project, a larger number of people needed resettlement than anticipated and there was a failure during appraisal to identify a mechanism for assessing and paying compensation prior to project start-up.

8.18 High level engagement is needed to find a way to move project preparation further along and speed up implementation. It is not clear based on just one mission why water projects are only appraised about 20 percent right up to the Board Approval date. But when there is only a small package ready to implement after approval one might expect urgent attention to getting activities moving. When it takes two years to get consultants on board to prepare the remaining 80 percent of the project there are just too many opportunities lost.

INFLATION CRISIS AND THE SUSTAINABILITY OF SERVICES

8.19 The 2006 National Water Resources Strategy notes that:

> *The perception that water is an economic good has not been sufficiently incorporated into Vietnam's current policy and mechanism, especially in economic and financial policies, to create internal forces and incentives for sustainable development, to ensure reasonable exploitation and sufficient supply of water for society, as well as to encourage efficient and effective uses of water to preserve water resources.*

8.20 Most governments struggle to impose user fees. Eliminating them where they are politically well-accepted is likely to result in the re-imposition of these charges being fraught. Although the country was moving towards integrating user charges and fees to support institutional, environmental, and service sustainability, the recent inflationary spiral and the suspension of most user charges for the use of irrigation water and river transport, as well as the freezing of urban water tariffs are quite an about-face. It is certainly the government's prerogative to subsidize desirable activities when it chooses to do so. Political considerations apart, the impact of the abolition of user charges on environmental sustainability is another dimension. Subsidized water for urban users further strains existing supply and treatment problems, and the removal of incentives to conserve water use in irrigated areas has several pernicious results including higher levels of agricultural chemicals that make their way to the rivers.

TAKE BETTER ADVANTAGE OF THE EXPERIENCE OF PROJECT CHAMPIONS

8.21 Within the projects reviewed by this assessment there was enormous unevenness between project sites and implementation teams. In the Coastal Wetlands Protection Project, reforestation activities went best in Ca Mau and perhaps worst in Bac Lieu. Resettlement and cultural support to the Khmer community seemed to go best in Soc Trang. Technology transfer went well in Tra Vinh and Soc Trang. In terms of the managerial achievements of the different Water Supply Companies, Haiphong has greatly outperformed the others. This is true to such a degree that it is visited by in-country water supply companies that did not participate in the project, and it even consults internationally. Reportedly, some of the Irrigation Management Companies are quite profitable and good at maintaining their infrastructure, while others are struggling. Based on these experiences, the PPAR will take a guess that some stretches of the inland waterway are better run, safer, and better maintained than others.

8.22 The development literature has a great deal to say about the potential impact of project champions. Although the Water Supply Project facilitated contacts between the WSCs, in the opinion of this review, more systematic and intensive inter-visitation between project teams and/or agencies and sponsored outreach by project champions like Haiphong Water will pay tremendous dividends. Vietnam seems to be approaching a point in the water sector where international experience will not always be instructive. It has much to learn from its own best examples, and it may have as much to teach to other countries as to learn from them.

REDEFINING THE BANK'S COMPARATIVE ADVANTAGE

8.23 When asked what they would do differently if the opportunity presented itself to do these projects over, staff were quite frank in their discussions with the mission, and several people were quite persuasive in proposing ways this type of work could be done better in the future. The gist of their thoughts is shared here because the mission found them quite compelling.

8.24 One point that was raised quite often is that the Bank should recognize the areas where Vietnam is entirely competent and it should adjust the way it works to take into

account where things go better without its supervision and sometimes even without its support. Take the case of mangrove reforestation. Leaving aside the social aspects of the CWP project for a moment, which admittedly were its greatest achievements, it is clear that without direct Bank support, Program 661 achieved five times more mangrove replanting than the project was able to do, in about the same period of time. This PPAR does not evaluate Program 661, but a cursory look at the numbers certainly would lead one to wonder if, going forward, the Bank and the GoV might not be better off with the Bank providing budget support for forestry. It could be argued that the community awareness, technology transfer, resettlement, small enterprise development, and cultural heritage work undertaken by the project are still highly challenging to GoV agencies, and that these activities provided the essential enabling environment for the reforestation. In the likely event that this is true, it would indicate the nature and scale of a reforestation support effort that would best be supported by a standard sector investment loan.

8.25 It was noted above that Vietnam is on track to achieve the MDGs in its urban areas but, by extension, progress in rural areas remains behind that target, however, and development of basic rural water services has not kept pace with economic growth, leaving around one third of the population without adequate water supplies and two thirds of the population without sanitation. One staff member noted that urban water utilities have a "monopoly on a good that everyone needs to buy." The point, really, was how much longer will a country that can equitize Haiphong Water need World Bank support for the provision of potable water to urban consumers? Probably not much longer. Bank strategy might be to get out of urban water supply reasonably quickly and to concentrate on sanitation, environmental restoration, and perhaps rural water. For Vietnam to meet the MDGs for both urban and rural water and sanitation by 2015 has been estimated at $600 million annually, or about four times the investment of the last 10 years.[37] A broad approach to sanitation that provides low-tech, step by step improvements may be preferable to high cost treatment plants in most cities.

LESSONS

8.26 The projects' experience suggest the following lessons:

The achievements of Bank-financed water projects in many subsectors are often constrained by environmental problems that pre-date project appraisal. In Vietnam it is increasingly likely that projects that build water infrastructure will be called on to perform environmental restoration as well as their core activities, if they are to have sustainable outcomes. The four projects studied share certain characteristics. First and foremost is the nature of their relationship to the environment. Whereas traditionally Bank water sector projects had either an institutional or infrastructure focus or both, it is becoming nearly impossible to avoid addressing environmental restoration and environmentally related land use questions in many areas of the country. In Vietnam (which is not unique in this respect) Bank-financed projects in many sectors are increasingly constrained by environmental problems that pre-date project appraisal. In the

37 *Vietnam's Infrastructure Challenge: Water Supply and Sanitation Strategy*, Staykova and Kingdom, The World Bank, 2006.

four evaluated projects it was assumed that investments in infrastructure would overcome what were in essence environmental problems. The project experience of the IRP, WSP, Inland Waterways, and CWP projects shows just how difficult it has become, even in widely different subsectors focusing on highly divergent activities, to achieve anything lasting without addressing the problems that have been caused by an extended period of environmental neglect.

Environmental restoration is challenging because the people causing the problem have to become part of the solution. If all the mangroves have been destroyed it is never enough just to plant new ones: reforestation and forest protection have to address the underlying social causes of encroachment and provide alternative sources of income if they hope to stop environmentally negative actions that produce income for the malefactors. Conversely, addressing livelihood problems can have positive environmental impacts.

Waiting to confront major issues on which the Bank and borrower disagree until after loan approval can lead to major delays, enormous costs, and foregone opportunities. While there were other factors contributing to the early-stage delays identified in this report, resolving policy differences between Bank and Borrower before Board approval is perhaps the easiest to correct.
A common problem, associated with the design of the four water-related projects evaluated in this report, is that important aspects of each project were not ready to implement after the loan was approved. High level engagement is needed to find a way to move project preparation further along and speed up implementation.

When the economic incentives shift, the priorities of water service providers will follow with negative effects on the environment. As users become accustomed to not paying fees, service providers become accustomed to not thinking about them as clients. Although the country was moving towards integrating user charges and fees to support institutional and service sustainability, the recent suspension of most user charges for the use of irrigation water and river transport, as well as the freezing of urban water tariffs are quite an about-face. Subsidized water for urban users further strains existing supply and treatment problems, and the removal of incentives to conserve water use in irrigated areas has several pernicious results including higher levels of agricultural chemicals that make their way to the rivers, which are tapped for drinking water, and so on.

Water resources are difficult to manage efficiently and effectively when there is no mechanism for involved agencies to communicate, much less coordinate. The four projects point to a number of challenges which Vietnam needs to overcome to progress towards integrated water resources management. First, that key players have a long way to go before they integrate. Agencies that should be talking to each other and planning ways to maximize synergies are not yet at that point. Second, there is still greater emphasis and attention given to end of pipe solutions that increase the available supply than to managing the watershed in ways that will make the delivery of water services easier in the next year and during those that follow. Water utilities are more concerned with getting pollutants out of the water they deliver than they are about stopping

polluters. And around the major cities new factories open at an alarming rate. Third, the abolition of economic incentives to conserve and make services economically sustainable (use charges and tariffs in line with costs) poses risks for water quality and river health going forward, and increases the likelihood that conflicts over access to water between various user groups will increase; and this in a future where climate variation looks likely to reduce supply.

Annex A. Basic Data Sheet

THE SOCIALIST REPUBLIC OF VIETNAM: IRRIGATION REHABILITATION PROJECT (IDA-27110)

Key Project Data *(amounts in US$ million)*

	Appraisal estimate	*Actual or current estimate*	*Actual as % of appraisal estimate*
IDA Credit	100.00	79.3	79.3
Government	14.8	23.0	155.4
Cofinancing *	13.9	0.0	0.0
Total project costs	128.7	102.3	79.5

*Farmers

Project Dates

	Original	*Actual*
PCD	06/22/1993	06/22/1993
Begin Appraisal	09/29/1994	09/29/1994
Board approval	04/25/1995	04/25/1995
Signing		07/11/1995
Effectiveness	10/09/1995	09/13/1995
Mid-Term Review	11/16/1998	11/20/1998
Closing date	12/31/2001	06/30/2003

Staff Inputs (staff weeks)

Stage of Project Cycle	Actual/Latest Estimate	
	No. Staff Weeks	US$ ('000)
Identification/Preparation	na	708,477 (i)
Appraisal/Negotiation		na
Supervision	na	677,809 (ii)
ICR		na
Total	na	1,386,286

The total includes: (i) all Bank preparation costs up to negotiation (LEN) including US$196,745 in consultant trust funds and a contribution of US$52,815 from FAO/CP, i.e. actual Bank preparation costs were US$458,887; (ii) all Bank supervision (SPN) and ICR costs including a contribution of US$23,887 from FAO/CP, i.e. actual Bank SPN and ICR costs over 16 missions was US$653,922, an average of US$40,870 per mission. Overall Bank budget for the project was US$1,112, 809, which was 1.5% higher than the Bank budget allocated for LEN, SPN, and ICR.

Mission Data

	Date (month/year)	No. of persons	Specializations represented	Performance rating: Implementation Progress	Performance rating: Development Objective
Identification/ Preparation	05/15/1993	6	IRRIGATION ENG./TEAM LDR., AGRICULTURALIST , ECON., IRRIGATION ENGL., SOC. SPEC.; ENV. SPEC.		
	01/10/1994	5	TEAM LDR., IRRIGATION ENG. (2), SOC. SPEC.; ENV. SPEC.		
	04/14/1994	3	TEAM LEADER, IRRIGATION ENG., ENV. SPEC.		
Appraisal/ Negotiation	07/05/1994	9	TEAM LDR.; IRRIGATION ENG. (3), ECONOMIST, FIN. ANALYST, ENV. SPEC., SOC. SPEC., LAWYER		
	10/08/1994	10	TEAM LDR., SOC & ENV. SPEC., IRRIGATION ENGL. (2), LAWYER, FINANCIAL SPEC. ECON. (4)		
Supervision	07/18/199	5	IRRIGATION ENG.; RESETTLEMENT SPEC.; WATER RES. MGMT. SPEC.; PROCUREMENT SPEC.; TEAM LDR./ECON.	S	S
	12/08/1995	4	PROCUREMENT SPEC.; WATER RES. MGMT. SPEC.; IRRIGATION ENG.; TEAM LDR./ECON.	S	S
	02/06/1996	3	PROCUREMENT & DISBURSEMENT	S	S

Date (month/year)	No. of persons	Specializations represented	Performance rating: Implementation Progress	Performance rating: Development Objective
		SPEC., ENV. SPEC., TEAM LDR.		
01/25/1997	4	IRRIGATION MGMT. SPEC.; TEAM LEADER; INSTIT. SPEC.; ENG.	S	S
06/17/1997	4	TEAM LDR; INSTIT. SPEC.; WATER RES MGMT SPEC.; ENG.	S	S
11/29/1997	2	TEAM LDR.; ENG.	S	S
08/14/1998	3	TEAM LDR; ECON.; ENG.	S	S
11/15/1998	6	TEAM LDR; ECON.; ENG.; RESETTLEMENT SPEC.; PROCUREEMENT SPEC.; FINANCIAL SPEC.	S	S
06/29/1999	4	TEAM ;LDR/ ECON.; ENG.; RESETTLEMENT SPEC.	S	S
06/18/2000	3	TEAM LDR/ECON.; ENG.; RESETTLEMENT SPEC.	S	S
12/12/2000	2	TEAM LDR.; ECON.; ENG.	S	S
09/06/2001	1	TEAM LDR., ENG.	S	S
05/25/2002	4	TEAM LDR, ENG.; RESETTLEMENT/SOCIAL SPEC.; PROCUREMENT SPEC.	S	S
11/22/2002	7	TEAM LDR./ECON; ENGL.; SOC. DEV. OFFR.; FINANCIAL MGMT. OFFR.; PROCUREMENT ANALYST; ECON.; ENV. OFFICER	S	S

	Date (month/year)	No. of persons	Specializations represented	Performance rating: Implementation Progress	Performance rating: Development Objective
	05/15/2003	5	TEAM LEADER/ECON.; CO-LEADER/ENGINEER; FIN. MGMT. OFFR.; PROCUREMENT ANALYST; DISBURSEMENT ANALYST	S	S
Completion	10/25/2003	3	TEAM LEADER/ENG.; ECON.; RD SPECIALIST	S	S

THE SOCIALIST REPUBLIC OF VIETNAM: Water Supply Project (IDA-N0260, TF-29548, TF-29270, TF-20966)

Key Project Data *(amounts in US$ million)*

	Appraisal estimate	*Actual or current estimate*	*Actual as % of appraisal estimate*
Loan/Credit Amount	98.61	60.26	61.1
Government	25.98	12.21	47.0
Cofinancing	18.06	16.38	90.7
Total project costs	142.64	88.85	62

Project Dates

	Original	*Actual*
PCD	12/03/1993	12/03/1993
Begin Appraisal	03/24/1997	03/24/1997
Board approval	06/26/1997	06/26/1997
Signing		07/07/1997
Effectiveness	10/06/1997	10/14/1997
Mid-Term Review	02/23/2000	03/13/2000
Closing date	12/31/2002	12/31/2004

Staff Inputs (staff weeks)

Stage of Project Cycle	Actual/Latest Estimate	
	No. Staff Weeks	US$ ('000)
Identification/Preparation	209.5	773.0
Appraisal/Negotiation	19.7	56.9
Supervision	240.4	584.0
ICR	11.0	36.6
Total	480.6	1,450.5

Regional direct mark-up to direct cost is 25% for FY99 and before.

Mission Data

	Date (month/year)	No. of persons	Specializations represented	Performance rating: Implementation Progress	Performance rating: Development Objective
Identification/ Preparation	Identification and preparation files were lost in EAP's 1997 reorganization. Time reporting records indicate that identification started in 1991. Specialties are indicative.		ECON.; ENV. ENG. RESETTLEMENT SPEC.; PROC. ANALYST; SANITARY ENG. ENV. SPEC.; FINANCIAL ANALYST		
Appraisal/ Negotiation	Appraisal: June/July 1996	10	ECON./TTL (1); SR. COUNSEL (1); ENV. ENG. (1); RESETTLEMENT SPEC. (1); RESEARCH ASST. (1); PROC. ANALYST (1); SANITARY ENG. (2); ENV. SPEC. (1); FINANCIAL ANALYST (1)		
Supervision	02/27/1998	2	ENV. ECONOMIST (1); MUNICIPAL ENG. (1)	S	S
	06/01/1998	4	MUNICIPAL ENG./TTL (1); ENV. ECONOMIST (1); OPERATIONS OFFICER/ENG. (1); FIN. ANALYST	U	S
	05/06/1999	3	MUNICIPAL ENG. (1) OPERATIONS OFFICER/ENG. (1); FIN. ANALYST (1)	S	S
	10/27/1999	3	MUNICIPAL ENG./TTL (1); OPERATIONS OFFICER/ENG. (1);	S	S

Date (month/year)	No. of persons	Specializations represented	Performance rating: Implementation Progress	Performance rating: Development Objective
		FIN. ANALYST		
Mid-Term Review: 03/13/2000	6	MUNICIPAL ENG. (1); OPERATION OFFICER/ENG. (1); FIN. ANALYST (1); HEALTH/PARTICIP ATION (1); ENV. SPEC. (1); TEAM ASST. (1)	S	S
12/13/2000	2	OPERATION OFFICER/ENG. (1); FIN. ANALYST (1)	U	S
12/05/2001	4	MUNICIPAL ENG./TTL (1); OPERATIONS OFFICER/ENG. (1); FIN. ANALYST (1); TEAM ASST. (1)	S	S
04/26/2002	4	OPERATIONS OFFICER/ENG./TTL (1); MUNICIPAL ENG. (1); FIN. ANALYST (1); RESETTLEMENT SPEC. (1)	S	S
09/23/2002	5	OPERATIONS OFFICER/ENG./TTL (1); URBAN SECTOR COORD. (1); FIN. ANALYST (1); ENV. SPEC. (1); RESETTLEMENT SPEC. (1)	S	S
03/28/2003	3	OPERATIONS OFFICER/ENG./TTL (1); URBAN SECTOR COORD. (1); FIN. ANALYST (1)	S	S
09/23/2003	4	URBAN SECTOR COORD. (1); OPERATIONS OFFICER/ENG./TTL (1); FIN. ANALYST (1); ENV. SPEC. (1)	S	S
05/10/2004	3	INFRASTRUCTURE	S	S

	Date (month/year)	No. of persons	Specializations represented	Performance rating: Implementation Progress	Performance rating: Development Objective
			COORD. (1); OPERATIONS OFFICER/ENG./TTL (1); FIN. ANALYST (1)		
	11/08/2004	3	INFRASTRUCTURE COORD. (1); OPEREATIONS OFFICER/ENG./TTL (1); FIN. ANALYST (1)		
Completion	04/30/2005	1	ECONOMIST	S	S

Much of the ICR work was carried out in the November 2004 supervision mission; the April 2005 mission largely conducted follow-up work.

THE SOCIALIST REPUBLIC OF VIETNAM: INLAND WATERWAYS AND PORT REHABILITATION PROJECT (IDA-30000)

Key Project Data *(amounts in US$ million)*

	Appraisal estimate	*Actual or current estimate*	*Actual as % of appraisal estimate*
IDA	73.00	62.60	.00
Government	11.90	15.80	.00
Cofinancing	--	--	--
Total project costs	68.60	78.40	

Project Dates

	Original	*Actual*
Concept Review	07/05/1994	07/05/1994
Begin Appraisal	04/14/1997	04/14/1997
Board approval	11/04/1997	11/04/1997
Signing		11/08/1997
Effectiveness	03/06/1998	03/06/1998
Mid-term Review	12/17/2005	10/21/2002
Closing date	06/30/2003	03/31/2006

Staff Inputs (staff weeks)

Stage of Project Cycle	Actual/Latest Estimate	
	No. Staff Weeks	USD Thousands (including travel and consultant costs)
Lending		
FY94		55.07
FY95		123.04
FY96		114.07
FY97		238.48
FY98		35.57
Total		566.23
Supervision/ICR		
FY98		56.12
FY99		59.16
FY00	24	69.18
FY01	21	58.37
FY02	17	61.09
FY03	26	68.53
FY04	34	87.23
FY05	24	55.69
FY06	23	56.86
FY07		34.64
Total	169	606.87

Mission Data

Bank Lending and Implementation Support/Supervision Processes

Task Team Members

Names	Title	Unit	Responsibility/Specialty
Lending			
Pramod K. Agrawal	Sr. Soc. Dev. Spec.	SASES	Resettlement Spec.
Jitendra N. Bajpai	Adviser	EAPVP	Task Team Leader
Veronique Bishop	Sr. Fin. Spec.	CININ	Fin. Analyst
Bobbie J. Brown	Program. Asst.	EASUR	Task Asst.
Carlos R. Escudero	Lead Counsel	LEGEA	Sr. Counsel
Dieter Havlicek	Consultant	EASTE	Transport Econ.
Scott D. MacKnight		EASTE	Env. Spec.
Ismail E. Mobarek	Consultant	SASEI	Port Engineer

Chander P. Ohri	Consultant	EASEG	Proc. Spec.
Thach Ngoc Phan	Operations Officer	EASTE	Infrastructure Engineer
Paul Stott	Consultant	ETWWA	Operations Officer
Deepali Tewari	Sr. Municipal Dev. S	AFTU2	Resettlement Spec.
G. George Tharakan	Lead Transport Spec.	SASEI	Transport Econ.
Ronald D. Zweig	Sr. Agric. Ecologist	EASRE	Env. Spec.
Supervision/ICR			
Pramod K. Agrawal	Sr. Soc. Dev. Spec.	SASES	Resettlement Spec.
Phillip Brylski	Country Sector Coordinator	EASEN	Env. Spec.
Kek Choo Chung	Consultant	EASTE	Port and Water Transport
Christopher J. De Serio	Sr. Program Asst.	EASTE	Sr. Program Asst.
Vinh Quoc Duong	Consultant	EACIF	Env. Officer
Quyen Do Duong	Fin. Analyst	LOAG1	Disbursement Analyst
Simon David Ellis	Sr. Transp. Spec.	EASTE	Task Team Leader
Dung Anh Hoang	Oper. Officer	EASTE	Oper. Officer
Hung Viet Le	Fin. Mgmt. Spec.	EAPCO	Fin. Mgmt.
Hung Kim Phung	Sr. Fin. Officer	LOAG1	Sr. Finance Officer
Richard Y. Scheiner	Consultant	EASTE	Engineer
Kien Trung Tran	Sr. Proc. Spec.	EAPCO	Proc. Analyst
Phuong Thi Minh Tran	Sr. Oper. Officer	EASTE	Oper. Officer
Toshiro Tsutsumi	Sr. Port Eng.	EASTE	Task Team Leader
Hong Vu	Sr. Oper. Off.	EASSO	Resettlement Officer

THE SOCIALIST REPUBLIC OF VIETNAM: Coastal Wetlands Protection Project (IDA-3292)

Key Project Data *(amounts in US$ million)*

	Appraisal estimate	*Actual or current estimate*	*Actual as % of appraisal estimate*
IDA	31.80	31.80	100
Government	22.50	16.30	72
Denmark: Danish International Development Assistance (DANIDA)	11.30	7.30	65
Total project costs	65.63	55.40	

Project Dates

	Original	*Actual*
Concept Review	09/01/1995	09/01/1995
Begin Appraisal	10/18/1999	10/18/1999
Board approval	11/23/1999	11/23/1999
Signing		02/24/2000
Effectiveness	05/31/2000	05/31/2000
Restructuring		11/23/2004
Mid-term Review		05/05/2003
Closing date	09/30/2006	08/31/2007

Staff Inputs (staff weeks)

Stage of Project Cycle	Actual/Latest Estimate	
	No. Staff Weeks	USD Thousands (including travel and consultant costs)
Lending		
FY96		154.71
FY97		80.27
FY98		161.30
FY99		212.27
FY00	30	64.98
FY01	9	32.06
FY02		0.00
FY03		4.36
FY04		0.03
FY05		0.97
FY06		0.00
FY07		0.00
Total	39	710.95
Supervision/ICR		
FY96		0.00
FY97		0.00
FY98		0.00
FY99		0.29
FY00	17	20.70
FY01	29	34.28
FY02	39	72.92
FY03	51	159.09
FY04	45	121.08
FY05	33	77.61
FY06	30	60.13
FY07	5	42.94
Total	249	589.04

Regional direct mark-up to direct cost is 25% for FY99 and before.

Mission Data

Bank Lending and Implementation Support/Supervision Processes

Task Team Members

Names	Title	Unit	Responsibility/Specialty
Lending			
Choeng-Hoy Chung	Sr. Economist	EASRD	First Task Team Leader
Ronald Zweig	Sr. Agric. Ecologist	EASRD	Second Task Team Leader
Christopher Gibbs	Sr. Rural Dev. Spec.	EASRD	Rural Dev.
Susan Shen	Sr. Ecologist	EASRD	Forestry
Rob Crooks	Sr. Environmental Spec.	EASEN	Environment
Lars Lund/Lanfranco Blanchetti-Reveli	Sr. Soc. Spec.	EASSO	Soc. Dev. And Safeguards
Matius Schlund	Agr. Economist	EASRD	Agriculture
Binh Thang Cao	Oper. Officer	EASRE	Natural Res. Mgmt.
Manuel Schiffer/Jeffrey Muller	Economists	EASRD	Economics
Trikkur V. Somanathan	Fin. Spec.	EAPCO	Fin. Mgmt.
Jack Fringer/Thank Chien Nguyen	Sr. Fin. Spec.	EAPCO	Procurement
Gaye Lindsey	Consultant		Disbursement
Karen Hudes/Carlos Escudero	Sr. Legal Counsels	LEGEA	Legal Aspects
Carmen Beaulieu	Task Asst.	EASRD	Overall Assistance
Supervision/ICR			
Ronald Zweig	Sr. Agric. Ecologist	EASRD	Second Task Team Leader
Laurent Msellati	Sr. Operations Officer	EASRD	Third Task Team Leader/Project Mgmt.
Binh Thang Cao	Sr. Oper. Officer	EASRE	Fourth Task Team Leader/Project Mgmt.
Quang Ngoc Bui/Lan Thi Thu Nguyen	Oper. Officer/Analyst	EASSO	Soc. Dev. and Safeguards
Vinh Quoc Duong	Consultant	EACIF	Env. Safeguards
Robin Mearns	Sr. NRM Spec.	EASRE	Natural Res. Mgmt.
Dzung The Nguyen	Oper. Officer	EASRE	Rural Fin.
Steven Oliver	Sr. Agric. Econ.	EASRE	Agriculture
Kien Trung Tran	Sr. Procurement Spec.	EAPCO	Procurement
Thong Quang Tran/Quynh Thi Xuan Phan	Fin. Mgmt. Spec./Analyst	EAPCO	Fin. Mgmt.
Son Thanh Vo	Oper. Officer	EASRE	Natural Res. Mgmt.
Thu Thi Le Nguyen	Sr. Team Asst.	EACVF	Overall Assistance

Annex B. Vietnam Water Sector Logframe

GOAL

To manage, use and protect the water resources of Vietnam in an integrated and comprehensive manner to ensure that economic growth, poverty reduction, environmental health and the quality of life are sustainable in accordance with goals of the Government

COMPONENTS & ACTIVITIES

Component 1: The system of legislation, policies and strategies on water resources developed

Component Objective: To strengthen legal, policy and strategy frameworks to increase the contribution of water resources management to poverty reduction and sustainable national developments

Outputs	Activities	Comment
Output 1.1: Legal framework strengthened	1.1.1	These activities will focus on laws and sub-laws to provide a legal platform for the GoV's management of the sector within an IWRM framework at all levels
1.1.2		
etc		
Output 1.2: Comprehensive strategies on water and related resources management developed	1.2.1	These activities will focus on the need for strategies at the National level (eg the National Water Resources Strategy) to give effect to the GoV's IWRM framework and its links to other natural resource management approaches; and activities related to defining terms of references for the preparation of river basin plans
1.2.2		
etc		
Output 1.3: National water resource policy framework completed	1.3.1	As IWRM approaches are new to Vietnam, there are many areas for which a GoV policy position is not clearly articulated. These activities will focus on fundamental policy areas for which lack of a clear GoV position is impeding progress e.g. water sharing
1.3.2		
etc		
Output 1.4: International cooperation strengthened for water and related resource development and protection	1.4.1	These activities will focus on promoting bilateral and multilateral cooperation to strengthen the relations with countries and international organisations in water and related resources, particularly for participation in the Mekong River Initiative
1.4.2		
etc		

Component 2: Improve the social environment and living conditions for people, especially the poor (including social empowerment of the poor)

Component Objective: To build more effective institutional and decision-making systems so that all people can make informed choices on improvements to their social environment and living conditions

Output 2.1: The number of poor and hungry households reduced	2.1.1	These activities will focus on ensuring food security for vulnerable regions and households, and appropriate water related policies to support poor regions based on the relative advantages of these regions
2.1.2 etc		
Output 2.2: Promote gender and ethnic equity	2.2.1	These activities will continue to implement GoV policies/programs regarding gender and ethnic equity and providing opportunities for women and minority groups to participate in and benefit from IWRM
2.2.2 etc		
Output 2.3: Ensure vital infrastructure works for poor people, poor communities and communes	2.3.1	The focus of these activities will be to ensure basic infrastructure for the poor in rural and urban areas, and on the implementation of National Target Programme for rural water supply and sanitation in accordance with the RWSS Strategy
2.3.2 etc		
Output 2.4: Reduce vulnerability and support the disadvantaged and the poor	2.4.1	These activities will focus on ensuring pro-poor infrastructure development, on early warning forecast systems on natural disasters and on living with extreme events such as floods
2.4.2 etc		

Component 3: Effective management and sustainable use of water resources

Component Objective: To ensure that water resources are secured, managed and used at national, river basin, provincial, district and sectoral levels, to support sustainable and high quality economic growth

Output 3.1: High-quality and timely water and related data and information collected, processed and disseminated	3.1.1	These activities will focus on the collection, processing and dissemination of timely and high-quality information and basic surveys on water and related resources as a basis for better decision-making; and on research and information on climate change and its implications
3.1.2 etc		
Output 3.2: River basin plans for water resources extraction, use and development completed in priority areas	3.2.1	These activities will focus on the development of plans in priority river basins for the sustainable management, development and use of water resources for the benefits of the community, including the provision of ecological flow requirements
3.2.2 etc		

Output 3.3: The contribution to the national economy by the water sector increased through works and measures	3.3.1	These activities will cover more efficient and sustained sector productivity, upgrading and improving priority water supply, dams and dyke protection systems; the application of efficient water supply and water use technologies; maximising the benefits of investments in existing and new infrastructure that is economically, socially and environmentally sustainable; and establishing asset management plans for key infrastructure
3.3.2 etc		
Output 3.4: The contribution to the national economy by the urban water sub-sector increased through works and measures	3.4.1	These projects cover more efficient and sustained sector productivity by upgrading and improving priority water supply dams, reticulation systems and treatment plants (water, sanitation and wastewater); the application of efficient urban water supply, water use technologies and efficient sanitation and wastewater services; maximising the benefits of investments in existing and new infrastructure that is economically, socially and environmentally sustainable; and establishing asset management plans for key infrastructure
3.4.2 etc		
Output 3.5: Flood management activities completed	3.5.1	These activities will focus on the development of flood protection plans in priority river basins; and other activities for dealing with water related natural disasters that affect the community
3.5.2 etc		
Output 3.6: IWRM tools for the management of water extraction and use put into effect	3.6.1	These activities will focus on the IWRM tools to achieve sustainable water exploitation and use, such as water licensing, inspectorate and compliance, water resource pricing, water allocation action plans
3.6.2 etc		

Component 4: Water related biodiversity conserved, pollution prevented and environmental quality improved

Component Objective: To improve the quality of water and related environments by preventing pollution and protecting environmental assets

Output 4.1: River basin plans for water source protection completed in priority areas	4.1.1	These activities will focus on the development of plans in priority river basins for the protection of water and related resource from pollution and degradation
4.1.2 etc		

Output 4.2: Improvement to the environment by the water sector increased, through works and	4.2.1	These activities cover upgrading and improving priority sanitation and wastewater reticulation systems and treatment plants; water re-use and
4.2.2 ***measures***	etc	efficient sanitation and wastewater services; solid waste management systems; and establishing asset management plans for key infrastructure
Output 4.3: IWRM tools for managing pollution developed and applied	4.3.1	These activities will focus on the development of pollution control measures such as issuing wastewater discharge permits, inspectorate and compliance, wastewater treatment, the adoption of clean production and the use of pollution fees and charges, EIA processes, land use planning
4.3.2 etc		
Output 4.4: Water related biodiversity and ecosystems conserved	4.4.1	These activities will focus on the development of measures to protect the integrity of water and related environments such as extension of special areas for conservation, natural resources management plans for key assets such as wetlands), protection of riparian lands, mangrove forests, river estuaries and catchment forests
4.4.2 etc		

Component 5: Water sector institutional capacity strengthening - build capacity, participation, education and awareness

Component Objective: To develop water sector capacity and knowledge at the national, river basin, provincial, district and local community levels to implement IWRM approaches in a practical way

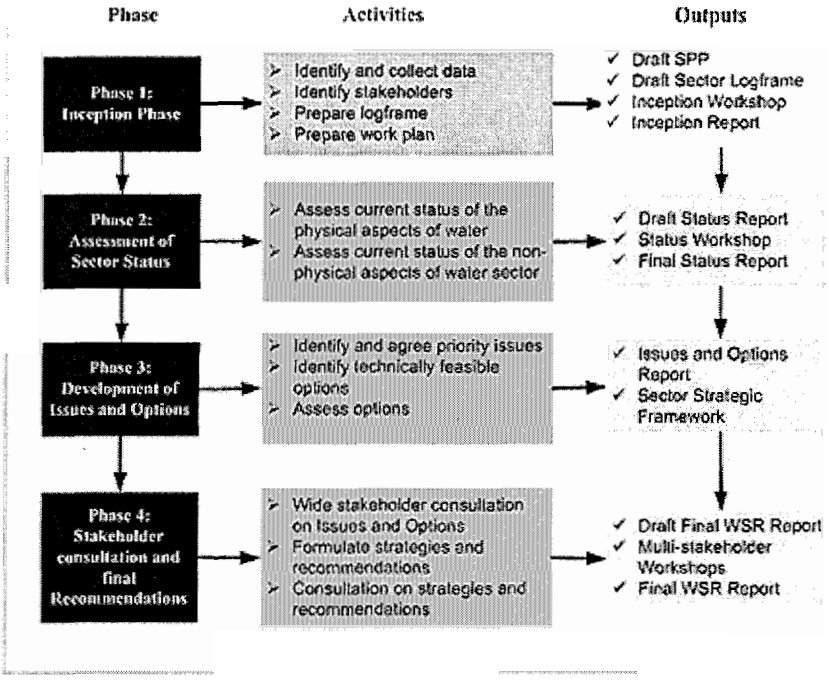
Output 5.1: Intuitional capacity strengthening for water sector at all levels of authorised agencies and socio-economic organisations	5.1.1	These activities focus on strengthening institutional capacity such as clear definitions of functions of organisations (GOV, river basin, SOEs), improving the skills (both range and number) particularly at provincial and lower levels, developing decision support tools (eg models); improving research, science and technology at all levels, IT development to support the water sector, renovation of the technical facilities for sectors and up-grading equipment
5.1.2 etc		
Output 5.2: Strengthen involvement of water users in decision-making and financing	5.2.1	These activities will focus on participatory mechanisms for management of rural water infrastructure; systems for irrigation, which support user-control and cost-recovery; and participatory management systems for local authorities and user groups
5.2.2 etc		

Output 5.3: Enhance the participation of the community into making managing decisions

5.3.1 These activities will focus on awareness of water issues, citizen rights and responsibilities; community participation in water planning and management; guidelines/handbook and training for community participation; and monitoring the implementation of water resources and environmental protection

5.3.2
etc

Box 10. Activities and Outputs



The above table shows a summary of the activities and outputs under each Phase