



Report and Recommendation of the President to the Board of Directors

Project Number: 40282-02
November 2008

Proposed Supplementary Loan Socialist Republic of Viet Nam: Emergency Rehabilitation of Calamity Damage Project

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 7 November 2008)

Currency Unit	–	dong (D)
D1.00	=	\$0.000594
\$1.00	=	D16,838

ABBREVIATIONS

ADB	–	Asian Development Bank
CCFSC	–	Central Committee for Flood and Storm Control
CPI	–	consumer price index
CPMU	–	Central Project Management Unit
DARD	–	Department of Agriculture and Rural Development
DDMFSC	–	Department of Dike Management, Flood and Storm Control
EIRR	–	economic internal rate of return
FDI	–	foreign direct investment
GDP	–	gross domestic product
GIS	–	geographic information system
ICB	–	international competitive bidding
IEE	–	initial environmental examination
IPDF	–	indigenous peoples development framework
MARD	–	Ministry of Agriculture and Rural Development
NCB	–	national competitive bidding
O&M	–	operation and maintenance
PPC	–	provincial people's committee
PPMU	–	provincial project management unit
RRP	–	report and recommendation of the President
SDR	–	special drawing rights
SOE	–	state-owned enterprise
TA	–	technical assistance
WRU	–	Water Resources University

NOTE

In this report, "\$" refers to US dollars.

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SUPPLEMENTARY LOAN AND PROJECT SUMMARY

Borrower	Socialist Republic of Viet Nam
Classification	Targeting classification: General intervention Sector: Agriculture and natural resources Subsector: Water resource management Theme: Sustainable economic growth Subthemes: Fostering physical infrastructure development, developing rural areas
Environment Assessment	Category B An initial environmental examination was undertaken.
Project Description	<p>The report and recommendation (RRP) of the President for the Project was circulated to the Board of Directors of the Asian Development Bank (ADB) in October 2006. This led to approval of an initial loan of SDR34.7 million to the Socialist Republic of Viet Nam in November 2006, as emergency assistance to support the Government's response to calamitous damage to rural infrastructure caused by a series of typhoons and storms in 2005. The Project is aimed at (i) reinstating essential infrastructure, including roads, flood protection, irrigation systems, and social infrastructure in the 10 provinces that were severely affected by typhoons and storms in 2005; and (ii) providing equivalent or enhanced storm and flood protection to vulnerable areas where feasible. Project implementation was initially deficient, with delays exposing investments already committed under the Project to further damages from typhoons and storms in 2006 and 2007. Project implementation has also been affected by cost increases caused by high inflation in Viet Nam's economy. However, implementation progress has improved markedly in recent times, especially since the mobilization of project implementation consultants in June 2008.</p>
Rationale	<p>At appraisal, the Project comprised 89 subprojects (39 priority and 50 additional subprojects). Subsequently, with the delays in project start-up and given the urgency of some, 16 subprojects were carried out using government funds. Thus, the total number of subprojects was reduced to 73 and reprioritized into 47 priority and 26 additional subprojects. With recent high inflation and greatly increased costs for civil works, materials, and labor—compounded by additional damages to infrastructure caused by typhoons and storms in 2006 and 2007—many of the subprojects now have total cost estimates that significantly exceed the original estimates.</p>

The Government is trying to respond to this situation through a reduction in the number of subprojects and by providing additional counterpart financing. However, given the size and significance of the price escalation, and the Government's inability to provide the full amount of additional financing, a further reduction in the number of subprojects may threaten the Project's viability. Without supplementary financing, there would be a significant financing gap that would put much of the investment to date at risk. Partially completed structures could either be lost or be unable to provide their expected protective function while awaiting finance for completion from other sources. This would also militate against sustaining agricultural productivity in the project areas.

At least 13 priority subprojects also require design enhancements to reduce risk and vulnerability, and ensure adequate safety for people living in the area and for the sustainability of the capital investments committed to rural infrastructure rehabilitation.

Impact and Outcome

The impact of the Project, as stated in the original design and monitoring framework, is sustained economic growth in the areas affected by typhoons in 2005. The original outcome is rapid resumption of livelihoods and reduced vulnerability to natural disasters in the affected areas. While it has not been rapid, the supplementary financing will contribute to the resumption of livelihoods and reduced vulnerability to natural disasters.

Project Investment Plan

The estimated cost of the supplementary financing is \$30 million, including taxes and duties of \$3.3 million. The total revised project cost is estimated to be \$93.9 million.

Financing Plan

Supplementary financing of \$25.5 million (SDR17.085 million to supplement the \$50.97 million agreed in 2006) will be provided from ADB's Special Funds resources to provide supplementary financing for the Project. The supplementary financing will be subject to the same terms and conditions as the initial loan, and the repayment schedule of the supplementary financing will be synchronized with that of the initial loan, which has a term of 40 years, including a grace period of 10 years, an interest rate of 1% per year, and repayment of principal at 2% a year for the first 10 years after the grace period and 4% a year thereafter, and such other terms and conditions as are substantially in accordance with those set forth in the Loan Agreement, as amended for purposes of the supplementary financing. The initial loan was approved on 21 November 2006. The Government's contribution from local sources to the supplementary financing will be \$4.5 million, including all taxes and duties. The Borrower will be the Socialist Republic of Viet Nam.

Period of Utilization

Until 31 December 2011

Estimated Project Completion Date

30 June 2011

Executing Agency

Ministry of Agriculture and Rural Development (MARD)

Implementation Arrangements

The current implementation arrangements will be maintained for the supplementary financing. MARD has delegated the main responsibilities for project execution to the Central Project Management Unit (CPMU) in MARD's Agriculture Projects Management Board. The provincial people's committees (PPCs) in the provinces where the Project is located are the implementing agencies and, through the provincial departments of agriculture and rural development (DARDs), subprojects are selected, prepared, and implemented. Each DARD has established a provincial project management unit (PPMU) under its direct administration to carry out the works.

Delays in project implementation have provided lessons that will be applied to improve performance that include (i) setting deadlines for design procedures, after which subprojects will not be eligible for consideration of financing under the loan; (ii) accelerating training, which will be provided in each project province and improving effectiveness by including PPMUs, PPCs, DARDs, and contractors; (iii) prior review and endorsement of subproject designs for flood protection projects by CPMU, with assistance from the project implementation consultants; (iv) assessment of a minimum of two alternatives for the feasibility studies of subprojects; and (v) increased mobilization advances for construction contractors to prepurchase materials.

CPMU will create a database of all subproject contracts, including the contract adjustments that can be included in project reports, to ensure that an up-to-date reconciliation of "available funds" is maintained. The database will be used as the basis for deciding on the use of unutilized funds according to the following priorities: (i) given high price escalation, completion or upgrading of priority subprojects to a sustainable standard; (ii) completion of priority subprojects through enhanced technical design to ensure safety conditions of structures, protection of human life, and protection of essential infrastructure; and (iii) additional subprojects that meet the required selection criteria.

Procurement

The current procurement conditions will be maintained for the supplementary financing. Civil works and related services will be procured in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time). Most civil works contracts are estimated to cost less than \$2 million and are being procured through national competitive bidding (NCB) procedures. The Government's standard bidding documents and procedures comply closely with ADB's *Procurement Guidelines* and are being used for this purpose. Postqualification or the national contractor's registration and/or classification system has been used for NCB contracts. The bidding period is 21 days. Prior review by ADB of invitations to bid, bidding documents, and bid evaluation reports was required for the first NCB contract in each province. Subsequently, retroactive approval procedures were followed. In cases where, for any reason, ADB does not approve the award or terms of contract, the Government is required to use its own funds to finance the contract or to refund to ADB any payments already made from loan funds for that contract.

Consulting Services

A team of international and national consultants, with expertise in natural disaster risk assessment, engineering investigations and design, geotechnical engineering, economic and financial analyses, and social and environmental aspects was recruited under ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time) to assist with implementation of the Project, and will be maintained for its extended duration.

Project Benefits and Beneficiaries

The major beneficiaries previously identified were about 450,000 residents of remote areas of the project provinces that will benefit directly from improved access to markets, schools, and other services; rapid resumption of income-earning activities; and greater security from natural disasters. In the priority subprojects, the Project will reinstate (i) protection and irrigation infrastructure serving about 18,300 hectares (ha) of land; (ii) 211 kilometers (km) of rural roads (including 67 culverts and 5 bridges); (iii) about 98 km of sea dikes and flood protection embankments; and (iv) construction of 1,820 square meters (m²) for schools and markets. Based on risk and vulnerability assessments, rehabilitated structures will have higher resistance to floods, storm surge, waves, and other typhoon-related impacts (including larger conveyance capacity for bridges and better slope protection on sea dikes and flood protection embankments). The causes of failure will be examined to ensure better design standards where necessary, and the completed works will be integrated into a database linked to provincial disaster preparedness plans.

Risks and Assumptions

The risks and assumptions relating to supplementary financing are (i) continued delays to implementation, leading to cost overruns; (ii) an attempt to complete too many subprojects by reducing the scale or technical design standards; and (iii) further damages during the implementation period. Delayed implementation could arise from the amount of time required to complete the adjustment to each priority subproject contract to take into account inflation and any required improvement to the existing design specifications. The reduced scope of dikes and embankments severely reduces their effectiveness and often creates significant risk of damage to the partially completed structure. Measures are being taken to prevent recurrence of such practices. Finally, prolonged design periods have resulted in additional damages to sites. For embankments where there is river action every flood season, this results in significant site changes that require additional design and technical inputs.

Technical Assistance

A technical assistance (TA) grant will be provided for advisory assistance to the Government in Geo-Information Technology for Hazard Risk Assessment. The total cost of the TA is \$625,000, out of which the Republic of Korea e-Asia and Knowledge Partnership Fund will provide a grant of \$500,000 equivalent to be administered by ADB, while the Government will provide the balance of \$125,000 in kind. The TA will support increased disaster preparedness to mitigate the worst impacts of climate change through the provision of staff training for MARD's Disaster Management Center and the Water Resources University (WRU) on the use of advanced technology such as geographic information systems (GIS) and remote sensing.

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed supplementary loan to the Socialist Republic of Viet Nam for the Emergency Rehabilitation of Calamity Damage Project. The report also describes proposed administration of technical assistance (TA) for Geo-Information Technology for Hazard Risk Assessment, and if the Board approves the proposed supplementary loan, I, acting under the authority delegated to me by the Board, will approve the administration by the Asian Development Bank (ADB) of technical assistance to be financed on a grant basis by the Republic of Korea e-Asia and Knowledge Partnership Fund.

II. THE APPROVED PROJECT

A. Project Rationale

2. Flooding triggered by typhoons and storms is the most prevalent and serious natural disaster in Viet Nam, which ranks among the top five most impacted countries to climate change and fourth in the world behind the People's Republic of China, India, and Bangladesh in terms of the absolute number of people living in vulnerable, low elevation coastal zones. In 2005, tropical storms and typhoons affected large parts of Viet Nam, causing loss of life and extensive damage in 16 provinces. Many types of infrastructure that are critical to the livelihoods of poor rural households were destroyed in the 10 most seriously affected provinces: Ha Giang, Ha Tinh, Nam Dinh, Nghe An, Phu Tho, Phu Yen, Quang Binh, Quang Tri, Thanh Hoa, and Yen Bai (the project provinces).

3. Following a damage and needs assessment, and in response to the Government's request, a project following a sector-like approach was designed.¹ This led to approval of an emergency assistance loan (the initial loan) to finance the Emergency Rehabilitation of Calamity Damage Project (the Project).

B. Objectives and Scope

4. The Project's impact will be sustained economic growth in the project provinces severely affected by typhoons in 2005. Its outcome will be rapid resumption of livelihoods and reduced vulnerability to natural disasters in the affected areas. This is being achieved by (i) reinstating essential infrastructure, including roads, flood protection, irrigation systems, and social infrastructure; and (ii) concurrently providing equivalent or enhanced storm and flood protection to vulnerable areas where feasible.

5. The Project's outputs are rehabilitated and strengthened infrastructure in four sectors: (i) flood protection, (ii) irrigation, (iii) roads and bridges, and (iv) social services. The Project finances (i) contracts for civil works; (ii) contracts with national consulting firms that have recently worked or are currently working in the affected districts for feasibility study and detailed design; and (iii) a contract with a team of international and national consultants for technical, social, and environmental review. The project design and monitoring framework is in Appendix 1.²

¹ ADB. 2006. *Report and Recommendation of the President on a Proposed Loan to the Socialist Republic of Viet Nam for the Emergency Rehabilitation of Calamity Damage Project*. Manila (October).

² Despite the Project's failure to produce rapid results, the original design is maintained, including the impact and outcome statements to which the supplementary financing will contribute. Only the performance targets and

C. Cost Estimates and Financing Plan

6. At the time of project appraisal in 2006, the total investment cost was estimated at \$59.89 million, including taxes and duties of \$5.8 million. The Government requested a loan of \$50.97 million equivalent from ADB's Special Funds resources to help finance the Project. The Loan Agreement for the initial loan was signed on 7 December 2006. The initial Loan Agreement has a 40-year term, including a grace period of 10 years, an interest rate of 1% per year, and repayment of principal at 2% a year for the first 10 years after the grace period and 4% a year thereafter. The Government's contribution from local sources was estimated to be \$8.92 million. The Borrower is the Socialist Republic of Viet Nam.

D. Status of and Progress in Project Implementation

7. The Ministry of Agriculture and Rural Development (MARD) is the Executing Agency and has delegated the main responsibilities for project execution to the Central Project Management Unit (CPMU) in MARD's Agriculture Projects Management Board. The provincial people's committees (PPCs) in the project provinces are the implementing agencies and, through the provincial departments of agriculture and rural development (DARDs), subprojects are selected, prepared, and implemented. Each DARD has established a provincial project management unit (PPMU) under its direct administration to carry out the works.

8. At the time of project appraisal in 2006, the Project comprised 89 subprojects (39 priority and 50 additional). Subsequently, with the delays in project start-up and given the urgency of some, 16 subprojects were carried out using government funds. Thus, the total number of subprojects was reduced to 73 and reprioritized into 47 priority and 26 additional subprojects. Of the 47 priority subprojects, 35 have awarded all related contract packages and are in various stages of implementation. Of these, construction is expected to be completed for 6 subprojects within 2008. For the remaining 12 priority subprojects, bid evaluation and contracting of the related packages are at various stages, with one of these subprojects having to be redesigned and rebid, all contracting for which is expected to be completed before the end of 2008. Of the 26 additional subprojects, all of which were identified and reviewed during appraisal of the initial loan, 16 have completed technical designs and are awaiting confirmation of available finance prior to commencing the bidding process. As of 31 August 2008, the overall project implementation progress was estimated at 30% against the elapsed loan period of 57%. The cumulative contract awards were \$21.2 million (equivalent to 39% of the net loan amount of \$54.5 million) and disbursements were \$13.7 million (equivalent to 25% of the net loan amount).³ The list of priority and additional subprojects is in Appendix 2.

9. Project implementation progress was initially deficient but has improved markedly in recent times, especially since the mobilization of project implementation consultants in June 2008. There were delays in project and loan processing, and an extended period elapsed before the Project was fully operational after loan effectiveness. The recruitment of the loan-financed project implementation consultants was completed 14 months after initial loan effectiveness, which limited the technical oversight to DARD and CPMU staff.⁴ The Government's

indicators relating to the outputs, as well as the inputs and activities of the design and monitoring framework, change with supplementary financing.

³ Project implementation progress has picked up considerably since the project review conducted in March 2008 when it was only 17%.

⁴ Although 14 months for the recruitment of consultants seems an excessive period of time, it is actually normal—if not relatively expedient—given onerous government procedures that need to be followed.

decentralized implementation arrangements required PPC decisions over design and contracting procedures without detailed implementation guidelines, which also delayed construction.⁵ The capacity of PPMUs has been inadequate in some provinces and the CPMU training program was delivered late and had limited impact. ADB staff changes also contributed to the lack of continuity and delays. The delays created two unexpected impacts: (i) the 2006 and 2007 storm seasons extended damage at many subproject sites,⁶ and (ii) the Project was exposed to cost increases because of inflation.

10. Work conducted on some subprojects displays a lack of quality arising from design processes, contracting arrangements, contract supervision, and government procedures. Design processes have not adopted least-cost alternative assessments; have been limited to replacement or rehabilitation of specific sites without addressing either site or offsite risk and vulnerability; have been influenced by the PPCs' preference to address a wider scope at lower quality standards; and, most importantly, were driven by the estimated budget provided to the PPCs by CPMU, which results in lower quality design choices as opposed to the specific needs of a subproject. Contracting arrangements have been used to increase the number of procurement packages, resulting in smaller contracts enabling the participation of small local contractors that do not have the experience, equipment, or control systems to achieve the required standards for some subprojects. The lack or limited quality of contract supervision caused by the existence of many small-sized contracts compounds the limited capacity of contractors. However, project implementation consultants were mobilized in June 2008, which provided momentum with achievement of significant project implementation progress.

11. Key lessons learned and to be applied under the supplementary financing include (i) setting deadlines for design procedures after which subprojects will not be eligible for consideration of financing under the loan; (ii) accelerating training, which will be provided in each project province, and improving effectiveness by including PPMUs, PPCs, DARDs, and contractors; (iii) prior review and endorsement of subproject designs by CPMU with assistance from the project implementation consultants; (iv) assessment of a minimum of two alternatives for the feasibility studies of subprojects; and (v) increased mobilization advances for construction contractors to prepurchase materials.

III. THE PROPOSED SUPPLEMENTARY FINANCIAL ASSISTANCE

A. Cost Overrun

12. The estimated total project cost overrun is \$30 million, which is 51% more than the original project cost estimate of \$59.9 million.⁷ The cost includes full financing (including price escalation) for 47 priority subprojects costing \$13.3 million, as well as \$6.5 million for enhancing priority subprojects to reduce risk and vulnerability and \$8.3 million for completing additional subprojects that were reviewed during appraisal of the initial loan.⁸ The balance of the project

⁵ Government Decree 131 outlining its policy for decentralization of responsibility for the implementation of externally financed projects was issued in November 2006. The guidelines to implement this policy followed 10 months later, in September 2007.

⁶ In 2007, flooding from storms caused death for 462 people, 33 others went missing, and 856 were seriously injured. The floods destroyed 718,000 homes and severely damaged transport and irrigation infrastructure in these areas. The estimated costs of damages were more than \$700 million.

⁷ The total cost increase is estimated at \$34 million, of which \$4.0 million is financed through the change in the SDR-US dollar rate.

⁸ The original list was not fully financed because fewer loan savings were made available to fund the emergency assistance loan.

cost overrun is for management costs of \$1.5 million,⁹ and interest charges. The extension of the Project will increase the interest payments during the period of construction by \$0.5 million.

13. Within the list of 47 priority subprojects, CPMU has identified 13 subprojects requiring an additional total investment of \$6.5 million¹⁰ to ensure they achieve sustainable construction standards that enhance their resistance to damage from future storms and typhoons. These additional costs arise from shortfalls in technical design, especially for dikes and river embankments, and additional damages that occurred during the 2006 and 2007 storm seasons.

14. The impact of input price escalation was assessed for four contracts—one each for irrigation, roads, flood protection, and social infrastructure subprojects, which are representative of the four sectors supported under the Project (Appendix 4, Table A4.2 provides the composition of contract price escalation for case study contracts). The overall contract price escalation from bid preparation to contract signing increased from 25% to 28%, with the increased prices of materials comprising about two-thirds to three-fourths of the total value of contract price escalation for all sectors. For the road contract, price escalation on fuel costs had a far greater impact (21%) than for the other sectors (less than 10%) reflecting the mechanical nature of road construction. For the flood protection contract, labor costs constituted 35%, reflecting the highly labor-intensive nature of works on dikes and river embankments, while for the other sectors price escalation on labor costs constituted from 17% to 25%.

B. Impact on the Project

15. Unprecedented rates of price escalation threaten the successful completion of priority subprojects' works that have commenced under the Project. Additional costs were incurred from further damages—during the 2006 and 2007 flood seasons, and early 2008 floods—that have delayed project implementation, exposing the subprojects to additional price escalation. Revised cost estimates of priority subprojects equate to 114% of the original total project financing prior to any project management, interest, and additional subproject costs. The financing shortfall creates a significant risk that some priority subprojects would remain incomplete, delayed, or constructed to lower standards. CPMU and PPMUs have recognized the shortfall of funds and have placed additional subprojects on hold until supplementary financing is confirmed. ADB policy on supplementary financing gives priority to financing cost overruns on works to address damage caused by natural disasters, including floods, as is the case with the Project.¹¹

16. The Government is trying to respond to the significantly higher costs of subprojects through a reduction in their number and by providing additional counterpart financing. However, given the size and significance of the price escalation, and the Government's inability to provide the full amount of additional financing, a further reduction in the number of subprojects may reach an extent that threatens the Project's viability. Some PPMUs have sought cost savings by lowering design standards and reducing the scope of subprojects, which is resulting in increased risk and vulnerability in a number of subprojects. These subprojects include a school at risk from embankment collapse, several river embankments that have inadequate toe protection resulting in toe erosion, and incomplete dike construction that leaves the structure susceptible to further damage and potentially jeopardizes the livelihoods of local residents. These enhancements would receive priority over additional subproject financing.

⁹ Estimated to be 9% of capital works investment in enhancement works of priority subprojects and additional subprojects

¹⁰ Excluding expected project management costs of \$0.6 million.

¹¹ ADB. 2005. *Operations Manual*. Section H5/BP: Supplementary Financing. Manila (5 December).

17. Without supplementary financing, the expected outcome of the Project will not be realized and the Project's contribution—albeit small—to the national disaster preparation, mitigation, and management goals will be significantly lessened. Much of the investment made to date would remain at risk—partially completed structures could be lost or be unable to provide their expected protective function, while awaiting finance for completion from other sources. This would also militate against sustaining agricultural productivity in the project provinces. The exact extent of these impacts is not possible to predict, as it is not known which subprojects will be completed, nearly completed, or abandoned without the detail of the actual costs from contract adjustment negotiations that have yet to be undertaken.

C. Rationale

1. Macroeconomic Context

18. Viet Nam's economy has been one of the fastest growing in Asia for the last 2 decades. Growth was particularly strong in the last several years, with real gross domestic product (GDP) growing by an average annual rate of 8.0% in 2003–2007. In 2007, real GDP grew by 8.5%, the highest rate since 1996. GDP per capita at current prices increased from \$441 in 2002 to \$818 in 2007, while GDP per capita at purchasing power parity rose from \$1,649 to \$2,587.

19. In recent years, however, growth of aggregate demand outpaced growth of aggregate supply. While expansionary monetary and fiscal policies and extensive borrowing and spending by state-owned enterprises (SOEs) fueled growth of aggregate demand, growth of aggregate supply was constrained by infrastructure bottlenecks, relatively low efficiency of public investment, and increasingly acute shortages of skilled labor. As a result, both internal and external macroeconomic imbalances emerged.

20. On the domestic side, average annual inflation jumped from 1.8% in 1999–2003 to 7.9% in 2004–2007. Inflation was quite high in late 2007 and the first half of 2008, with food prices rising particularly fast. In June 2008, the consumer price index (CPI) was 27.2% higher and the index of food prices (which account for about 40% of the CPI) was 44.2% higher than in June 2007. Such high inflation was caused not only by the excessively rapid growth of aggregate demand in 2007, but also by the rise of world commodity prices (especially energy and food prices) in 2007 and the first half of 2008 and the supply-side shocks of late 2007 to early 2008 (including the outbreak of pig and poultry epidemics, an unusually harsh winter in northern provinces, and floods in central provinces).

21. In the external sector, the current account balance turned from a surplus in 1999–2001 into a deficit in 2002–2007 and the first half of 2008. Moreover, the current account deficit widened from 0.4% of GDP in 2006 to 9.6% of GDP in 2007 and an estimated 20% of GDP in January–June 2008. Exports grew fast, but imports grew even faster, resulting in sharp increases in the trade deficit. At the same time, inflows of foreign capital, especially foreign direct investment (FDI), remained strong. Viet Nam's accession to the World Trade Organization in early 2007 improved its attractiveness for foreign investors by making the policy framework more predictable. Net FDI inflows, which ranged from \$1.3 billion to \$1.8 billion in 2003–2006, surged to \$6.6 billion in 2007 and an estimated \$5.0 billion in the first 6 months of 2008. Consequently, the overall balance of payments recorded a large surplus in 2007 and a small deficit in the first half of 2008. Gross official international reserves almost doubled from \$11.5 billion at the end of 2006 to an estimated \$21.0 billion at the end of 2007, before declining to slightly less than \$20 billion at the end of June 2008.

2. Government Responses

22. In response to accelerating inflation and the ballooning current account deficit, in March 2008 the Government essentially changed its top policy priority from maintaining high growth rates to curbing inflation and reducing the trade deficit (Appendix 3). In January–June 2007, it took a range of measures aimed at achieving these objectives. Among them were tightening of monetary and fiscal policies. The minimum reserve requirements for banks and the policy interest rates were raised considerably. While budgetary expenditure on targeted social assistance programs increased, administrative and capital expenditures were cut substantially. Investments by SOEs (especially in noncore businesses) were curtailed.

23. There are signs that these measures are restraining growth of aggregate demand and reducing the macroeconomic imbalances. Growth of money supply slowed down from 46.1% in 2007 to an annualized rate of 15.7% in the first quarter of 2008. The balance of the consolidated budget turned from a deficit of 5.5% of GDP in 2007 to a surplus of 0.4% of GDP in the first half of 2008. Year-on-year GDP growth moderated to 6.5% in January–June 2008. Monthly inflation decelerated from 3.9% in May 2008 to 2.1% in June 2008, with the rise of food prices slowing down from 4.6% to 2.3%. The trade deficit narrowed from \$3.4 billion in March 2008 to \$0.8 billion in July 2008. In a sign that foreign investors remain optimistic about Viet Nam's medium-term economic prospects, new FDI commitments soared to \$31.6 billion in the first half of 2008 from \$20.3 billion for the entire year of 2007.

3. Project Price Escalation

24. The impact of inflation on project costs has been significant (Appendix 4). The impact was compounded by the sector-like disbursement modality that applies no price contingency. Price escalation for subprojects designed in July 2007 and constructed for completion in 2009 may exceed 25%. Usually, the Government would be expected to apply available funds to the list of subprojects, with any shortfall being managed through a reduction in scope. Following this approach for an emergency assistance loan, given the extreme impact of price escalation in Viet Nam's economy, would seriously erode the project outcome.

25. The timing of the preparation of bidding documentation has meant that many contracts were awarded before the January 2008 announcement of wage increases, and indicative budgets had no allowances for price increases on labor costs, fuel costs, or construction materials. As such, these contract prices are now insufficient to complete the required works program.

26. The estimation of price escalation can only be indicative as the actual cost will depend on the period until project completion, and further delays could be caused by weather or seasonal constraints and procedural delays with the government process to adjust existing contracts.

4. Existing Contract Adjustments

27. As a matter of policy, ADB does not endorse changes in contract prices that are not already permissible under the terms of the contract. However, for the reasons set out above, flexibility has been allowed.¹² Supplementary financing will require consideration of two

¹² ADB Central Operations Services Office memo dated 26 August 2006 on Price Adjustments in ADB-Financed Contracts Due to High Inflation.

important aspects. First, existing contracts will need to be adjusted for inflation in accordance with government procedures (key steps in the adjustment process are in Appendix 4). Second, CPMU needs to ensure that future contracting incorporates forecast price increases and provides a budget ceiling that enables the contract to be completed.

28. A number of constraints need to be considered in the Government's contract adjustment process. Requirements include (i) only one adjustment is allowed per contract, (ii) future inflation is limited to 10%, and (iii) the process relies on official unit prices which may vary from market prices. These factors require the timing of contract adjustments to be sufficiently late to enable as much actual information as possible to be included in the adjustment while not being so late that a contract stops. Ideally, the procedure would be concluded by the time disbursements on the original contract reach 80%.

29. In addition to the price escalation adjustments needed on most contracts, the design of at least 13 identified subprojects also needs to be adjusted to ensure that these investments achieve an acceptable level of risk reduction from possible failures. River embankments and sea dikes for flood protection, in particular, have had significant weaknesses identified. These need to be prioritized to ensure existing investments are not wasted, and to reduce the threat to life and the structures themselves to an acceptable level.

30. CPMU, with the assistance of project implementation consultants, needs to review the technical specifications for all flood protection subprojects and ensure that they are corrected and improved as applicable in accordance with the recommendations of the reviews. Availability of supplementary financing is conditional on these steps being taken to reduce the risks for subprojects already identified as defective, and introduces covenants into the initial Loan Agreement by way of an amendment to ensure that no further disbursements are authorized for any flood protection subproject unless and until its design specifications have been verified and the works corrected to the satisfaction of ADB. Where there have been prior disbursements and where the design specifications or works do not meet ADB standards, any loan proceeds already disbursed in respect of such subprojects shall be refunded to ADB immediately and unconditionally.

31. With supplementary financing, the project implementation period will be extended by 2 years. The extension is needed to complete construction of the priority subprojects, most of which will require contract adjustments caused by high price escalation in Viet Nam that was not reasonably predictable during early stages of project implementation. Furthermore, at least 13 of the 47 priority subprojects will also require contract adjustments to accommodate needed design enhancements, which did not become apparent until post-reviews by the project implementation consultants revealed design faults, especially with flood protection subprojects. Finally, the 2-year extension is needed to complete construction of additional subprojects that will be assessed and deemed eligible for financing after the priorities mentioned above have been addressed and adequate financing determined to be available. Technical designs have been completed for 16 of these additional subprojects, which are awaiting confirmation of financing before proceeding to the bid processing stage.

D. Revised Cost Estimates

32. The estimated cost of supplementary financing is \$30.0 million, including taxes and duties of \$3.3 million (Table 1). Detailed cost estimates by component are in Appendix 5.

Table 1: Project Investment Plan
(\$ million)

Item	Total ^a
A. Base Cost^b	
1. Priority Subprojects	19.76
(i) Price Escalation	13.28
(ii) Subproject Design Enhancements	6.47
2. Project Management ^c	1.46
3. Additional Subprojects ^d	8.29
Subtotal (A)	29.50
B. Contingencies^e	0.00
C. Interest During Implementation^f	0.50
Total (A+B+C)	30.00

^a Includes taxes and duties of \$3.3 million.

^b In mid-2008 prices.

^c Estimated at 9% of enhancement civil works and additional subproject budget.

^d Identified at appraisal therefore not additional to the original scope of the Project.

^e Physical and price contingencies are not included in a sector modality.

^f Interest during construction is computed at 1%.

Source: Asian Development Bank estimates.

E. Revised Financing Plan

33. The Government has requested a loan of \$25.5 million (SDR17.085 million¹³ to supplement the \$50.97 million¹⁴ equivalent agreed in 2006) from ADB's Special Funds resources to provide supplementary financing to the Project. The SDR value of the initial loan as at 30 August 2008 is \$54.5 million equivalent. The supplementary financing will be subject to the same terms and conditions as the initial loan, and the repayment schedule of the supplementary financing will be synchronized with that of the initial loan, which has a term of 40 years, including a grace period of 10 years, an interest rate of 1% per year, and repayment of principal at 2% a year for the first 10 years after the grace period and 4% a year thereafter, and such other terms and conditions as are substantially in accordance with those set forth in the initial Loan Agreement, as amended for purposes of the supplementary financing. The initial loan was approved on 21 November 2006. The Government's contribution towards the supplementary loan amounts to \$4.5 million, including all local taxes and duties. The Borrower will be the Socialist Republic of Viet Nam. Detailed cost estimates by financier are in Appendix 5.

34. The supplementary financing will be provided under an amendment to the initial Loan Agreement (the Amendment Agreement), providing for (i) an aggregate SDR loan amount (being the SDR amount under the initial loan increased by the supplementary financing); (ii) a consolidated repayment schedule for the initial loan and the supplementary financing; and (iii) certain clarifications and amendments to the implementation arrangements, as detailed in this report and recommendation of the President (RRP).

¹³ Based on the 28 October 2008 SDR–US dollar conversion of 0.67.

¹⁴ Based on the SDR–US dollar conversion rate at the time of loan negotiations.

Table 2: Financing Plan for Supplementary Loan
(\$ million)

Source	Total	%
Asian Development Bank	25.5	85.0
Government	4.5	15.0
Total	30.0	100.0

Source: Asian Development Bank estimates.

F. Remedial Steps

35. The major threat and risk to continuation of the Project is the prospect of prolonged periods for designing and implementing subprojects. A number of remedial steps have been identified and agreed with MARD and CPMU. These include (i) fast-tracking contracting, (ii) maximizing mobilization payments for purchase of materials, (iii) reduced construction windows, (iv) timely adjustment of existing contracts, and (v) reprioritization of additional subprojects based on the performance of each PPMU to design and implement priority subprojects. There are also recent initiatives to align ADB's procedures with those of the Government to improve project performance in general.¹⁵

36. Review missions will ensure that implementation plans are being achieved, and where delays are being incurred in a particular subproject, options (including the cancellation of the subproject) will be reviewed and applied.¹⁶ Full project reviews will be conducted by specialized staff of the Viet Nam Resident Mission twice a year for the duration of the implementation period.

G. Implementation Arrangements

1. Project Management

37. The implementation arrangements of the initial loan will be maintained and strengthened. Improvements will be introduced both in the Amendment Agreement and in the project administration memorandum to ensure that (i) CPMU and DARD work closely to monitor the level of price adjustments on existing contracts to ensure that overall project financing is available before commitments are made to additional subprojects, (ii) design specifications and construction are maintained or improved (iii) contract pricing is adjusted to accommodate inflation, and (iv) procedures for use of funds are reprioritized.

38. The RRP for the initial loan of the Project provides indicative costs for additional subprojects. This RRP does not provide these estimates so they cannot be used as a determinant of subproject design, acting as a constraint irrespective of site or technical needs. Under previous arrangements, major works were being simplified and/or had their scope reduced to fit the indicative budget. CPMU needs to ensure that design processes move into a far more sustainable form of subproject design based on site investigations and a design that

¹⁵ The Viet Nam Country Portfolio Review Mission in September–October 2008 proposed a number of advance and preparatory actions to improve project performance.

¹⁶ The Project Review Mission conducted simultaneously with the Supplementary Loan Fact-Finding Mission (24 July–12 August 2008) recommended 12 measures for CPMU's and PPMUs' improvement of project performance and implementation. These were subsequently agreed when the aide memoire of the Project Review Mission was signed by the director, CPMU on 17 September 2008.

responds to site and technical needs, and not simply a design for spending the budget. As such, all designs for additional subprojects will need to be reviewed by CPMU, with the assistance of the project implementation consultants, to ensure that all findings are incorporated into the contract documentation. ADB will endorse the bidding and contract documentation once it is assured all findings are incorporated.

39. The scope of the design inputs also needs to be reconsidered. The current approach of focusing on a site-based response to damages will be expanded to a system-wide approach within which a site is located. For example, the current approach of building a river embankment to protect land on one side of a river often results in damages downstream on the opposite bank. A proper assessment would factor these impacts into the design process, thus the requirement for prior approval of designs for additional subprojects is critical to ensure that such considerations are fully addressed.

40. To manage the supplementary financing, CPMU will create a database of all subproject contracts, including the contract adjustments, that can be included in project reports to ensure that an up-to-date reconciliation of “available funds” is maintained. The database will be used as the basis for deciding on the use of unutilized funds according to the following priorities: (i) given high price escalation, completion or upgrading of priority subprojects to a sustainable standard; (ii) completion of priority subprojects through enhanced technical design to ensure safety conditions of structures, protection of human life, and protection of essential infrastructure; and (iii) additional subprojects that meet the required selection criteria, including demonstrated capacity of relevant PPMUs. CPMU will be supported in these assessments by the project implementation consultants whose focus will move to (i) capacity building of PPMUs, (ii) technical support for CPMU, and (iii) technical assessment of both enhanced and additional subprojects. CPMU’s primary role of monitoring and evaluation will be strengthened through the development of a structured training needs assessment and plan. The training program will be implemented and the evaluation workshops completed prior to effectiveness of the supplementary financing.

41. The procedure for additional subprojects will involve the following: (i) PPMU requesting CPMU support for an original budget allocation; (ii) a site investigation is conducted and design options (minimum of two) are reviewed by the project implementation consultants; (iii) if endorsed, the PPC provides approval for feasibility study and detailed costing; (iv) the feasibility study would then be reviewed by the consultant’s safeguard specialists; and (v) if endorsed, CPMU would then seek ADB’s endorsement, which would trigger allocation of budget for implementation.

42. The process for additional subprojects is not to be a provincial allocation model but a competitive application process, with the first to apply being first to access available funds. This will be partly self-determined, based on demonstrated capacity of relevant PPMUs. A final cutoff date for approval of additional subprojects is 30 June 2009.

43. **Selection Criteria and Approval for All Subprojects.** All subprojects are required to meet the same criteria as applicable under the initial Loan Agreement (paragraph 5 of Schedule 5 to the initial Loan Agreement):

- (i) Only subprojects damaged by the 2005 series of typhoons and tropical storms will be considered for inclusion in the Project.
- (ii) Subprojects with unacceptable environmental or social impacts or significant resettlement may not be included.

- (iii) No subprojects will be located within or adjacent to designated protected or conservation areas and their buffer zones, nor will any subproject change the course of a river or alter river characteristics in a significant way, or have the potential to make significant changes in the surrounding environment.
- (iv) In the case of a flood protection subproject,¹⁷ the design specification for such subproject shall be approved by ADB.
- (v) Rehabilitation is technically feasible, cost-effective, financially viable, and sustainable, and represents a least-cost alternative, while incorporating natural disaster risk reduction measures where necessary and feasible.¹⁸
- (vi) A subproject may only be considered if the PPC has an operation and maintenance (O&M) plan for the subproject, and provides an assurance of annual O&M budget (exclusive of any beneficiary contribution that may be negotiated during subproject selection and preparation).
- (vii) Only subprojects for which the contracted works can be completed during project implementation may be considered, with final approvals in place before 30 June 2009.
- (viii) Partial financing of a subproject from sources other than the loan and related government counterpart funding is permissible provided the amounts and sources of all such external funding are clearly and transparently presented as part of the financing plan and submitted to ADB for approval.
- (ix) No subproject costing less than \$300,000 equivalent will be eligible for financing under the Project unless otherwise agreed by ADB, and there shall be no grouping of smaller works program to attain this cost requirement.¹⁹

2. Implementation Period

44. The project implementation period is for over 48 months from the date of loan effectiveness of the initial loan, with project completion expected to occur by 30 June 2011 and loan closing date on 31 December 2011, against a project completion date of 30 June 2009 and loan closing date of 31 December 2009 under the initial loan. The indicative project implementation schedule is in Appendix 6.

3. Procurement

45. Civil works and related services will be procured in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time). SOEs will be eligible to bid for contracts if they are legally and financially autonomous, independent from MARD and the DARDs, and operate on the basis of commercial law and practice. Civil works contracts estimated to cost more than \$2 million equivalent will be procured through international competitive bidding (ICB). ADB's standard bidding documents for the procurement of works (large contracts) will be used. Prequalification will only be required for large or complex subprojects as determined by ADB at the feasibility study phase. Procurement using ICB procedures requires prior ADB review of invitations to bid, bidding documents, and bid evaluation reports. The bidding period will be 42 days for ICB contracts.

¹⁷ A subproject indicated as a flood protection subproject in Appendix 2 of this RRP.

¹⁸ Distributional analyses will be made to determine the nature and impact of all positive and negative impacts, and the results will be used to improve subproject prioritization and thereby increase project benefits for the poor.

¹⁹ The threshold amount is raised from \$200,000 (under the initial loan) to \$300,000 as a result of inflation. For the same reason, selection criterion (vii) paragraph 5 of Schedule 5 of the initial Loan Agreement ("the estimated construction cost shall not exceed the original estimate by the Borrower by more than 15%") is not included as a selection and approval criteria with supplementary financing.

46. Civil works contracts estimated to cost \$2 million or less will be procured through national competitive bidding (NCB) procedures. The Government's standard bidding documents and procedures will be used if these comply closely with ADB's *Procurement Guidelines*. Postqualification or the national contractor's registration and/or classification system will be used for NCB contracts. The bidding period will be 21 days. Prior review by ADB of invitations to bid, bidding documents, and bid evaluation reports was required for the first NCB contract in each province. Subsequently, retroactive approval procedures were followed. If for any reason ADB does not approve the award or terms of contract, the Government will use its own funds to finance the contract or to refund to ADB any payments already made from loan funds for that contract. The updated procurement plan is in Appendix 7.

47. A team of international and national consultants, with expertise in natural disaster risk assessment, engineering investigations and design, geotechnical engineering, economic and financial analyses, and social and environmental aspects was recruited under ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time) to assist with implementation of the Project, and will be maintained for its extended duration.

4. Anticorruption Policy

48. ADB's *Anticorruption Policy* (1998, as amended to date) was explained to and discussed with the Government and Executing Agency. Consistent with its commitment to good governance, accountability, and transparency, ADB reserves the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive, or coercive practices relating to the Project. To support these efforts, relevant provisions of ADB's *Anticorruption Policy* are included in the loan regulations and the bidding documents for the Project. In particular, all contracts financed by ADB in connection with the Project shall include provisions specifying the right of ADB to audit and examine the records and accounts of the Executing Agency and all contractors, suppliers, consultants, and other service providers as they relate to the Project.

IV. TECHNICAL ASSISTANCE

49. A TA grant will be provided for advisory assistance to the Government in Geo-Information Technology for Hazard Risk Assessment. The total cost of the TA is \$625,000, out of which \$500,000 equivalent will be financed on a grant basis by the Republic of Korea e-Asia and Knowledge Partnership Fund and administered by ADB, while the Government will provide the balance of \$125,000 in kind.

50. The TA will support increased disaster preparedness to mitigate the worst impacts of climate change through the provision of training to staff of MARD's Disaster Management Center and of the Water Resources University (WRU) on the use of advanced technology such as geographic information systems (GIS) and remote sensing. Further details of the TA are in Appendix 8.

V. PROJECT BENEFITS, IMPACTS, AND RISKS

A. Benefits and Impacts

51. The nature of the Project makes detailed determination of the economic and financial feasibility difficult. Under the disaster and emergency assistance guidelines, there is no explicit requirement for economic analysis; rather, the economic assessment is included in the Government's feasibility study guidelines. The review of economic assessments highlights these

difficulties and major shortfalls for the feasibility study guidelines. Details of the updated economic analysis of selected subprojects are in Appendix 9.

52. There are four types of subprojects: (i) irrigation, (ii) roads, (iii) flood protection, and (iv) social infrastructure subprojects. Each type of subproject has a unique set of economic benefits, which requires a different methodology for quantifying and estimating. The economic benefits that can be attributed to the subprojects are discussed below.

53. For irrigation subprojects, the primary benefit is increased agricultural production, which is measured as the incremental increase in net farm income for the project area. Secondary benefits of irrigation subprojects can include improved drainage function (reduced or avoided flood damage) and multiple use benefits, such as water for cleaning and drinking. Quantifying secondary benefits is difficult and not normally done. Another important potential benefit can be improved flood protection from a reservoir used for irrigation purposes.

54. For road subprojects, the primary economic benefit is reduced travel costs, normally found through reduced fuel consumption and travel time. The estimated difference in the value of travel costs “with” and “without” the Project provides the subproject benefits. The subproject feasibility studies calculate economic benefits based on projected cost reductions from improved road quality, increase in traffic volume, and changes in transportation mode.

55. The primary economic benefit of flood protection subprojects (i.e., sea dikes and river embankments) is the value of expected damage avoided. Typically, there are three necessary components to making this calculation: (i) probability of flood event occurring, (ii) probability of dike failure, and (iii) a damage function based on the magnitude of the flood event. When estimating benefits of flood protection subprojects, it is critical that negative impacts arising from the altered hydrologic processes are included as a negative benefit. The data requirements for such estimates are quite intensive and include a non-negligible amount of uncertainty. In the examined subproject feasibility studies, either no attempt is made to estimate economic benefits or benefits are estimated as changes in production values as projected by the local socioeconomic development plan—the assumption being that protection from flood damage will allow the area to pursue economic development strategies successfully. This approach, while having some legitimacy, does not accurately assess the reduction in vulnerability, which is the main objective of a flood protection subproject.

56. The primary economic benefit of social infrastructure subprojects is less direct, but can include the value from achieving a higher education level, improved health care, and more active markets. While it is possible to quantify these benefits, given the focus on social benefits and the emergency nature of the subprojects, it is not worthwhile to pursue an attempt to quantify these benefits for economic analysis.

57. The impact of capital cost escalation on subproject viability is variable, with some subprojects still being feasible based on the economic analysis from the feasibility studies. While investment costs increase, many of the benefit streams described above also increase. Higher transport costs also increase the benefits of saved travel time, and higher rice prices increase the value of agricultural production, especially rice.

58. Without supplementary financing, the 47 priority subprojects face a 14% financing shortfall as their capital costs are now estimated at 114% of the original total project cost. The result is that some of these priority subprojects would not be completed and no additional subprojects would be undertaken. An economic assessment of supplementary financing only

includes the investment costs excluding the sunk costs, which are assessed against the benefits generated by the subproject less any benefits captured by the incomplete subproject. Where a subproject is incomplete, most risk reduction benefits will not be generated; while for some subprojects, the uncompleted structure will create substantial additional opportunity costs from damages to adjacent areas.²⁰ The adoption of a sunk cost approach would present the expected benefits from the original project financing being assessed against the reduced investment cost of \$30 million. The resultant economic feasibility of the supplementary financing would then be significantly higher than the original estimates for those subprojects completed.

59. For financial analysis, no subproject generates a direct revenue stream, so no financial internal rates of return are calculated. The financial sustainability is addressed as a condition for subproject approval linked to the PPC's financial capacity to maintain the structures after completion of the Project. All subproject feasibility studies include commitments to meet the O&M costs as specified under government guidelines. As the investment costs and scope of each subproject are very small relative to the PPC O&M budgets, CPMU concludes that each is financially sustainable.

60. A key issue is the extent to which the government guidelines are appropriate, in terms of the amount required for effective maintenance of civil works integrity through time. Experience and field observations indicate that there is a significant gap between needs and stated official requirements. The issue is recognized by MARD, and an ADB-financed TA²¹ will address the Government's approach and inputs for O&M of publicly financed infrastructure. There may be further opportunities for synergies with related activities by facilitating experience sharing with other ADB-assisted investments in the sector.

61. The major beneficiaries identified in the RRP for the initial loan were about 450,000 residents of remote areas of the project provinces that will benefit directly from improved access to markets, schools, and other services; rapid resumption of income-earning activities; and greater security from natural disasters.²² The Project will reinstate (i) protection and irrigation infrastructure serving about 18,300 hectares (ha) of land; (ii) 211 kilometers (km) of rural roads (including 67 culverts and 5 bridges); (iii) about 98 km of sea dikes and flood protection embankments; and (iv) construction of 1,820 square meters (m²) for schools and markets. Rehabilitated structures will have higher resistance to floods, storm surge, waves, and other typhoon-related impacts (including larger conveyance capacity for bridges and better slope protection on sea dikes and flood protection embankments), based on risk and vulnerability assessments. The causes of failure will be examined to ensure better design standards where necessary, and the completed works will be integrated into a database linked to provincial disaster preparedness plans.

B. Social Aspects

62. Significant resettlement impacts are not expected because most of the rehabilitation work is being done within the existing right-of-way of the damaged infrastructure. Acquisition of

²⁰ The assignment of costs and benefits by each subproject within a "with" and "without" supplementary financing scenario was not completed because of the uncertainty over which subprojects will be completed and the limited time for preparation of supplementary financing.

²¹ ADB. 2007. *Technical Assistance to the Socialist Republic of Viet Nam for Infrastructure Policy Reform Support*. Manila (TA 4981-VIE, \$1 million, approved 15 October 2007).

²² With the Government wholly financing some of the top-priority subprojects before effectiveness of the initial loan (paragraph 8), the number of beneficiaries may have changed prior to implementation of the Project, although this is not considered to have been significant.

some small areas of land may be needed where infrastructure cannot be reinstated within the original site. This may occur if the site has been eroded or otherwise rendered unsuitable, an alternative nearby site offers greater security in terms of future flood events, or sound technical and financial reasons are given for selecting another site. The Government and ADB have agreed on a resettlement framework that sets out the compensation and other entitlements for any unanticipated land acquisition and/or resettlement impacts in accordance with the Government's applicable laws and regulations, and ADB's *Involuntary Resettlement Policy* (1995). This same resettlement framework will be applied for the Project with supplementary financing. The Project remains category B. Short resettlement plans will be prepared for any subproject found to have resettlement impacts up to the limits of category B.

63. A high proportion of the ethnic minority groups will be affected in the subproject areas in Ha Giang, Yen Bai, and Phu Tho provinces. The Project is designed to ensure that all communities will benefit from the Project on an equitable basis. The Government and ADB have agreed to an indigenous peoples development framework (IPDF) prepared in accordance with the applicable government laws and regulations, and ADB's *Policy on Indigenous Peoples* (1998). The IPDF provides a policy framework to screen impacts of the subprojects, and accordingly, to prepare an appropriate indigenous peoples development plan or specific actions for the subprojects affecting ethnic minority groups. This same IPDF will be applied for the Project with supplementary financing. The Project is classified category B for indigenous peoples.

C. Environmental Impacts

64. While the Project may lead to temporary and reversible localized negative impacts, no significant adverse environmental impacts are foreseen, and the Project is classified as environmental category B. A generic initial environmental examination (IEE) was prepared for the original project to identify potential impacts, appropriate mitigation measures, and suitable monitoring mechanisms. Subprojects will follow environmental assessment procedures stipulated in an environmental assessment and review framework developed to ensure compliance with the Government's environmental regulations and ADB's *Environment Policy* (2002). IEEs will be prepared for all category B subprojects. Although no environmental impact assessment is currently required, this will be reexamined during detailed design of additional subprojects.

D. Risk and Assumptions

65. The risks and assumptions relating to supplementary financing are (i) continued delays to implementation leading to cost overruns, (ii) an attempt to complete too many subprojects by reducing the scale or technical design standards, and (iii) further damages as a result of further natural disasters during the implementation period.

66. Delayed implementation could arise from the amount of time required to complete the adjustment to each priority subproject contract to take into account inflation and any required improvement to the existing design specifications. As the adjustment process has not been previously applied and approvals do not follow established procedures, it is expected that some delays will result. The impact of this risk is that CPMU will not have a clear understanding of the project financial commitments and the delays will limit the number of additional subprojects. Risk mitigation will be through CPMU expediting the processing of initial contract adjustments.

as soon as possible to develop guidelines and procedures, and also to establish the precedence for the overall process.²³

67. The reduced scope of dikes and embankments severely reduces their effectiveness and often creates significant risk of damage to the partially completed structures, which the Government and ADB cannot accept. Under the Amendment Agreement, ADB and the Government will put in place procedures to ensure that this practice is identified and managed and that the supplementary financing does not fund flood protection subprojects for which the design specifications have not been independently confirmed to be satisfactory and the works completed according to such specifications. Lowered or inappropriate technical standards to reduce costs also create risks. To date, some subprojects have not had sufficient technical design input or the design is redundant because of changing site conditions. In part, this risk arose from the delayed mobilization of technical design specialists with the project implementation consultants until after designs are completed. These project implementation consultants have now been mobilized, and extension of their contract for the extended duration of the Project will be one of the conditions for effectiveness and availability of the supplementary financing.

68. Prolonged design periods have resulted in additional damages to sites. For embankments where there is river action every flood season, this results in significant site changes that require additional design and technical inputs. Prior to final approvals, each PPMU will complete a site investigation visit and confirm the validity of the design to the CPMU.

VI. ASSURANCES

A. Specific Assurances

69. In addition to the standard assurances, the Government and MARD have given the following assurances, which are incorporated into the Loan Agreement, as amended under the Amendment Agreement:

- (i) **Provincial project management units.** MARD will continue to ensure that the participating DARDs provide in each PPMU, for the duration of the Project, a project manager, social and environment sectors coordinator, economist, accounting and financial management staff, and engineering and technical staff consistent with the number and complexity of subprojects to be managed, to the satisfaction of ADB. MARD will ensure that the project implementation consultants recruited for the Project (or any other team of consultants recruited with the approval of ADB) are assigned to (i) assist the CPMU to review the feasibility study and design specifications prepared for each subproject by the PPMU in each project province, including any variation to such design specifications; (ii) provide recommendations to the PPMU and CPMU to enhance the design specifications for each flood protection subproject in order to ensure that adequate safety standards are met; and (iii) assist ADB, when requested, in assessing the final design specifications for a flood protection subproject.

²³ Delays in the contract adjustment process could also result if inadequate ADB resources are applied for the review and approval of the large number of contract adjustments required. The risk will be mitigated with the assignment of an international Central Operations Services Office procurement specialist and the recruitment of a national procurement specialist to the Viet Nam Resident Mission to assist with this process.

- (ii) **Selection of Subprojects.** MARD will continue to ensure that all subprojects meet, to the satisfaction of ADB, the agreed selection criteria set out in paragraph 5 of Schedule 5 to the initial Loan Agreement (with the exception of item (vii), which shall be deleted and item (ix) for which the threshold amount shall be increased to \$300,000), and implementation arrangements, and that all subprojects incorporate measures to enhance their resistance to typhoon damage based on risk and vulnerability analyses. Without prejudice to the preceding sentence, MARD will also ensure that approval by ADB of the design specifications is required before any flood protection subproject may be selected.
- (iii) **Design Specifications.** MARD will ensure that the design specifications and the civil works for all subprojects give due consideration to the recommendations of the project implementation consultants. Disbursements in respect of a flood protection subproject will be subject to works being completed in accordance to design specifications reviewed and approved by ADB. In the event where loan proceeds for a flood protection subproject have already been disbursed and the completed civil works are deemed by ADB to be insufficient or not in compliance with the approved design specifications and are not corrected to ADB's satisfaction within a reasonable period of time, ADB will have the option to ask from the Government that such loan proceeds (or any portion thereof) be refunded immediately and unconditionally.
- (iv) **Resettlement.** MARD will continue to ensure that only subprojects whose resettlement impacts remain within the limits of a category B subproject will be financed by the Project. MARD will continue to ensure that land acquisition and resettlement activities are implemented in accordance with the applicable laws and regulations of Viet Nam and the requirements of ADB's *Involuntary Resettlement Policy*, as reflected in the project resettlement framework dated September 2006. MARD will continue to ensure that subproject resettlement plans, prepared in accordance with the procedures given in Appendix 5 to the RRP for the initial Loan Agreement, will be disclosed to people affected prior to submitting to ADB for review. Approval of the subproject resettlement plan by ADB will be a precondition to award of contracts for civil works in such cases. MARD will continue to ensure that independent external monitoring and evaluation of the resettlement process and impacts are conducted by a qualified social science or other suitably qualified institution acceptable to ADB.
- (v) **Community participation.** MARD will continue to ensure that the DARDs actively promote community participation in selection, preparation, implementation, and performance monitoring of subprojects. Tender documents will continue to include provisions to ensure contractors' preferential hiring of local labor, to guarantee equal opportunities for female workers with the principle of equal pay for work of equal value, and to prevent employment of child labor.
- (vi) **Indigenous people.** MARD will continue to ensure that subprojects will not adversely affect indigenous peoples, households headed by women, disabled, elderly, or other similarly vulnerable groups. In the event that indigenous people are affected by or are beneficiaries of any subproject, MARD will continue to ensure that their rights and needs are fully respected in compliance with ADB's *Policy on Indigenous Peoples* (1998) and in accordance with the IPDF dated September 2006.

- (vii) **Environment.** MARD will ensure that each subproject follows environmental assessment procedures stipulated in the environmental assessment and review framework developed to ensure compliance with the Government's environmental regulations and ADB's *Environment Policy* and dated September 2006. MARD will further ensure that IEEs and, as may be required during detailed design, an environmental impact assessment, are prepared for all category B subprojects.
- (viii) **Award of civil works.** The Government will not award any civil works contracts financed under the supplementary financing until (i) the resettlement plan for the relevant subproject has been approved by ADB; and (ii) all resettlement activities have been completed and related compensation payments, replacement of assets or other assistance for the affected people are delivered prior to the dispossession or displacement of the affected people in accordance with the resettlement plan or other requirements relating to resettlement and vulnerable groups, as applicable.

B. Conditions to Effectiveness of the Amendment

70. Prior to effectiveness of the amendment ADB will have received confirmation from the Government satisfactory to ADB that (i) the design specifications (or the procurement contract, where the design specifications are included in the procurement contract) for subprojects numbered 19, 20, 21, 26, 27, 28, 29, 30, 40, 41, 42, 43 and 44 in Appendix 2 to this RRP have been revised; (ii) the IEE for each of the subprojects referred to in (i) above have been revised to reflect the changes in design specifications; and (iii) the services contracts of the international consultants have been amended to ensure that their scope of services reflects paragraph 69(i) here above and extended until the revised project completion date, being 30 June 2011.

VII. RECOMMENDATION

71. I am satisfied that the proposed supplementary loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve

- (i) the supplementary loan in various currencies equivalent to Special Drawing Rights 17,085,000 to the Socialist Republic of Viet Nam for the Emergency Rehabilitation of Calamity Damage Project, from ADB's Special Funds resources, with an interest charge at the rate of 1.0% per annum; a term ending on 15 November 2046, including a grace period to 14 May 2017; and such other terms and conditions as are substantially in accordance with those set forth in the draft Amendment Agreement presented to the Board; and
- (ii) waiver of the normal 2-year completion period under the *Disaster and Emergency Assistance Policy (2004)* and as more fully discussed in paragraph 31 of this report.

Haruhiko Kuroda
President

14 November 2008

REVISED DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
Impact Sustained economic growth in areas affected by the 2005 typhoons	Economic growth rates for affected districts	Reports of the Government Statistics Office Provincial and district statistics covering economic activities and poverty	
Outcome Rapid resumption of livelihoods and reduced vulnerability to natural disasters in the affected areas	Rural infrastructure constructed and repaired to agreed flood-resistance design standards Improved access to schools, markets, and other services Reduced loss of life and damage in future storm seasons	Annual reports of the provincial departments of agriculture and rural development (DARDs) in each project province Project completion report prepared by the Central Project Management Unit (CPMU) in the Ministry of Agriculture and Rural Development (MARD) School enrollments and health clinic records Damage assessments of the Central Committee for Flood and Storm Control Annual reports of the provincial departments of transportation and construction	Assumptions <ul style="list-style-type: none"> Causes of failure identified and dealt with during detailed design Appropriate preparedness and mitigation measures can be incorporated into subprojects at reasonable cost Adequate and timely counterpart funds provided by the central and provincial governments Risks <ul style="list-style-type: none"> Many subprojects found to be environmental category A or to have significant resettlement or other social impacts that would preclude their inclusion in the Project Feasibility and detailed design studies require extended time, precluding completion within the implementation period Costs continue to escalate at levels above indicative estimates used for project design
Outputs 1. Essential infrastructure (roads, flood protection, irrigation systems, and social infrastructure) reinstated 2. Equivalent or enhanced storm and flood protection provided to vulnerable areas	In the 47 priority subprojects, rehabilitation completed by October 2010 for <ul style="list-style-type: none"> (i) irrigation canals serving more than 18,250 hectares (ha) of irrigated land; (ii) 211 kilometers (km) of rural roads; (iii) about 98.7 km of sea dikes and flood protection embankments; and (iv) 1 school 	Annual reports of the DARDs in each project province Project completion report prepared by CPMU Central Committee for Flood and Storm Control reports on future natural disasters Annual reports of the provincial departments of transportation and construction Contract handover reports	Assumptions <ul style="list-style-type: none"> Timely recruitment and mobilization of international and national consultants Timely award of civil works contracts Adequate performance by contractors Risks <ul style="list-style-type: none"> Delays in government approvals cause late start and completion of works

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
	Rehabilitation of approved additional subprojects completed by 30 June 2011	Audit reports Project progress reports Project review missions	<ul style="list-style-type: none"> • Delays in completion of feasibility and detailed design processes, including risk and vulnerability assessments • Delays to contract price escalation constrain the number of additional subprojects • Technical assistance is demobilized before additional subproject designs are available for review
Activities with Milestones Initial Activities 1.1 Project administration memorandum completed by end of April 2007 1.2 Subproject screening completed by end of March 2008 1.3 National design consultants selected by mid-September 2008 for additional subprojects 1.4 Project implementation consultants contracted by end of March 2008 1.5 Pro forma contract documentation prepared by end of November 2007 Design and Feasibility 2.1 Design contracts for priority subprojects awarded by end of August 2007 and additional subprojects by mid-December 2008 2.2 Detailed designs for priority subprojects completed by end of December 2007 and additional subprojects by end of February 2009 2.3 Risk and vulnerability assessments for subsequent subprojects completed by end of December 2008, with subproject strengthening needs designed and approved by end of May 2009 2.4 Designs for priority subprojects approved by end of March 2008 and additional subprojects by end of March 2009 2.5 Initial environmental examinations prepared for environmental category B additional subprojects by end of June 2009 2.6 Resettlement plans prepared for any category B subprojects by end of June 2009 Implementation of Subprojects 3.1 Contract documents completed for priority subprojects by end of September 2007 and for additional subprojects by end of April 2009 3.2 Bid evaluations of priority subprojects completed by mid-December 2008 and additional subprojects by mid-July 2009 3.3 Contracts of priority subprojects awarded by end of December 2008 and additional subprojects by end of July 2009 3.4 Contract price escalation adjustments completed by mid-May 2011 3.5 Construction completed by end of May 2011 3.6 Environmental management plans implemented by end of June 2009 3.7 Any resettlement and related compensation for category B subprojects completed by end of June 2009 3.8 Subprojects handed over by end of June 2011			Inputs <ul style="list-style-type: none"> • Asian Development Bank: \$80.03 million <ul style="list-style-type: none"> - Civil works: \$71.91 million - Project management: \$6.99 million, of which project implementation consultants: \$1.18 million • Government: \$13.88 million <ul style="list-style-type: none"> - Civil works: \$12.69 million - Project management: \$1.19 million

LIST OF SUBPROJECTS

Table A2.1: Summary of Physical Scope

Item	Irrigation (ha)	Road (m)	Flood Protection (m)	Other (m ²)
Priority Subprojects	15,184	169,769	80,720	1,820
Additional Subprojects	3,102	41,825	17,980	
Total	18,286	211,594	98,700	1,820

ha = hectare, m = meter, m² = square meter.

Source: Provincial reports to the Ministry of Agriculture and Rural Development.

Table A2.2: List of Priority Subprojects

No	Subproject Title	Type of Work	Scope		Status
			Unit	Quantity	
I	Yen Bai				
1	Nam Da Irrigation	Irrigation	m	5,600	All contracts awarded and under implementation. Completion of construction expected in 2008.
2	Tram Tau–Hat Liu Road	Road	m	4,585	All contracts awarded and under implementation. Completion of construction expected in 2008.
3	Ngoi Nhi and Thac Hoa Irrigations	Irrigation	ha	405	All contracts awarded and under implementation. Completion of construction expected in 2009.
4	Son A Suspension Bridge	Road	m	2,090	All contracts awarded and under implementation. Completion of construction expected in 2008.
5	Son Thinh–Ban Moi and Chan Thinh–Mui Kim Roads; Tran Phu, Chan Thinh Suspension Bridge	Road	m	4,135	Bidding finalized and contracts soon to be signed. Completion of construction expected in 2009.
6	Nam Khat and ZeSu Phinh Irrigation	Irrigation	m	151	Bidding finalized and contracts soon to be signed. Completion of construction expected in 2009.
7	Nam Khat–La Khat and Nam Khat–Mi Hang Tau Roads	Road	m	17,000	All contracts awarded and under implementation. Completion of construction expected in 2009.
8	Ban Ngoa and Nghia Phuc Embankments and Nghia Lo Town Reservoir	Flood Protection and Irrigation	m ha	969 45	All contracts awarded and under implementation. Completion of construction expected in 2008, although technical design may require enhancements.
II	Phu Tho				
9	My Thuan Spillway	Road	m	3,147	Bidding evaluation ongoing. All contracts to be signed in 2009 and completion of construction expected in 2009.
10	Cam Khe District Reservoirs	Irrigation	ha	540	Bidding evaluation ongoing. All contracts to be signed in 2009 and completion of construction expected in 2009.
11	Xuan An–Trung Son Road Spillways	Road	m	15,000	Bidding evaluation approved. All contracts to be signed in 2008 and completion of construction expected in 2009.
12	Tam Nong District	Irrigation	ha	555	Bidding evaluation ongoing. All contracts to

No	Subproject Title	Type of Work	Scope		Status
			Unit	Quantity	
	Reservoirs				be signed in 2008 and completion of construction expected in 2009.
III	Ha Giang				
13	Nghia Thuan Commune Market Embankment	Flood Protection	m	150	All contracts awarded and under implementation. Completion of construction expected in 2009, although technical design may require enhancements.
14	Quang Nguyen Commune Center Embankment	Flood Protection	m	300	All contracts awarded and under implementation. Completion of construction expected in 2009, although technical design may require enhancements.
15	Lung Tam–Thai An Road	Road	m	12,000	All contracts awarded and under implementation. Completion of construction expected in 2009.
16	San Sa Ho–Po Ly Ngai Road	Road	m	24,000	Bidding evaluation ongoing. All contracts to be signed in 2008 and completion of construction expected in 2009.
17	Na Dong and Mau Due Embankments	Flood Protection	m	1,480	All contracts awarded and under implementation. Completion of construction expected in 2009, although technical design may require enhancements.
18	Lien Hiep–Duc Xuan Road	Road	m	17,000	Bidding evaluation ongoing. All contracts to be signed in 2008 and completion of construction expected in 2009.
19	Vinh Quang Primary School Embankment	Flood Protection	m	170	All contracts awarded and under implementation but design enhancements are required. Completion of construction expected in 2009.
IV	Nam Dinh				
20	Hai Hau District Sea Dike	Flood Protection	m	6,167	All contracts awarded and under implementation but design enhancements are required. Completion of construction expected in 2009.
21	Giao Thuy District Sea Dike	Flood Protection	m	4,080	All contracts awarded and under implementation but design enhancements are required. Completion of construction expected in 2009.
V	Thanh Hoa				
22	Hau Loc District Sea Dike	Flood Protection	m	2,334	All contracts awarded and under implementation. Completion of construction expected in 2009, although technical design may require enhancements.
23	Hai Thanh Commune Sea Dike	Flood Protection	m	3,044	All contracts awarded and under implementation. Completion of construction expected in 2009, although technical design may require enhancements.
24	Xuan Lam–Phu Son Road	Road	m	7,967	All contracts awarded and under implementation. Completion of construction expected in 2009.
25	Xuan Quy–Thanh Quan Road	Road	m	24,895	All contracts awarded and under implementation. Completion of construction expected in 2009.

No	Subproject Title	Type of Work	Scope		Status
			Unit	Quantity	
VI	Nghe An				
26	Xop Nhi–Bao Nam Road	Road	m	16,000	Bidding evaluation ongoing based on revised FS and design enhancements are required. All contracts to be signed in 2008 and completion of construction expected in 2009.
27	Quynh Di Dike	Flood Protection	m	8,500	All contracts awarded and under implementation but design enhancements are required. Completion of construction expected in 2009.
28	Bien Ganh Spillway and Bridge	Road	m	800	All contracts awarded and under implementation but design enhancements are required. Completion of construction expected in 2008.
29	Trang Son Embankment	Flood Protection	m	800	All contracts awarded and under implementation but design enhancements are required. Completion of construction expected in 2008.
30	Dien Ngoc Embankment	Flood Protection	m	3,500	All contracts awarded and under implementation but design enhancements are required. Completion of construction expected in 2009.
31	Hung Tay Primary School	Other	m ²	1,820	All contracts awarded and under implementation. Completion of construction expected in 2009.
32	Dien Luc Dam	Irrigation	m	472	All contracts awarded and under implementation. Completion of construction expected in 2009.
VII	Ha Tinh				
33	Rac River Irrigation	Irrigation	m	3,009	All contracts awarded and under implementation. Completion of construction expected in 2009.
34	Thach Dai–Thach Xuan Road; Cho Bia Bridge and Cau Dong Market	Road and Other	m m ²	6,533 449	All contracts awarded and under implementation. Completion of construction expected in 2009.
35	Hau Loc, Con Phuong Sections of Ta Nghen Sea Dike	Flood Protection	m	9,228	All contracts awarded and under implementation. Completion of construction expected in 2009, although technical design may require enhancements.
36	Huong Vinh Bridge and Spillway	Road	m	150	All contracts awarded and under implementation. Completion of construction expected in 2009.
37	Ngan Sau River and Embankment	Flood Protection	m	937	All contracts awarded and under implementation. Completion of construction expected in 2009, although technical design may require enhancements.
38	La River's Duc Quang Commune Embankment	Flood Protection	m	350	All contracts awarded and under implementation. Completion of construction expected in 2009, although technical design may require enhancements.
39	Pho Chau Town Embankment	Flood Protection	m	710	All contracts awarded and under implementation. Completion of construction expected in 2008, although technical design may require enhancements.

No	Subproject Title	Type of Work	Scope		Status
			Unit	Quantity	
VIII	Quang Binh				
40	Van Hoa Embankment	Flood Protection	m	1,410	All contracts awarded and under implementation but design enhancements are required. Completion of construction expected in 2009.
41	Vuc Tron Reservoir	Irrigation	m	4,452	All contracts awarded and under implementation but design enhancements are required. Completion of construction expected in 2009.
42	Kien Giang Zone II Dike	Flood Protection	m	18,400	All contracts awarded and under implementation but design enhancements are required. Completion of construction expected in 2009.
IX	Quang Tri				
43	Vinh O–Vinh Ha Road	Road	m	21,000	All contracts awarded and under implementation but design enhancements are required. Completion of construction expected in 2009.
44	O Giang River Dike	Flood Protection	m	15,060	All contracts awarded and under implementation but design enhancements are required. Completion of construction expected in 2009.
X	Phu Yen				
45	Nam Binh and Long Xuyen Embankments	Flood Protection	m	1,500	Bidding evaluation ongoing. All contracts to be signed in 2008 and completion of construction expected in 2009, although technical design may require enhancements.
46	Ben Sach Embankment, Tay Hoa Road and Tan Long Pumping Station	Flood Protection, Road, and Irrigation	m	1,600	Bidding evaluation ongoing. All contracts to be signed in 2008 and completion of construction expected in 2009, although technical design may require enhancements.
47	Cam Thach Village	Flood Protection	m	1,000	Bidding evaluation ongoing. All contracts to be signed in 2008 and completion of construction expected in 2009, although technical design may require enhancements.

ha = hectare, m = meter, m² = square meter.

Source: Provincial reports to the Ministry of Agriculture and Rural Development.

Table A2.3: List of Additional Subprojects

	Subproject Title	Type of Work	Scope		Status
			Unit	Quantity	
I	Phu Tho				Capacity of PPMU needs strengthening to ensure continued participation and efficient implementation of additional subprojects.
1	Minh Thuan Bridge and Choc Spillway	Road	m	200	Investment Report under preparation. If eligible and funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2011.
II	Ha Giang				Capacity of PPMU needs strengthening to ensure continued participation and efficient implementation of additional subprojects.
2	Km 38 Thong Nguyen Road	Road	m	17,000	Bidding evaluation ongoing. If eligible and funds available, bid evaluation and contracts to be signed in 2008 with completion of construction expected in 2009.
3	Lien Hiep Spillway and Thuong Binh Road	Road	m	1,850	Bidding evaluation ongoing. If eligible and funds available, bid evaluation and contracts to be signed in 2008 with completion of construction expected in 2009.
4	Duong Thuong–Thai An Road	Road	m	20,000	Investment Report under preparation. If eligible and funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010.
5	Che La Commune Irrigation	Irrigation	ha	150	Investment Report under preparation. If eligible and funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010.
III	Thanh Hoa				
6	Dinh Tien–A Lang Pumping Station	Irrigation	ha	1,010	Feasibility study and design approved. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010.
7	Ngoc Vanh Reservoir	Irrigation	ha	72	Technical design underway. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010.
8	Cau Chay Sea Dike	Flood Protection	m	4,350	Feasibility study approved. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010, although technical design may require enhancements.
9	Khe Nhoi Reservoir	Irrigation	ha	300	Feasibility study and design approved. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010.
10	Chau Son Reservoir	Irrigation	ha	110	Feasibility study and design approved. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010.
IV	Nghe An				
11	Mau Duc–Thach Ngan	Road	m	1,050	Feasibility study completed. If funds available, bid evaluation and contracts to be

	Subproject Title	Type of Work	Scope		Status
			Unit	Quantity	
	Spillways				signed in 2009 with completion of construction expected in 2010.
12	Hung Xuan Pumping Station	Irrigation	m	300	Feasibility study completed. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010.
V Ha Tinh					
13	Tri River Embankment	Flood Protection	m	150	Technical design completed. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010, although technical design may require enhancements.
14	Nha Tho Reservoir	Irrigation	m	340	Technical design completed. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010.
15	Ba Dan Bridge	Road	m	35	Technical design completed. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010.
16	Da Bac Di and Sluice and Xuan Song Sluice	Flood Protection	ha	7,300	Technical design completed. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010, although technical design may require enhancements.
17	Ong Nghe Bridge	Road	m	15	Technical design completed. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010.
18	Nha Thanh Bridge	Road	m	1,500	Technical design completed. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010.
19	Khe Sanh Dam Spillway	Irrigation	m	340	Technical design completed. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010.
20	Quyen River Embankment	Flood Protection	m	30	Technical design completed. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010, although technical design may require enhancements.
VI Quang Binh					
21	Long Dai Bridge	Road	m	175	Technical design underway. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2011.
22	Quang Phuc Embankment	Flood Protection	m	1,000	No action taken to date. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2011, although technical design may require enhancements.

	Subproject Title	Type of Work	Scope		Status
			Unit	Quantity	
VII	Quang Tri				
23	Tuong Van Dike and Qui Ha Dam	Flood Protection	ha	2,500	Technical design completed. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010, although technical design may require enhancements.
24	Hieu Nam Reservoir	Irrigation	ha	250	Technical design completed. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010.
25	Cau Duc Dam, Da La and Dung Reservoirs	Irrigation	ha	230	Technical design completed. If funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010.
VIII	Phu Yen				Capacity of PPMU needs strengthening to ensure continued participation and efficient implementation of additional subprojects.
26	Binh Thanh Village, Xuan Tho 2 Commune Embankment	Flood Protection	m	2,650	Feasibility study completed. If eligible and funds available, bid evaluation and contracts to be signed in 2009 with completion of construction expected in 2010, although technical design may require enhancements.

ha = hectare, m = meter.

Source: Provincial reports to the Ministry of Agriculture and Rural Development.

MACROECONOMIC CONTEXT AND GOVERNMENT'S RESPONSE

A. Economic Performance

1. Viet Nam's economy has been one of the fastest growing in Asia for the last 2 decades. Growth was particularly strong in the last several years, with real gross domestic product (GDP) growing by an average annual rate of 8.0% in 2003–2007. In 2007, real GDP grew by 8.5%, the highest rate since 1996. GDP per capita at current prices increased from \$441 in 2002 to \$818 in 2007, while GDP per capita at purchasing power parity rose from \$1,649 to \$2,587.

2. In recent years, however, growth of aggregate demand outpaced growth of aggregate supply. While expansionary monetary and fiscal policies and extensive borrowing and spending by state-owned enterprises (SOEs) fueled growth of aggregate demand, growth of aggregate supply was constrained by infrastructure bottlenecks, relatively low efficiency of public investment, and increasingly acute shortages of skilled labor. As a result, both internal and external macroeconomic imbalances emerged.

3. On the domestic side, average annual inflation jumped from 1.8% in 1999–2003 to 7.9% in 2004–2007. Inflation was quite high in late 2007 and the first half of 2008, with food prices rising particularly fast. In June 2008, the consumer price index (CPI) was 27.2% higher and the index of food prices (which account for about 40% of the CPI) was 44.2% higher than in June 2007. Such high inflation was caused not only by the excessively rapid growth of aggregate demand in 2007, but also by the rise of world commodity prices (especially energy and food prices) in 2007 and the first half of 2008 and the supply-side shocks of late 2007 to early 2008.

4. In the external sector, the current account balance turned from a surplus in 1999–2001 into a deficit in 2002–2007 and the first half of 2008. Moreover, the current account deficit widened from 0.4% of GDP in 2006 to 9.6% of GDP in 2007 and an estimated 20% of GDP in January–June 2008. Exports grew fast, but imports grew even faster, resulting in sharp increases in the trade deficit. At the same time, inflows of foreign capital, especially foreign direct investment (FDI), remained strong. Viet Nam's accession to the World Trade Organization in early 2007 improved its attractiveness for foreign investors by making the policy framework more predictable. Net FDI inflows, which ranged from \$1.3 billion to \$1.8 billion in 2003–2006, surged to \$6.6 billion in 2007 and an estimated \$5.0 billion in the first 6 months of 2008. Consequently, the overall balance of payments recorded a large surplus in 2007 and a small deficit in the first half of 2008. Gross official international reserves almost doubled from \$11.5 billion at the end of 2006 to an estimated \$21.0 billion at the end of 2007, before declining to slightly less than \$20 billion at the end of June 2008. FDI committed to 1,500 new projects with the majority of these in the industrial sectors.

5. The high growth rate and policy achievements are built on stability and an expansionist economic policy, resulting in increasing domestic demand along with strong export performance. Consumption growth is strong across all sectors, indicating a strong domestic economy where private consumption amounts to 63% of GDP compared to 6% of GDP for the public sector.

6. The structure of the economy continues to change, with industrial production growing at more than 10% per annum compared to services (8%) and agriculture (3%). Investment (FDI and domestic) has flowed to the industrial sectors, which have grown from 36% of GDP in 2000 to over 42% in 2007.

7. In summary, the period following the Asian financial crisis was one of consolidation, stability, and massive investment in the economy—driving growth to new highs and achieving the Government's economic and social goals, often well ahead of schedule. At the same time, these pressures have led to macroeconomic imbalances between aggregate demand and supply. This has resulted in escalating inflation which, when combined with external commodity price increases in food and fuel, has seen inflation exceed 26% in mid-2008.

B. Economic Shocks and Challenges

8. Viet Nam's economy was indicating that it was overheating in 2005–2007, with excess demand creating price pressures, a growing money supply, increased FDI, increased credit availability, and continued export growth providing liquidity. During the latter half of 2007 and early 2008, the economy faced new challenges, including (i) rapidly increasing world oil prices, (ii) increased concerns regarding the world economy and the fallout of global financial institutions, and (iii) commodity price increases. These external shocks were accompanied by a range of domestic pressures, including (i) inflation; (ii) increased consumption supported by increased incomes, credit, and FDI; and (iii) a booming construction sector.

1. External

9. The major external shock has been the rising cost of oil and fuel in early 2008. For Viet Nam, this has occurred when domestic oil production and oil exports have declined by 1.5% to 2.0%—a trend that is expected to increase in the short run. Viet Nam is increasingly exposed to the international price of fuel for its own consumption and also for transporting the growing volume of export trade. The cost of mineral fuel imports rose by 150% from 2000 to 2006. The subsidized nature of fuel prices meant that increased world prices placed pressure on the government budget deficit.

10. The growing demand for all commodities—industrial and agricultural—placed additional pressures on the economy. The price of steel, aluminum, and cement all experienced increased international demand, largely from the People's Republic of China and India, resulting in significant price increases that often exceeded 100%. For industrial commodities, the burgeoning industrial sector requires increased raw material input, and there was little choice for the construction sector but to accept additional costs. For agricultural commodities, Viet Nam was able to benefit from higher rice prices as a major exporter of rice—export receipts from rice increased nearly 40% since 2005. However, this is mostly offset by the increase in non-rice food imports, which increased 300% from 2000 to 2005.

11. At the same time, FDI continued to increase, and through the first 5 months of 2008 FDI grew at 134% compared with the same period in 2007. The FDI places additional demand pressure on local prices and the need for imports.

2. Internal

12. Food prices rose rapidly during the first half of 2008, with Government Statistics Office reporting increases amounting to 55%–60% over the first 6 months and other foodstuffs increasing by over 20%. The effect on the lower income earners and the poor was dramatic, and the Government responded with an increase in the minimum wage from D450,000 per month to D540,000 per month. With food contributing nearly 43% of the basket of goods that make up the CPI, other price increases were delayed by the Government.

13. The growing cost of subsidies resulted in the Government increasing prices of fuel in June 2008. These price increases averaged 36% for domestic oil, 31% for gasoline, and 14.3% for diesel. These increases are not yet fully reflected in the CPI.

14. In response, inflation rates in Viet Nam are the highest in Asia reaching 21.8% in January–June 2008. As such, the rate of inflation for 2008 is now expected to exceed 25%. In July 2008, the impact of food price increases has reduced slightly on a monthly basis as new season harvest begins and international fears of rice shortages diminish. Provisional data for July place the annual inflation rate at over 27%—the highest since 1991. At these levels, output growth will fall by 26%, imports will increase by 29%, and the provisional estimate of the trade deficit will be D18.8 billion.

15. The economic growth rate forecast for 2008 has been reduced to 6.5%. The open nature of the economy, combined with the range of new threats and pressures, has made Viet Nam more susceptible to the changing global economy and especially the likelihood of increased global inflation. The challenge is to manage these pressures within the current management framework, without experience to draw upon. The rate of increase of foreign reserves and credit to balance trade payments in a period demanding tightening of monetary policy will be a difficult task and will test the Government's commitment to market-based systems.

C. Government Responses

16. In response to accelerating inflation and the ballooning current account deficit, in March 2008 the Government essentially changed its top policy priority from maintaining high growth rates to curbing inflation and reducing the trade deficit. In January–June 2007, it took a range of measures aimed at achieving these objectives. Among them were tightening of monetary and fiscal policies. The minimum reserve requirements for banks and the policy interest rates were raised considerably. While budgetary expenditure on targeted social assistance programs increased, administrative and capital expenditures were cut substantially. Investments by SOEs (especially in noncore businesses) were curtailed.

17. There are signs that these measures are restraining growth of aggregate demand and reducing the macroeconomic imbalances. Growth of money supply slowed down from 46.1% in 2007 to an annualized rate of 15.7% in the first quarter of 2008. The balance of the consolidated budget turned from a deficit of 5.5% of GDP in 2007 to a surplus of 0.4% of GDP in the first half of 2008. Year-on-year GDP growth moderated to 6.5% in January–June 2008. Monthly inflation decelerated from 3.9% in May 2008 to 2.1% in June 2008, with the rise of food prices slowing down from 4.6% to 2.3%. The trade deficit narrowed from \$3.4 billion in March 2008 to \$0.8 billion in July 2008. In a sign that foreign investors remain optimistic about Viet Nam's medium-term economic prospects, new FDI commitments soared to \$31.6 billion in the first half of 2008 from \$20.3 billion for the entire year of 2007.

18. The measures introduced by the Government include the following:

- (i) Tightening of monetary policy with three interest rate increases to the interbank prime rate (currently 14%) and the imposition of a 30% cap on credit growth compared with 55% growth in 2007. The State Bank of Viet Nam has introduced these measures to reduce liquidity arising from both FDI and portfolio inflows. Some local businesses operating in export markets have already reported difficulty exchanging foreign currency for dong to pay wages and rent. The

- imposition of stricter lending rules, expansion of future bond issues, and increased bank reserves all seek to absorb local currency and reduce liquidity
- (ii) Fiscal constraint through reducing government and SOE spending by 25%. This is to be achieved by slowing down publicly funded development. Essential infrastructure, such as roads, ports, and electricity are not included but low-efficiency projects are targeted.
 - (iii) Exchange rate flexibility to enable the dong to appreciate against the US dollar beyond the agreed trading band of 0.75%–2.00% to reduce imports. However, this will weaken export growth.
 - (iv) The possible introduction of import controls in an attempt to reduce the cost of imports by \$0.5 million for raw materials, components, and machinery. A further saving of \$1 billion in consumer goods, \$1.5 million savings on steel imports, and \$1 million saving on oil. The controls are yet to be announced but will either be direct controls or through imposing import duties and fees.

FINANCIAL ANALYSIS OF SUPPLEMENTARY FINANCING

A. Price Escalation

1. The Project was designed in 2005 as an emergency response to calamitous damages arising from typhoon and cyclonic storms. However, the loan was not effective until April 2007 after 14 months during which some of the original core subprojects were funded out of necessity by the Government. During the period following project effectiveness, detailed designs and feasibility studies were undertaken and initial contract awards were only completed in the last quarter of 2007 and first quarter of 2008.

2. The impact of inflation has been significant and the effect compounded by the sector-like disbursement modality that applies no price contingency. Usually, the Government would be expected to apply available funds to the list of subprojects with any shortfall being managed through a reduction in scope. Under (i) an emergency response loan, and (ii) the extreme impact of price escalation experienced by Viet Nam, changes in scope are considered inappropriate.

3. The timing of the preparation of bidding documentation has meant that some bidding documents were issued before the wage increase announcement, thus indicative budgets had no allowance for price increases caused by labor costs, fuel costs, or construction materials. As such, these contract prices are now insufficient to complete the required works program.

4. The CPI data in Table A4.1 highlights the impact of inflation on the construction sector in rural Viet Nam. Construction costs along with food have increased more than 20% in the first 6 months of 2008. Provisional data for June–July 2008 suggests that the inflation rate has reached 26%–27% compared with the same period in 2007. For the Project, price escalation from time of supplying bid documents (September 2007) to June 2008 is estimated to be 19.9%, comprising 1.3% per month for October–December 2007 (3.9%) and 15.97% for the first 6 months of 2008.

Table A4.1: Rural Cost Price Index for Viet Nam

Item	Index in June 2008 compared with (%)				Index for the first half year in 2008 with same period in 2007
	Base year 2005	June 2007	December 2007	May 2008	
Consumer price index	143.57	127.22	119.01	102.10	120.36
Food and foodstuff	168.73	145.81	131.25	103.23	132.96
Housing and construction materials	145.64	125.29	115.97	101.58	121.18

Source: Government Statistics Office.

5. The scheduled project completion date of June 2009 will see estimated price increases of 12% from July to December 2008 and 1.17% per month during 2009. Some subprojects are completed prior to this or have materials paid early in the period so are not affected to the same degree. The different sectors also have a markedly different profile regarding the sources of contract price escalation. From four case study contracts (Table A4.2), contract price escalation estimates ranged from 25% to 28%.¹ However, the relative contribution from different inputs

¹ The case studies applied the same timelines to demonstrate the impact of input inflation.

varies significantly for each sector. Price escalation on materials constitutes about two thirds to three fourths of the overall price escalation for each sector; the main materials are rock, aggregate, cement, and steel. For road subprojects, price escalation on fuel constitutes more than 20%, which is more than double that in the other sectors, reflecting the mechanical nature of road construction. Price escalation on wages constitutes over one third of the price escalation for the flood protection subprojects while fuel comprises a significantly lower proportion of the total price escalation.

Table A4.2: Composition of Contract Price Escalation—Case Study Contracts

Case Study Sector	Contract Escalation (%)	Input Contribution		
		Labor	Materials	Fuel
Irrigation	26	25	66	9
Roads	27	17	62	21
Flood Protection	25	35	60	5
Social Infrastructure	28	23	75	2

Source: Provincial reports to the Ministry of Agriculture and Rural Development.

6. The determination of final price escalation can only be indicative. Viet Nam's design process requires that a budget be included in a bidding document as the ceiling budget. Many feasibility studies were completed during 2007 and offered for bidding. The contractor responses to these documents in early 2008 using 2008 prices would exceed the ceiling and result in a noncomplying bid. Instead, contractors used unit prices applying at the time of the bid preparation. The rate of increase on these contracts is likely to be substantially higher than for those bids prepared after the recent price increases to labor, etc.

7. Prices also escalate through the period until project completion and any delays compound the impact of inflation. The causes of delays for subprojects are (i) weather or seasonal constraints to construction, especially construction for flood protection and dikes; (ii) the extension of the project and disbursement period by an additional 18 months through to mid-2011 to enable later contracts to be completed; and (iii) procedural delays relating to the government process for adjusting existing contracts for subproject implementation.

8. Furthermore, although contracts are awarded for a contract period, contractors receive mobilization advances that are used to purchase materials in advance to start work. These advances offset the risk of future price increases, with the overall effect of inflation being reduced. Given the significantly different mix of materials and labor, and the above variations, the estimate of financing shortfall is described below.

B. Estimating Project Financing Shortfall

9. The estimation of the project financing shortfall was undertaken for each subproject and aggregated to the provincial level. At the subproject level, expenses were split into (i) civil works, (ii) project management, (iii) other expenses, and (iv) contingencies. The civil works expenses were then split into the bid packages or packages to be bid with the bid price, bid opening date, and contract completion dates identified.

10. Prices were inflated for the periods between the bid opening dates and the expected completion date for each contract. The bid opening date, however, is not always appropriate as discussed above. Therefore, to ensure coverage for this in the assessment of the financing shortfall, an additional 3 months of price escalation for the period prior to the bid opening date was included.

11. Costs that were inflated include (i) construction and civil works, (ii) equipment, (iii) project management and supervision costs, and (iv) insurance and auditing costs. Inflation factors used were based on the construction CPI data released by the Government Statistics Office as shown in Table A4.3. The factors were applied to the bid price where available or to the cost estimate where bids were not available.

Table A4.3: Price Escalation Factors Applied
(%)

Item	Bid to June 2008	July–December 2008	2009	2010–2011
Period Average	19.9	12	14	10
Monthly Rate	3.3	2	1.2	0.8

Source: Government Statistics Office.

12. Each subproject has a contingency factor applied at the provincial project management unit (PPMU). This factor is not included in the contract but is retained in the imprest account. The use of the budgeted contingency amount is based on a decision between contractor and project supervisor who jointly apply to the PPMU for its application. The PPMU submits the request to the provincial peoples committee, which makes the final decision. If supported, the PPMU then completes a contract variation. This contingency figure is not inflated, as the financing shortfall and price adjustment remove any adverse price effects. The scale of physical adjustment is unchanged.

13. To ensure that escalation factors were not applied to works already completed, the escalation factors were applied to a declining proportion of total cost in each consecutive period. The average project cost overrun for priority subprojects is estimated to be 29% and totals \$12.9 million. The bid price plus the cost overrun for priority subprojects amounts to \$65.7 million or 114% of the total project cost.

14. It is not possible to distinguish clearly which subprojects would remain incomplete in the absence of supplementary financing. Many of the smaller subprojects required less design input and were contracted earlier while the larger subprojects have only recently started construction. The number of subprojects estimated by the Central Project Management Unit (CPMU) and PPMUs that could not be completed is 25%. However, for some of these, the lack of completion may be limited to final site clearances or restoration. For large priority subprojects, including sea dikes and river flood protection works, these would either have (i) incomplete structures or (ii) structures that are reduced in scope to below the design specifications (i.e., reduced length and heights). One of the biggest impacts would be the lack of finance for enhancing subprojects that have begun construction using designs that are considered unsafe or at risk. This includes risks to a school, essential infrastructure, and significant numbers of local residents. These risks also include a risk to the investment made to date which could, in some locations, face the risk of premature failure because dikes or flood protection systems have gaps or inadequate construction standards.

15. The summary of cost escalation and financing shortfall by province is shown in Table A4.4. Provinces with a high proportion of priority subprojects will exceed the budget allocation, while those such as Quang Tri (with a high proportion of additional subprojects) will have sufficient finances for their priority subprojects along with a surplus.

16. Whereas the budget allocation provides indicative costs for additional subprojects, this has not been undertaken in preparations for supplementary financing. The review mission found that cost estimates had become the determinant of subproject design acting as a constraint,

irrespective of site or technical needs. As such, major works were simplified and had their scope reduced to the level of the indicative budget. The mission discussed the need to move into a far more sustainable form of subproject design based on site investigations and a design that responds to the site and technical needs, and not simply a design for spending the budget.

17. The scope of the design inputs also needs to be reconsidered. The current approach of focusing on a site-based response to damages should be expanded to consider the whole system within which a site is located. For example, the current approach of building a river embankment to protect land on one side of a river, while successful, often results in damages downstream on the opposite bank. A proper assessment would factor these impacts into the design process. The designs used in the first phase did not appear to consider these factors. The requirement of prior approval of designs for additional subprojects is therefore critical to ensure that this practice is discontinued.

C. Procedures for Contract Adjustments

18. The existing contracts held by the individual PPMUs will need to be adjusted for price escalation. The procedure is in accordance with government procedure as stated in Circular No: 9/2008TT-BXD issued by the Ministry of Construction on 17 April 2008, which has been supplemented by Circular No: 1551/BXD-KTXD dated 1 August 2008. The required approach is based on a single price escalation factor for each contract, based on a weighted average for each cost category within the total contract multiplied by the ratio of new unit costs to units in the current contract.

19. A number of constraints need to be considered in this process. Requirements that have direct impact are (i) only one adjustment is allowed per contract; (ii) future inflation is currently limited to 10%; and (iii) the process relies on official unit prices, which may vary from current market prices. These factors require the timing of contract adjustment to be sufficiently late to enable as much actual information to be included in the adjustment while not being so late that a contract stoppage is incurred as the procedure is completed. Ideally, the procedure would occur when disbursement on the original contract approaches 80%.

20. The agreed contract adjustment procedure includes the following steps:

- (i) Ministry of Agriculture and Rural Development (MARD) approves budget allocation plan for subproject.
- (ii) PPMU, contractor, and contract supervisor complete price escalation calculation.
- (iii) Provincial people's committee (PPC) and Department of Agriculture and Rural Development (DARD) approve contract adjustment.
- (iv) CPMU submits contract adjustment to Asian Development Bank (ADB).
- (v) ADB approves adjustment.
- (vi) PPMU and contractor make adjustment, sign revised contract, and submit a copy to ADB.

21. CPMU will create a database of all project contracts, including the contract adjustments that can be included in project reports, to ensure that an up-to-date reconciliation of available funds is maintained. The database will be used as the basis for deciding on the use of unutilized funds for (i) completion or upgrading of priority subprojects to a sustainable standard; (ii) completion of priority subprojects through increased technical design and/or scope to ensure safety conditions of structures, protection of human life, and protection of essential infrastructure; and (iii) additional subprojects that meet the required selection criteria.

Table A4.4: Price Escalation for Priority Subprojects
(\$'000)

Summary of Price Adjustment	Provincial Project Management Unit										Total
	Yen Bai	Nam Dinh	Phu Tho	Ha Giang	Thanh Hoa	Nghe An	Ha Tinh	Quang Binh	Quang Tri	Phu Yen	
Budget Allocation	4,580	15,550	3,650	5,410	11,730	3,980	5,070	3,030	4,930	1,640	61,740
Total Bid Price	5,370	13,400	6,156	4,050	7,803	3,886	3,709	3,025	3,729	1,704	55,413
Price Adjustment for Current and Future Inflation	6,987	17,679	7,527	5,091	10,780	4,749	4,874	3,896	5,075	1,972	71,702
Increase (adjusted bid)	1,617	4,279	1,370	1,041	2,976	863	1,165	872	1,346	268	16,289
Price increase (%)	30	32	22	26	38	22	31	29	36	16	29

Source: Provincial reports to the Ministry of Agriculture and Rural Development.

DETAILED REVISED PROJECT COST ESTIMATES

Table A5.1: Summary Revised Cost Estimates by Component
(\$ million)

Item	Foreign	Local	Total
1. Priority Subprojects	21.00	44.70	65.71
2. Central Project Management Unit	1.18	1.30	2.48
3. Additional and Enhanced Subprojects	8.61	15.99	24.60
Total Base Costs	30.79	61.99	92.78
Interest During Implementation	1.13	-	1.13
Total Project Costs	31.93	61.99	93.91

^a In mid-2008 prices.

^b Project management includes the cost of project implementation consultants of \$1.18 million.

^c No contingencies are included in the cost estimates because the Project will follow a sector approach in preparing subprojects for implementation. Subproject cost estimates allow for any land acquisition, resettlement, and specific environmental or social mitigation measures.

^d Interest during construction is computed at 1% per annum.

Source: Asian Development Bank estimates.

Table A5.2: Detailed Cost Estimates by Financier
(\$ million)

Item	ADB		Government		Total	
	Amount	%	Amount	%	Amount	%
Civil Works	71.91	85	12.69	15	84.60	90
Consultancies	1.18	100	0.00	0	1.18	1
Project Management	5.81	83	1.19	17	7.00	7
Total Base Costs	78.90	85	13.88	15	92.78	99
Interest During Implementation	1.13	100	0.00	0	1.13	1
Total Project Costs	80.03	85	13.88	15	93.91	100

^a Based on SDR conversion as at 31 August 2008

^b Based on mid-2008 prices

Source: Asian Development Bank estimates.

Table A5.3: Supplementary Financing Disbursement Table
(\$ million)

Item	ADB		Government		Total	
	Amount	%	Amount	%	Amount	%
Disbursement Categories						
Civil Works	23.80	85	4.24	15	28.04	93
Project Management	1.20	83	0.26	17	1.46	5
Total Base Costs	25.00		4.50		29.50	98
Interest During Implementation	0.50	100	0		0.50	2
Total Project Costs	25.50	85	4.50	15	30.00	100

Source: Asian Development Bank estimates.

INDICATIVE IMPLEMENTATION SCHEDULE

Activity	2008					2009												2010												2011					
	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
Feasibility studies of additional Subprojects																																			
National consultants selected and mobilized																																			
Preparation of feasibility studies																																			
Approval of feasibility studies																																			
Designs of additional Subprojects																																			
National consultants selected and mobilized																																			
Preparation of designs																																			
Approval of designs																																			
Implementation of priority Subprojects																																			
Complete contract documentation																																			
Complete bid evaluation																																			
Award construction contracts																																			
Complete construction																																			
Hand-over completed works																																			
Implementation of additional Subprojects																																			
Complete contract documentation																																			
Complete bid evaluation																																			
Award construction contracts																																			
Complete construction																																			
Hand-over completed works																																			

Sources: Asian Development Bank and Ministry of Agriculture and Rural Development estimates.

UPDATED PROCUREMENT PLAN

Project Information

Country	Socialist Republic of Viet Nam
Name of Borrower	Socialist Republic of Viet Nam
Project Name	Emergency Rehabilitation of Calamity Damages
Loan Reference Number	40282-02
Date of Effectiveness	23 April 2007
Amount	\$93.91 million
Of which Committed	TBD
Executing Agency	Ministry of Agriculture and Rural Development
Approval date of original procurement plan	
Approval of most recent procurement plan	
Publication of local advertisement	
Period covered by this plan	April 2007 to June 2011

Procurement Thresholds, Goods and Related Services, Works and Supply and Install

Procurement Methods	Thresholds (\$)
International Competitive Bidding (ICB) Works	More than 2,000,000
ICB Goods	More than 500,000
National Competitive Bidding (NCB) Works	More than 100,000 not more than 2,000,000
NCB Goods	More than 100,000 not more than 500,000
Shopping Works	Not more than 100,000
Shopping Goods	Not more than 100,000

Procurement Thresholds, Consulting Services

Procurement Methods	Thresholds (\$)
QCBS – National	More than \$100,000
Direct contracting – National	More than \$100,000
QCBS International	More than \$100,000

List of Contract Packages in Excess of \$100,000 for Works and Consulting Services

Description	Number of Contracts	Approximate Cost Estimate (\$ million)	Mode of Procurement	Responsible Agency
A: Civil Works Small Scale Infrastructure	100 or more contracts	83.5	NCB	PPMU
B: Consulting Services				
i. International	1 contract	1.18	QCBS	CPMU
ii. National	70 or more contracts	4.30	SSS	PPMU

CPMU = central project management unit, ICB = international competitive bidding, NCB = national competitive bidding, PPMU = provincial project management unit, QCBS = quality and cost based selection, SSS = single source selection, TBD = to be determined.

TECHNICAL ASSISTANCE FOR GEO-INFORMATION TECHNOLOGY FOR HAZARD RISK ASSESSMENT

A. Introduction

1. The Government requested the Asian Development Bank (ADB) to provide emergency assistance to reinstate infrastructure damaged during July–December 2005 by typhoons and storms. ADB approved the Emergency Rehabilitation of Calamity Damage Project on 21 November 2006 to (i) reinstate roads, flood protection, irrigation systems, and social infrastructure in the 10 most severely affected provinces; and (ii) provide enhanced storm and flood protection to vulnerable areas where feasible. An ADB project review mission in July–August 2008 revealed several deficiencies in assessing hazard risks and developing appropriate solutions to the risks. This technical assistance (TA) for Hazard Risk Assessment using Geo-Information Technology will support the Project by enhancing the Government's capability to carry out risk and vulnerability assessments.

2. Government agencies¹ responsible for managing natural disasters and their consequences lack the tools and skills needed to identify and assess vulnerable areas, and use the results to formulate appropriate development choices and disaster avoidance strategies. Although they have some capability in the application of geographic information systems (GISs) and remote sensing, agencies lack the skills needed to implement and maintain up-to-date hazard risk assessments. Recently, the Water Resources University (WRU) began a new program on “Disaster Management and Mitigation” creating a need for lecturers to raise their skill levels in advanced hazard assessment techniques. The incorporation of modern hazard risk assessment tools in university curricula is clearly warranted by the susceptibility of the country to natural disasters. The TA will also be useful to professional staff within the Ministry of Agriculture and Rural Development (MARD) who are involved in disaster management. Hence, there is an excellent opportunity with this TA to link academic and executive agencies.

3. In line with ADB's *Disaster and Emergency Assistance Policy (2004)*, the TA will enhance the Government's capability to (i) carry out risk and vulnerability assessments, including physical, economic, social, and environmental impacts; and (ii) mainstream prevention and preparedness activities into the development process. The TA will entail two main components: (i) training, and (ii) a pilot project for a selected province. The detail of the components will be clarified in the TA design and preparation stage. The TA will enhance capabilities to include alternative approaches, including nonstructural, to mitigate natural hazard risks, while also making use of economic tools to improve the planning, design, and sustainability of risk mitigation measures. The principle methodology to be used under the TA will be training of academic staff and students of WRU in Ha Noi, as well as key staff of the Central Committee for Flood and Storm Control (CCFSC) and the Department of Dike Management, Flood and Storm Control (DDMFSC). Participants will be trained to apply geo-information technology for hazard risk assessment (specifically those hazards associated with water-related natural disasters) in selected case study areas. Capacity to apply this technique will be built through interactive courses. Training modules will be developed for incorporation into an elective master's degree course at WRU.

¹ The Central Committee for Flood and Storm Control (CCFSC) was established in 1990 under the leadership of the Ministry of Agriculture and Rural Development (MARD), with supporting provincial and district committees. CCFSC helps the Government prepare for, respond to, and overcome natural disasters and their consequences. It coordinates emergency response, and has a role in the recovery and reconstruction after disasters. CCFSC works in close liaison with MARD's Department of Dike Management, Flood and Storm Control (DDMFSC), which encompasses the Disaster Management Center.

4. The outputs of the TA will be (i) improved knowledge base of different types of natural disasters, inventory of at-risk facilities, and hazard maps in selected areas; (ii) improved ability to use a computer-based GIS to assess hazard risks and prepare visual presentations of vulnerability, including the capability to assess and present risk and vulnerability in economic, social, and physical terms; (iii) capability built within the relevant disaster management agencies to operate and maintain the database and decision-making tools; and (iv) capacity built among faculty staff of WRU to use the training materials prepared under the TA. Training under the TA will target staff of (i) CCFSC; (ii) DDMFSC in MARD and from provincial offices; and (iii) the remote sensing and GIS lab of WRU's Hydrological and Environmental Faculty. To encourage sustainability of project outputs, a working relationship with an international university should be established.

5. The TA is structured in three phases: (i) identification, (ii) design and preparation, and (iii) training implementation. The identification phase will (i) carry out an institutional analysis of the relevant disaster management organizations to assess their capacity and ability to allocate key staff for training; and (ii) conduct a training needs analysis as the basis for designing training courses and to identify suitable trainees, especially drawn from the international and national consultants. Trainees may come from related agencies at central level and provincial level, especially provinces under the Emergency Rehabilitation of Calamity Damage Project. The design and preparation phase will (i) design training courses and develop manuals for hazard risk assessment, (ii) prepare training materials and exercises, (iii) develop a pilot study to be used for project-based learning during the TA, and (iv) collect data and prepare it in a format suitable for formal courses in risk management. The training implementation phase will (i) train selected staff in hazard risk assessment using GIS and remote sensing; (ii) demonstrate the application of GIS and remote sensing for hazard risk assessment in the selected case study area in Viet Nam; (iii) conduct a workshop using course participants as mediators to transfer the fundamentals of the methodology to colleagues, managers, and decision makers of relevant organizations; (iv) develop a web-based training package (in digital and hard versions) for information dissemination to other stakeholders; and (v) after the end of the project, organize a donor coordination workshop to assess the outcome of the TA and expand the scope (e.g., to more provinces). It is important that the case study emphasize the development of capacity to analyze and interpret modeling results for the development of effective hazard mitigation measures. The trainees will present their newly acquired knowledge and working ability in hazard risk assessment.

B. Yen Bai Province as a Case Study

6. Yen Bai province is tentatively proposed to be the case study. It is located in the area between the highlands and midlands east of Hoang Lien mountains. The Red River (the biggest river in the northern Viet Nam) flows through the province, dividing it into lowlands and mid-range mountains on the left (northern) bank and hills and mountainous terrain on the other side. The town of Yen Bai has about 78,000 inhabitants according to the 2004 census. Yen Bai town is experiencing rapid growth, which is expected to continue until 2020 because of the construction of an international highway to the People's Republic of China. Industry is relatively small and agricultural food production in the area can be characterized by small farms with a low level of mechanization.

7. The selected study area includes most of the town and is a watershed with an area of about 140 square kilometers (km²). The streams Hien Duong, Au Lau, Yen Ninh, Yen Thinh and Dai Dong flow through the town into the Red River. Although the discharge of these streams is generally low (less than 1 cubic meter per second), they are prone to flashfloods that can cause

significant damage and create problems for local people. The area is also affected by landslides, especially during the rainy season. Slopes are often modified by human activities, such as road and house construction; and are often steeply cut, making them more susceptible to future instability.

8. In 2005 and 2006, two successive rainstorms hit Yen Bai, which caused the worst flash floods and landslides of the last 40 years. The flash flood after torrential rain on 27 September 2005 induced a number of small landslides, causing 76 deaths and an economic loss of D350 billion (CCFSC). The prolonged rainfall on 19 August 2006 was less serious, but killed 9 people and caused an estimated loss of more than D25 billion (CCFSC).² These events show the urgency of addressing the problems of landslides and flash floods in Yen Bai. The town needs to increase its capacity in geo-hazard assessment and requires additional tools to include these hazards in the urban planning process. This makes Yen Bai town an ideal pilot study location for hazard risk assessment.

9. Yen Bai province is also suitable for the case study as it has many important databases needed to carry out a pilot study. It appears that necessary digitized maps are available, such as base maps (including contour lines, stream and river system, administration boundaries, annotations); geological maps; hydrological maps; geomorphology maps (including geological, geo-morphological units); and soil maps. However, it should be confirmed that maps are freely available for the project prior to finalizing the case study province choice. Additionally, there is a remote sensing database, including LandSat enhanced thematic mapper and thematic mapper from 1990 to 2001, 2005, 2007; and hard copies of aerial photographs scaled 1:33,000 with various time scales. Finally, a flood database is available, including precipitation records from the 1960s to present and discharge records in digital format at Yen Bai Provincial Department of Natural Resources and Environment; and historical flood maps in digital and hard copy, and flood loss and damage records—both available at DDMFSC.

C. Management Arrangements

10. The Executing Agency for the TA will be MARD. WRU will be the implementing agency in cooperation with Disaster Management Center under DDMSFC. WRU is suitably equipped to be an implementing agency for this TA. WRU maintains more than 100 computers with high-speed local area network connection at the Center of Informatics. WRU has capabilities in remote sensing and a laboratory. WRU maintains required capabilities, including GIS and remote sensing software; database (e.g., digital base maps, satellite images, aerial photos); and other facilities (e.g., handheld global positioning system, stereoscope). WRU may need to upgrade its computers out of the university budget prior to initiation of the project.

D. Cost and Financing

11. The total cost of the technical assistance is estimated at \$625,000, out of which the Republic of Korea e-Asia and Knowledge Partnership Fund will provide a grant of \$500,000 equivalent to be administered by ADB, while the Government of Viet Nam will contribute \$125,000, largely in kind, for office accommodation and transport, costs of counterpart staff, and other items.

² 2005 & 2006. *National Disaster Management Newsletter*. Hanoi: Press Department—Ministry of Culture and Information.

E. Consulting Services Requirements

12. The TA will be implemented over 18 months. It is anticipated that it will commence in March 2009 and be completed by August 2010. Its implementation will require the services of a multidisciplinary team of international and national consultants. The consultants, to be recruited under ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time), will provide 34 person-months of national and 20 person-months of international consultant inputs. The international consultants will encompass the range of technical skills needed for this TA, specifically flood modeling disaster management, GIS and remote sensing, economic analysis, and geo-hazard assessment. National consultants will provide expertise in training, flood hydrology, and computer operation for GIS.

1. Team Leader and Flood Specialist (international, 4.0 person-months)

13. The team leader and flood specialist will liaise directly with the project manager and ADB, manage the team to ensure timely completion of assigned tasks, and ensure that TA products are prepared to a professional standard and quality. The team leader will also have primary responsibility for (i) institutional analyses of the relevant divisions of CCFSC, DDMFSC, and WRU; (ii) design and management of the training courses; (iii) design the pilot study, including data collection and preparation; (iv) workshop organization; and (v) preparation of progress reports, inception report, and TA consultants' final report.

2. Geographic Information Systems and Hydrology Specialist (international, 1.5 person-months)

14. The consultant will be an experienced international expert with qualifications and specialization in the application of remote sensing and GIS for disaster for hydrology and flood studies. The consultant will have primary responsibility for setting up the user interface for operation of remote sensing and GIS systems based on geo-information technology. He or she will assist the team leader in the design of the pilot study, and lecture in the training modules. He or she will have had professional experience in training.

3. Geo-Hazard Specialist (international, 1.5 person-months)

15. The consultant will be an experienced international expert with qualifications and specialization in the application of geo-information technology for hazard risk assessment. He or she should have sound knowledge of and practical experience in carrying out risk and vulnerability assessments. The consultant will have primary responsibility for designing and installing a web-based disaster risk information system for dissemination of information to various stakeholder groups and the public. He or she will have had professional experience in training.

4. Natural Hazards Economist (international, 1 person-month)

16. The consultant will be an experienced international expert with qualifications and specialization in conducting the economic analysis of hazard reduction projects, especially flood protection projects. He or she should have sound knowledge of, and practical experience in, hazard risk assessment in Viet Nam or similar environments. He or she will have had professional experience in training.

5. Disaster Management Specialist (international, 2 person-months)

17. The consultant will be an experienced international expert with qualifications and specialization in disaster geo-information management. He or she should have sound knowledge of, and practical experience in, hazard risk assessment in Viet Nam or similar environments. He or she will have had professional experience in training.

6. Junior Geo-Information and Flood Specialist (international, 9 person-months)

18. The consultant will have experience in developing pilot studies and assisting participants in case studies. He or she should have qualifications and specialization in geo-information for disaster management, with specialization in flooding.

7. Disaster Preparedness Specialist and Trainer (international, 1 person-month)

19. The consultant will be an experienced trainer with qualifications and specialization in disaster preparedness. He or she should have sound knowledge of disaster preparedness, mitigation for loss reduction, tools of risk communication and participatory approaches, and practical experience in Viet Nam.

8. Co-Team Leader and Training Specialist (national, 12 person-months)

20. The consultant will be an experienced national expert with qualifications and specialization in training and education. He or she will have primary responsibility for (i) training needs assessment of the relevant divisions of CCFSC, DDMFSC, and WRU training needs assessment specific to disaster management and hazard risk assessment; and (ii) the conduct of all training courses. He or she will contribute to the design of the training courses, workshop organization, and reporting (particularly for training evaluation) for the TA consultants' final report.

9. Flood Hydrologist (national, 12 person-months)

21. The consultant will be an experienced national expert with qualifications and specialization in flood hydrology and river hydraulics. He or she should have sound knowledge of and practical experience in flood modeling.

10. Computer and GIS Specialist (national, 10 person-months)

22. The consultant will be an experienced national expert with qualifications and specialization in the design and operation of computer-based GIS systems. The consultant will assist the international GIS specialist install the computer programs and set up the user interface for operation of remote sensing and GIS systems based on geo-information technology. He or she will assist the geo-hazard specialist to design and install a web-based disaster risk information system.

Table A8: Cost Estimate and Financing Plan
(\$'000)

Item	Total Cost
A. Republic of Korea e-Asia and Knowledge Partnership Fund^a	
1. Consultants	
a. Remuneration and Per Diem	
i. International and Regional Consultants	240.0
ii. National Consultants	136.0
b. International and Local Travel	30.0
c. Reports and Communications	2.0
2. Miscellaneous Administration and Support Costs	10.0
3. Training, Seminars and Conferences	20.0
4. Surveys	20.0
5. Contingencies	42.0
Subtotal (A)	500.0
B. Government Financing	
1. Office Accommodation and Transport	30.0
2. Remuneration and Per Diem of Counterpart Staff	20.0
3. Others	75.0
Subtotal (B)	125.0
Total	625.0

^a Administered by the Asian Development Bank.
Source: Asian Development Bank estimates.

UPDATED ECONOMIC ANALYSIS OF SELECTED SUBPROJECTS

1. In July–August 2008, the Fact-Finding Mission for supplementary financing of the Emergency Rehabilitation of Calamity Damage Project ¹ was conducted to review implementation of existing subprojects, including cost overruns; and to assess the potential for processing of supplementary financing relevant to additional rehabilitation projects. In particular, increasing costs, price inflation, and implementation delays can have a significant impact on the economic viability and financial feasibility of the subprojects. This appendix reexamines the economic viability and financial feasibility of the subprojects.

2. Since the Project was originally designed in 2005, Viet Nam has experienced a significant increase in inflation—causing project costs to rise dramatically. According to the General Statistics Office of Viet Nam, the overall consumer price index (CPI) rate reached 27.2% year on year for June 2008. Compared with 2005, inflation as measured by the CPI has risen 43.57%. However, CPI increases have not been even across all sectors. Table A9.1 shows that the change in the CPI for food, 208% since 2005, has greatly outpaced increases in the price for housing and construction materials, which was 146% during the same period.

Table A9.1: Consumer Price Index—Rural Areas in Viet Nam (June 2008)

Item	Index in June 2008 compared with (%)				Index in the first half year in 2008 compared with same period in 2007
	Base year 2005	June 2007	December 2007	May 2008	
Consumer price index	143.57	127.22	119.01	102.10	120.36
Food and foodstuff	168.73	145.81	131.25	103.23	132.96
Of which: Food	207.80	171.25	157.22	104.48	137.74
Housing and construction materials ^a	145.64	125.29	115.97	101.58	121.18

^a Including housing, electricity, water, fuel and construction materials.

Source: General Statistics Office of Viet Nam. <http://www.gso.gov.vn/>

3. These relative changes in the prices have a direct impact on the economic viability of a subproject. The changes may be neutral or even beneficial, e.g., if inflation in project benefits is greater than increases in project costs, economic viability will improve. However, if project costs are rising faster than the value of benefits, then the economic viability of the subproject will worsen. For many subprojects, benefits were calculated as an increase in the net value of agricultural production. Table A9.1 shows that rural food prices have far outstripped inflation in rural construction costs over the last year and since 2005. Assuming that inflation in food prices has kept pace with increases in the price of farm inputs, this would indicate that, in general, subproject economic viability has been maintained or improved based on the original analytical approach. Unfortunately, analysis of the impact of inflation on farm inputs and outputs, and thus net production value, was not possible during the mission. Thus, benefits were maintained during the reexamination of subproject viability.

¹ ADB. 2006. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Socialist Republic of Viet Nam for the Emergency Rehabilitation of Calamity Damage Project*. Manila (Loan 2273).

4. There are four types of subprojects under the loan: (i) irrigation, (ii) roads, (iii) flood protection, and (iv) social projects. Each type of subproject has a unique set of economic benefits, which are discussed below. The primary benefit of irrigation projects is increased agricultural production, which is measured as the incremental increase in net farm income for the project area. These are the benefits most often used in analysis of economic viability. Secondary benefits of irrigation projects can include improved drainage function (reduced or avoided flood damage) and multiple use benefits, such as water for cleaning and drinking. Quantifying secondary benefits is difficult and not normally done.

5. The primary economic benefit of road projects is reduced travel costs found through reduced fuel consumption and travel time. Typically, a survey is made of existing travel volumes on the target road and projections are made of future travel volumes. Fuel consumption and travel times are estimated and monetized. The estimated difference in the value of travel costs is then taken as the project benefit. The process of developing the necessary data can be quite costly and time-consuming. Viet Nam faces an additional problem, as the transportation profile is changing rapidly, both in mode and volume. In general, the subproject feasibility studies calculated economic benefits based on projected cost reductions from improved road quality, increased traffic volume, and changes in transportation mode.

6. The primary economic benefit of flood protection projects (i.e., sea dikes and river embankments) is the value of expected damage avoided. Typically, three components are necessary to make this calculation: (i) probability of a flood event occurring, (ii) probability of dike failure, and (iii) a damage function based on the magnitude of the flood event. When estimating benefits of flood protection projects, it is critical that negative impacts arising from the altered hydrologic processes are included as a negative benefit. The data requirements for such estimates are quite intensive and include a non-negligible amount of uncertainty. In the examined subproject feasibility studies, either no attempt is made to estimate economic benefits or benefits are estimated as changes in production values as projected by the local socioeconomic development plan—the assumption being that protection from flood damage will allow the area to pursue economic development strategies successfully. While this approach has some legitimacy, it does not accurately assess the reduction in vulnerability, which is the main objective of a flood protection project.

7. The primary economic benefit of social projects is less direct, but can include the value from achieving a higher education level, improved health care, and more active markets. While it is possible to quantify these benefits, given the focus on social benefits and the emergency nature of the subprojects, it is likely not worthwhile to pursue an attempt to quantify these benefits for economic analysis.

8. Maintaining the financial feasibility of the subprojects is also an issue of concern. None of the 47 subprojects has a revenue flow, so financial feasibility will not exist for any of the subprojects. Instead, subproject sustainability is emphasized with a focus on operation and maintenance (O&M) budgets that are sufficient to maintain the benefit stream throughout the life of the Project. In general, responsibility for O&M is contracted after completion of construction. The regular maintenance budget is calculated according to government regulation in line with a norm (percentage of total capital costs) for (i) length of road, (ii) irrigated area, or (iii) length of dike or embankment. There is also a standardized norm for recurring repair, which increases in percentage by year. If maintenance contracts are concluded after completion of subproject construction, then costs can be adjusted accordingly.

9. The process for budgeting for O&M is to set a standardized amount according to total construction costs. The district or provincial government holds responsibility for covering these regular maintenance costs out of its general budget. In the case of repairs, the managing agency makes a budget request to the responsible district or provincial level entity. Interviews with the Department of Agriculture and Rural Development (DARD), provincial project management unit (PPMU), and local consultants during the mission presented mixed results as to the adequacy of this process in meeting actual O&M needs. Experience in past and ongoing infrastructure programs clearly indicates that O&M expenditure is generally well below the level required to sustain the capital investment.

10. It is crucial that the issue of O&M budget adequacy is resolved, as insufficient O&M budgets will result in a failure to maintain projected subproject benefit streams. This will reduce and possibly undermine the economic viability of a subproject. However, even if adequate initially, there appears to be no automatic inflation adjustment so that O&M budgets suffer a regular decline in real terms.

11. During the mission, numerous subprojects were reviewed and it was found that the economic methodology across different subprojects was essentially the same. Additionally, spreadsheets containing the economic analysis were requested from each PPMU and DARD. However, very few of these were obtained. Four subprojects were selected to reassess the economic viability under the new cost revisions, including three sea dikes and one road.² The assessments are presented below (paragraphs 12–15). The reassessment uses the perspective of the subproject being designed by comparing two scenarios for capital costs: (i) with the expected capital cost at the time of design; and (ii) with inflated investment costs as at the time of processing the supplementary financing, but not considering the investment already incurred as sunk costs, which would substantially increase the subproject economic internal rate of return (EIRR).

12. The Hai Thanh sea dike subproject in Thanh Hoa Province was used to test the economic viability with updated cost estimates. The feasibility study gives an EIRR of 18.33%, where 50% of full annual project benefits are realized during the second year of construction. To update the economic viability, several adjustments were made. Project life is assumed to equal 30 years. First, the updated cost figures give a longer project construction period with higher costs, so realization of full project benefits is delayed by 2 years. Second, project benefits are assumed to begin being realized in the second year, increasing with each year of construction, and are estimated as a percentage of eventual full subproject benefits. Third, project O&M costs are increased in accordance with 1.5% of increased construction costs. Lastly, additional costs are included for repairs at 5-year intervals and equal to 1% of construction costs per year of project life (e.g., 5% in year 5, 10% in year 10). This is a fairly standard method for estimating repair budgets in Viet Nam. The updated economic viability for the Hai Thanh sea dike, with the revised costs, was calculated as 16.15%. The impact of inflation is that maintenance costs would need to rise 14 percentage points more than the rate for benefits on an annual basis to reduce the EIRR below 12%. Such a high rate of inflation is unlikely to persist for such a lengthy period. Finally, if the O&M budget is inadequate, project benefits would need to decline at a rate of 4% per year to push the EIRR below 12%.

13. The feasibility study for the Xuan Quy–Thanh Quan Road in Thanh Hoa Province reported an EIRR of 18.04% based on original assumptions. The figures in the spreadsheet,

² Interviews with DARD staff indicate that, for flood embankment subprojects, few were assessed from an economic feasibility perspective because of the complexity of analysis and lack of available data.

however, yield an EIRR of 18.58%. The EIRR of 18.58% will be used here as the baseline for comparison. O&M estimates include a budget for regular maintenance and for larger repairs equal to 5% of subproject costs in year 5 and 20% in year 10. The year 5 and year 10 O&M costs are then repeated at year 15 and year 20. The project life is assumed to be 20 years. Construction is assumed to be completed in 1 year and project benefits start to be realized in the second year. For the revision, the project time line is extended by 3 years to account for the longer construction period, but still maintaining the original 19-year benefit stream. O&M costs were increased in accordance with the higher cost estimates. Benefits were increased by 25%, which is about the year-on-year inflation rate for rural housing and construction costs (including fuel) as reported for June 2008 by the General Statistics Office of Viet Nam. The updated economic viability for the Xuan Quy Thanh Quan Road, with the revised cost figures, was calculated as 14.86%. If O&M is inadequate to maintain project benefits, a 3% annual decrease in benefits will push the calculated EIRR below 12%.

14. The feasibility study for the Giao Thuy sea dike in Nam Dinh Province reports an EIRR of 20.28%. Construction is spread over 3 years and the project life is considered as 25 years. Benefits are calculated as increases in agricultural production in the protected area and are adjusted for changes in input use. The feasibility study reports that benefits include production increases in agriculture, aquaculture, and salt; as well as reductions in storm damage and maintenance costs. Annual expected damage avoided is equated to 5% of total damages caused by the 2005 storm event. The 5% is based on the presumed frequency of the storm event. The economic viability was recalculated based on the revised cost estimates. The construction period is extended by 1 year. O&M costs are revised according to a specified percentage of the revised costs. Inflation affects both inputs and outputs for agriculture and aquaculture, but it was not possible to estimate the recent net affect. Therefore, the value of subproject benefits was retained as originally presented. The updated economic viability for the Giao Thuy sea dike, with the revised cost figures, was calculated as 20.17%. Improvements in viability from reduced costs are offset by the extended construction period. Inflation of maintenance costs would need to outpace inflation on the benefits side by 12.5 percentage points to push the subproject EIRR below 12%. If the O&M budget is inadequate to maintain subproject benefits, it would take an annual decline of 5% of benefits to cause the subproject to fail the economic viability test.

15. The feasibility study for the Hai Hau sea dike in Nam Dinh Province reports an EIRR of 15.63%. The spreadsheet reported an EIRR of 16.78% and the summary investment report annex gives an EIRR of 15.67% (although the numbers in the accompanying table actually yield an EIRR of 15.54%). For purposes of recalculating the economic viability with revised cost estimates, the project costs and benefits included in the spreadsheet will be used. In the Hai Hau sea dike case, project benefits are limited to increases in agriculture. As it is not possible to discern a net impact on agricultural production value caused by inflationary forces, the original benefit estimates are retained here. The updated economic viability for the Hai Hau sea dike, with the revised cost figures, was calculated as 11.40%. It must be stressed that the full range of benefits was not included in the calculations presented in the feasibility study, and the EIRR is likely higher than 11.40%. Impacts of inflation on cost and inadequate O&M on benefits were not calculated as the revised estimate is already below the 12% viability mark.

16. Four subprojects were used to recalculate EIRR values and are summarized in Table A9.2. All but one subproject retains its economic viability using the revised cost estimates. The reassessment provided here takes the analyses provided in the feasibility studies as given, and only corrects some errors without altering the general approach. In some case, the O&M budgets were increased to account for the need to make repairs greater than those covered by

a regular maintenance budget. Sufficient O&M budgets are critical for the sustainability of project benefits and maintenance of project economic viability. Moreover, the presence of sufficient O&M budgets can be considered as a proxy test for financial feasibility. Most projects account for regular maintenance costs and a larger repair budget. These O&M budgets were calculated according to government regulations. Most interviews during the mission stated that the reported O&M budgets would be sufficient to cover actual maintenance needs, but it is not possible to verify whether this is correct.

Table A9.2: Revised EIRRs for Selected Subprojects Using Inflated Cost Estimates
(%)

Subproject	EIRR		Sensitivity	
	Original	With Revised Costs	Cost inflation to push EIRR below 12% assuming benefits have 0% inflation	Annual decline in benefits due to inadequate O&M to push EIRR below 12%
Thanh Hoa–Hai Thanh Sea Dike	18.33	15.15	14.0	4.0
Thanh Hoa–Xuan Quy–Thanh Quan Road	18.58	14.86		3.0
Nam Dinh–Hai Hau Sea Dike	16.78	11.40		
Nam Dinh–Giao Thuy Sea Dike	20.28	20.17	12.5	5.0

EIRR = economic internal rate of return; O&M = operations and maintenance.

Source: Asian Development Bank estimates.