Socialist Republic of Viet Nam: Support for the National Target Program on Climate Change with a Focus on Energy and Transport (Financed by the Nordic Development Fund)
CURRENCY EQUIVALENCES
(as of 8 October 2010)
Currency Unit = Viet Nam Dong (VND)
VND 1.00 = $ 0.000051
$ 1.00 = VND 19,607

ABBREVIATIONS
ADB = Asian Development Bank
AFD = Agence Française de Développement
GHG = greenhouse gas
JICA = Japan International Cooperation Agency
MOIT = Ministry of Industry and Trade
MOT = Ministry of Transport
MONRE = Ministry of Natural Resources and the Environment
NTP = National Target Program
TA = technical assistance

TECHNICAL ASSISTANCE CLASSIFICATION
Type = Policy and advisory technical assistance (PATA)
Targeting classification = General intervention
Sector (subsectors) = Energy (energy sector development)
Themes (subthemes) = Environmental sustainability (global and regional transboundary
environmental concerns); capacity development (client relations, network, and
partner development)
Climate change = Climate change mitigation and adaptation
Location impact = National (high), regional (medium), global (low)
Partnerships = Agence Française de Développement, and Rockefeller Foundation, Asia.

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

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designation of or reference to a particular territory or geographic area in this document, the
Asian Development Bank does not intend to make any judgments as to the legal or other status
of any territory or area.
I. INTRODUCTION

1. Recognizing that climate change is a major threat to economic development, the Government of Viet Nam has made it a key priority to address the impacts of climate change. In December 2008, by Decision No 158/QD-TTg, the government approved the National Target Program (NTP) to respond to climate change. The NTP mandated a comprehensive effort to assess climate change impacts on sectors and provinces, and develop action plans. The government has identified international engagement and technical assistance (TA) from development partners as crucial elements for the successful implementation of the NTP, and requested assistance from the Asian Development Bank (ADB). The proposed policy and advisory TA (PATA) will support two ministries, a province, and two cities in developing and/or instituting action plans for effective implementation of the NTP. ADB’s country strategy and program, (CSP) for 2007–2010 supports government efforts to achieve higher levels of pro-poor economic growth, foster social equity and balanced development, and protect the environment. The mid-term review of the CSP recommended stronger emphasis on addressing climate change. The proposed TA thus directly supports this new imperative and is listed in the current country operations business plan (COBP, 2009–2010). The scope, expected impact, outcome, outputs, and implementation arrangements were discussed and finalized during a reconnaissance mission in March 2010 and a TA fact-finding mission in May 2010. The TA will be financed by the Nordic Development Fund and administered by ADB. The design and monitoring framework is in Appendix 1. The TA will be implemented in line with related work that is either ongoing or being planned by ADB.

II. ISSUES

2. Viet Nam is particularly vulnerable to climate change. A study by the Ministry of Natural Resources and the Environment (MONRE) in June 2009 states that by the end of the 21st century, the average temperature in the country is expected to rise by about 2.3 degrees Celsius, with increasing rainfall during the wet season and less rainfall during the dry season. The sea level is expected to rise 75 centimeters during the same time period compared with the average for 1980–1999, with significant economic impacts on the population, mostly in the Mekong and Red river deltas. Viet Nam’s current greenhouse gas (GHG) emissions are low (a total of about 145 million tons of carbon dioxide equivalent, with nearly half coming from the energy sector). However, in the coming decades, increased demand for energy and heavier reliance on coal for power generation are expected to increase the country’s GHG emissions significantly.

3. Several development partners—including the Danish Embassy, Agence Française de Développement (AFD), Japan International Cooperation Agency (JICA), and United Nations

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1 A national steering committee led by the Prime Minister oversees NTP implementation, while the Ministry of Natural Resources and the Environment (MONRE) serves as the “standing office” for overall execution.
5 This TA first appeared in the business opportunities section of ADB’s website on 17 August 2010.
6 For example, TA 7377-VIE: Climate Change Impact and Adaptation Study in the Mekong Delta, financed by Australian Agency for International Development and ADB and administered by ADB, and other projects being conceptualized by ADB’s Regional and Sustainable Development Department. See section D on implementation arrangements for further details.
8 The Danish Embassy has provided $40 million in technical assistance funds to MONRE for 2008–2013. The amount of $15 million will be used for energy efficiency initiatives by the Ministry of Industry and Trade, and $23 million will be provided to MONRE as budget support for climate change policy work, including support for two provinces (Ben Tre and Quang Nam) to develop action plans. The remainder of $2 million has been set aside for program management.
9 AFD and JICA will provide a climate change program loan that will include broad-based policy and budgetary support, including for elements of the NTP. In 2010, AFD will provide €20 million and JICA will provide ¥10 billion.
Development Programme (UNDP)—are providing support to MONRE and the Ministry of Agriculture and Rural Development. However, the Ministry of Industry and Trade (MOIT) and the Ministry of Transport (MOT) have received limited support for implementation of the NTP, even though they are the agencies responsible for sectors that are both significant contributors to GHG emissions and projected to be adversely affected by climate change. MOIT has jurisdiction over large industries (e.g., iron and steel, fertilizers), power generation, and oil and gas production. Within MOIT, the Office of the General Director of the Industrial Safety Techniques and Environment Agency (ISEA) will develop the NTP action plan. MOIT’s action plan framework was officially launched in Ha Noi on 8 September 2010. In addition to developing a suitable quantitative approach and decision support tools, the framework stresses the need for capacity strengthening within the ministry and its constituent industries, and support for the development of enabling regulations and implementing rules.

4. MOT has jurisdiction over roads, railways, airways, inland waterways, and the maritime sector. The ministry is developing a framework for its action plan (2011–2015), to be submitted to the minister for approval by December 2010. Donor support for MOT includes assistance from the World Bank to develop an adaptation action plan for the country’s major ports under a regional program focused on analyzing the economics of climate change adaptation.

5. Climate change action plans for provinces and cities are as important as national ministerial plans. The proposed TA, therefore, aims to support the development of action plans in Thanh Hoa province, Ho Chi Minh and Da Nang cities. Thanh Hoa, the fourth-largest province in Viet Nam, is overwhelmingly rural and considered the second poorest. The province has embarked on an ambitious industrialization process by hosting Viet Nam’s second petrochemicals complex (the Nghi Son Petrochemical). The province also has two large cement plants (the Cong Thanh and Nghi Son Cement companies) and is in the process of expanding its power generation capacity by building coal-fired power plants at the Nghi Son power complex. ADB is providing assistance through its Thanh Hoa City Comprehensive Socioeconomic Development Project to improve urban infrastructure—roads, water delivery, sanitation, and wastewater treatment—and tourism facilities.

6. Ho Chi Minh City (HCMC) is a commercial hub. It accounts for 23% of national gross domestic product and attracts 20% of foreign direct investment flows. Over the past decade, it has posted annual growth rates of more than 10%. However, the city is highly vulnerable to climate change. Its low elevation, burgeoning population, and expanding urban settlements put inhabitants and infrastructure at risk. Recognizing this vulnerability, the government has, under the Irrigation Plan for Flood Control for the HCMC area to 2025, initiated the construction of a series of major drainage systems and dikes that will surround HCMC and divert water from floods, rains, and high tides to the Thi Vai River. Ahead of the city defining its own climate change action plan, ADB, through a joint study with JICA and the World Bank, helped conduct an analysis to 2050 of key climate risks to major sectors and outlined a set of adaptation options. The study singled out the development of HCMC’s action plan as a high priority as it will provide a framework for developing and implementing many of the study’s recommendations.

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10 The United Nations Industrial Development Organization has been supporting the development of MOIT’s action plan framework.
11 The successful development and implementation of MOIT’s action plan will depend largely on its ability to involve Viet Nam Electricity and Petro Viet Nam, its two constituent state-owned companies; the former is responsible for power generation and supply, the latter for oil and gas operations, and both are key sources of GHG emissions.
13 Approved by the Prime Minister on 28 October 2009 through Decision No 1547/QD-TTg with a total investment capital of VND 11.53 trillion (about $650 million).
7. Da Nang, in addition to capitalizing on its famed beaches and tourism opportunities, is also keen on developing into an economically competitive “green city.” Owing to its coastal location, the city is particularly vulnerable to climate change. Recognizing the risks, the city is gearing up to deal with mitigation and adaptation-related concerns. Da Nang is also participating in the Asian Coastal Cities Climate Resilience program supported by the Rockefeller Foundation. The city's Department of Industry and Trade and Department of Transport are closely working with the People's Committee to develop an NTP action plan for Da Nang.

8. In summary, by launching the NTP, the government has taken a bold step and demonstrated its commitment to addressing climate change. However, translating the stated broad strategic goal of building a less GHG-intensive and more climate-resilient economy into tangible outcomes in the medium term will require (i) a concerted effort by all line ministries, provinces, and cities to develop detailed and realistic action plans; (ii) introduction of enabling policies and implementing rules; (iii) establishment of data management frameworks and decision support tools; and (iv) greater capacity within the government, and industry and research institutes. Discussions between ADB, MOIT, MOT, and the People’s Committees of Thanh Hoa, HCMC and Da Nang highlighted a strong demand for ADB to help address this development challenges.

9. The TA will develop and implement detailed action plans in support of the NTP in Viet Nam. The TA will support MOIT and MOT, Thanh Hoa province, and Da Nang and Ho Chi Minh cities—collectively “the target ministries, province, and cities”—in developing exemplary plans that can be adapted to other sectors, province and municipalities. In developing these action plans, ADB will pursue a flexible and context-specific approach that builds on existing frameworks (where applicable) and the efforts of other development actors. The TA will estimate the current and future contribution of the industry, trade, and transport sectors to GHG emissions under different economic growth scenarios, and determine mitigation opportunities. It will then identify climate change-related risks to these sectors and develop appropriate adaptation options. This analysis will be the basis for the development of sector-specific climate change action plans—including mitigation and adaptation measures. The TA will also review and strengthen related policies and implementing rules, build institutional capacity to implement the plans, and conduct a public awareness program on climate change issues. Finally, the TA will design five climate-resilience pilot projects (one each for the target ministries, province, and cities), including a prefeasibility analysis of technical, economic, environmental, and social aspects.

III. THE PROPOSED TECHNICAL ASSISTANCE

A. Impact and Outcome

10. The impact of the TA will be effective implementation of detailed NTP action plans by the target ministries, province, and cities. The outcome will be greater capacity to design and implement climate change response measures in the target ministries, province, and cities.

B. Methodology and Key Activities

11. The key outputs of the TA are (i) development of detailed NTP action plans by the target ministries, province, and cities; (ii) strengthening of institutional capacity of key agencies within government, research institutes, and the private sector to plan and design climate change responses; (iii) design and implementation of a community awareness campaign; and (iv) development of pilot projects to help reduce GHG emissions and optimize adaptation responses to climate risks. The TA outputs, including knowledge products and services, will be disseminated
through in-country workshops, electronic reports, website publication, and other means to be specified in a knowledge dissemination and communication plan.

12. The main activities of the TA will include:

(i) estimating projected GHG emissions under business-as-usual and “smart growth” scenarios for 2011–2030; identifying mitigation options; undertaking a cost-benefit analysis; and developing an implementation plan for the top-ranked options;

(ii) designing and building a GHG emissions database and inventory that can be updated and maintained;

(iii) downscaling climate models and conducting integrated impact assessment modeling to identify key risks to economic sectors and human settlements, and develop adaptation plans;

(iv) integrating mitigation and adaptation action into a comprehensive climate action plan, and identifying the policy and implementing measures\(^1\) needed for effective implementation;

(v) assessing institutional capacity and training needs, and designing and implementing a capacity-strengthening plan;

(vi) designing and implementing coordinated public awareness campaigns using focus groups, public meetings, and TV, radio, and print media; and

(vii) creating a long and short list of mitigation and/or adaptation options, and finalizing the design of a pilot project for each of the target ministries, province, and cities, as well as presenting illustrative financing options.

C. Cost and Financing

13. The TA is estimated to cost $2.75 million equivalent, of which $2.50 million equivalent will be financed on a grant basis by the Nordic Development Fund and administered by ADB. The grant will cover remuneration, travel, and per diem for the international experts and national experts or institutes; training seminars and conferences; and TA administration and support costs. The Government of Viet Nam will finance the remaining $0.25 million equivalent in kind. Detailed cost estimates are in Appendix 2.

D. Implementation Arrangements

14. MOIT will be the executing agency. Within MOIT, ISEA will be the focal point. The Environment Department within MOIT and the people’s committees of Thanh Hoa, HCMC, and Da Nang will be the implementing agencies and oversee TA activities in their jurisdictions, under the overall coordination of MOIT. MOIT will help obtain government approvals for the TA, establish a national steering committee for the TA—comprising representatives and key constituents from the implementing agencies (e.g., EVN and PetroVietnam within MOIT)—and convene regular meetings of this committee. The committee’s primary role will be to provide technical inputs for the TA, and generate broad acceptance of the TA approach and methodologies, and of the draft and final action plans. MONRE, as the NTP’s standing office, will participate in the workshops and briefings organized under the TA, and will provide technical inputs to and endorsement of the draft and final action plans.\(^1\)\(^5\) MOIT will take the lead in approving all TA outputs on behalf of the government.

\(^1\)\(^4\) For example, renewable and energy efficiency measures, building codes, land use planning, and zoning rules.

\(^1\)\(^5\) In addition, to enable effective coordination with MONRE and strengthen its efforts to implement other ADB TA projects that are relevant to this project (e.g., climate change adaptation in the Mekong Delta capacity development TA), a part-time national consultant will be appointed as a focal point at MONRE for the period of the TA.
15. This TA will be implemented in line with related work planned by ADB’s Regional and Sustainable Development Department, including a rapid assessment of energy and transport-related CO₂ Emissions for Asian Cities (HCMC case study), and the regional climate atlas, among others. Efforts will be made during TA implementation to involve other actors that are providing support for the NTP in Viet Nam (e.g., the Asian Cities Climate Change Resilience Network, AFD, Danish International Development Assistance, European Union, JICA, and UNDP). 

All disbursements under the TA will be done in accordance with ADB’s Technical Assistance Disbursement Handbook (2010, as amended from time to time). Equipment for the TA will be procured in accordance with ADB’s Procurement Guidelines (2010, as amended from time to time) and turned over to the executing and implementing agencies upon TA completion.

16. The key assumptions and risks are in the design and monitoring framework in Appendix 1. Inadequate staff resources within MOIT, MOT, and provincial and municipal departments, as well as weak technical capacity suggest that the executing and implementing agencies may not have enough expertise and capacity to support an efficient implementation of this TA, making this the main risk. Therefore, ADB’s TA consulting team will assign a full-time coordinator (national consultant) to each of the executing and implementing agencies. This will improve coordination of study inputs and access to crucial data; foster support for policy dialogue and reform; and assist ongoing capacity strengthening. The executing and implementing agencies have approved this arrangement and have offered office space for the coordinators.

17. Approximately 227 person-months of consulting services (65 person-months of international consultants and 162 person-months of national consultants or services from national institutions) will be required. It is proposed that the TA be implemented by an international firm supported by national consultants. The team will comprise experts in climate change modeling and risk assessment, adaptation planning, institutional strengthening, sociology and economic analysis, public communications strategy, and geographic information systems. Detailed terms of reference are in Appendix 3. ADB’s Guidelines on the Use of Consultants (2010, as amended from time to time) will apply to the selection of the firm. The firm will be hired after a quality-and-cost-based selection method (90:10) on the basis of full technical proposals.

18. The TA will begin in March 2011 and be completed by March 2013.

IV. THE PRESIDENT’S RECOMMENDATION

19. The President recommends that the Board approve ADB administering technical assistance not exceeding the equivalent of $2,500,000 to the Government of the Socialist Republic of Viet Nam to be financed on a grant basis by the Nordic Development Fund for Support for the National Target Program on Climate Change with a Focus on Energy and Transport.

16 The Asian Cities Climate Change Resilience Network and AFD have indicated an interest in collaborating with the ADB under this TA, using a parallel cofinancing approach. The specifics of the collaboration will be described in the letter of agreement that is being negotiated among the three parties.
## DESIGN AND MONITORING FRAMEWORK

<table>
<thead>
<tr>
<th>Design Summary</th>
<th>Performance Targets and Indicators with Baselines</th>
<th>Data Sources and Reporting Mechanisms</th>
<th>Assumptions and Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Impact</strong></td>
<td>Growth rate of GHG emissions from target sectors reduced by 2020 when compared with the business-as-usual scenario (specific targets are to be developed by the target ministries, province, and cities during the development of their action plan frameworks, which is ongoing). A reduction in loss of infrastructure (in energy and transport sectors) and loss of productivity in the urban sector in the target provinces and cities when compared with business as usual.³</td>
<td>National communication to the UNFCCC and ministerial/national GHG inventories. Data from the National Steering Committee for Flood and Storm Damage Control.</td>
<td>Assumptions</td>
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<tr>
<td></td>
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<td>The government’s commitment to address climate change as an integral part of development planning continues. The government continues to emphasize rollout of the NTP across all ministries, cities, and provinces. The energy conservation law and the renewable energy law are implemented in a timely manner.</td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
<td>Five action plans are endorsed by agency heads and people’s committees by 2012. At least three improved policies, implementing rules, and operational procedures each are integrated into agency-wide and provincial operational plans in each of the five target ministries, province, and cities.</td>
<td>Review of provincial and ministerial decrees and policy documents in 2012. Review of operating guidelines and budget notifications in 2012.</td>
<td>Assumptions</td>
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<td></td>
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<td>Different levels of government are able to agree on action plan elements. KPS generated are valued and adopted by targeted agencies.</td>
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<td></td>
<td></td>
<td></td>
<td>Risks</td>
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<td></td>
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<td></td>
<td>Specified mitigation and adaptation options require difficult trade-offs or are not compatible with the government’s economic or social development goals. Specified adaptation options are politically or socially unacceptable.</td>
</tr>
</tbody>
</table>
### Design Summary

<table>
<thead>
<tr>
<th>Outputs</th>
<th>Performance Targets and Indicators with Baselines</th>
<th>Data Sources and Reporting Mechanisms</th>
<th>Assumptions and Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Action plans to support NTP developed by MOIT, MOT, and the People’s Committees of Thanh Hoa province, HCMC and Da Nang.</td>
<td>Working paper on modeling of climate change scenarios, and risk assessments for sectors and cities completed.(^{b,c}) Working paper on GHG emissions under business-as-usual and alternative scenarios completed for various sectors and locations. Draft and final action plans developed and reviewed.(^{d})</td>
<td>Consultants’ draft and final reports, and publicly available technical working papers.</td>
<td>Assumptions</td>
</tr>
<tr>
<td>2. Stronger institutional capacity of agency staff to plan and design climate change responses</td>
<td>Training modules(^{e}) on various topics, including introduction to climate change, GHG emissions monitoring and reporting, cost-benefit analyses of mitigation and adaptation responses, participatory development of adaptation plans, flood control, and disaster preparedness planning. At least 15 technical staff (50% shall be women) from each targeted sector, province, and city authority participate in trainings conducted under the TA and provide positive evaluation.</td>
<td>Training materials, proceedings of training workshops, and participants’ evaluations.</td>
<td>Timely access to data, personnel, and locations within Viet Nam</td>
</tr>
<tr>
<td>3. Community awareness campaign designed and implemented.</td>
<td>Community awareness programs’ including use of community meetings, and use of TV, radio, and/or print media (at least two radio and TV campaigns, five public events, and five newspaper media initiatives, in each TA location).</td>
<td>Summary of focus groups and meetings, advertisements in TV, radio, and/or print media.</td>
<td>Strong participation by the stakeholders</td>
</tr>
<tr>
<td>4. Pilot projects developed to help reduce GHG emissions and optimize adaptation responses to climate risks.</td>
<td>One pilot project(^{f}) each for the target ministries, province, and cities determined, designed, and costed and financing options identified. Presentation of results of TA implementation at a national forum and one regional forum.</td>
<td>Prefeasibility reports. Workshop proceedings and participants’ evaluation.</td>
<td>Effective collaboration and information sharing between agencies</td>
</tr>
</tbody>
</table>

**Assumptions**

- MONRE provides a reasonable, government-endorsed action plan framework that can form the basis for the detailed action plans to be developed under the TA.

**Risks**

- Lack of historical data could constrain validation of model results.
- Lack of data could result in models of a scale not suitable for adaptation planning.
- Staff reallocation could lead to loss of “local champions” within agencies and people’s committees.
### Activities with Milestones

#### 1.0 Action Plans to Support NTP developed by MOIT, MOT, and the People’s Committees of Thanh Hoa province, Ho Chi Minh City and Da Nang (March 2011–October 2011)

1.1. Prepare knowledge dissemination and communication plan as part of the inception report, including reports, website posting, workshops, and other knowledge-sharing events under the TA – March 2011.


1.3. Develop and test a GHG emissions registry and reporting system for all key emission sources – October 2011.

1.4. Identify mitigation options and undertake a cost-benefit analysis and ranking exercise, and develop an implementation plan – June 2011.

1.5. Downscale climate models and conduct integrated assessment modeling to identify key risks to sectors, provinces, and cities – May 2011.

1.6. Develop policies and implementing rules that complement the action plans in areas such as renewable energy, energy efficiency, GHG measurement and reporting, land use planning, building codes, etc. – August 2011.

1.7. Identify adaptation options and undertake a cost-benefit analysis and ranking exercise, and develop an implementation plan – August 2011.

1.8. Develop a draft plan, conduct agency briefings and public consultations – July 2011.

1.9. Include revisions and finalize action plans for the target ministries, province, and cities – October 2011.

#### 2.0 Institutional strengthening provided to enable agency staff to plan and design climate change responses – March 2011–February 2012

2.1. Assess capacity and training needs and design a capacity-strengthening plan – May 2011.

2.2. Develop and test training materials for (i) introduction to climate change, GHG emissions and their mitigation; (ii) climate risk modeling and impact assessment; (iii) GHG mitigation measures; (iv) climate-friendly urban and land-use planning; (v) GHG emissions monitoring and reporting; and (vi) economic analysis of mitigation and adaptation options – August 2011.

2.3. Conduct training workshops and facilitate learning-by-doing activities, and participate at national and regional climate-related knowledge events – September 2011–January 2013.

#### 3.0 Community awareness campaign designed and implemented – August 2011–January 2013


3.2. Develop and implement coordinated public awareness campaigns using focus groups, public meetings, TV, radio, and/or print media – September 2011–October 2012.

3.3. Conduct follow-up surveys of community awareness of climate change issues and provide recommendation for development of ongoing awareness campaigns to be supported by the ministries and the people’s committees of the province and the cities – October 2012–January 2013.

#### 4. Pilot projects developed to help reduce GHG emissions and optimize adaptation responses to climate risks – March 2012–November 2012

4.1. Create a long list of mitigation and/or adaptation options, evaluation criteria, and screening processes – March–May 2012.

4.2. Create a short list of mitigation and/or adaptation options and conduct cost-benefit analyses and prefeasibility analysis relating to institutional, political, and public acceptance issues – June–August 2012.

4.3. Finalize design of mitigation and/or adaptation options and develop illustrative financing options – September 2012–December 2012.

### Inputs

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Nordic Development Fund:</td>
<td>$2.5 million</td>
</tr>
<tr>
<td>Consultants:</td>
<td>$1,970,000</td>
</tr>
<tr>
<td>International and Local Travel:</td>
<td>$80,000</td>
</tr>
<tr>
<td>Equipment:</td>
<td>$30,000</td>
</tr>
<tr>
<td>Reports and Communications:</td>
<td>$45,000</td>
</tr>
<tr>
<td>Training, Seminars, and Conferences:</td>
<td>$85,000</td>
</tr>
<tr>
<td>Design and development of knowledge products:</td>
<td>$25,000</td>
</tr>
<tr>
<td>Miscellaneous Administration and Support Costs:</td>
<td>$10,000</td>
</tr>
<tr>
<td>Contract negotiations:</td>
<td>$15,000</td>
</tr>
<tr>
<td>Contingencies:</td>
<td>$240,000</td>
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<td>Government of Viet Nam:</td>
<td>$250,000</td>
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<tr>
<td>Office Accommodation and Transport:</td>
<td>$100,000</td>
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<tr>
<td>Remuneration:</td>
<td>$100,000</td>
</tr>
<tr>
<td>Others:</td>
<td>$50,000</td>
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</tbody>
</table>
The views expressed herein are those of the consultant and do not necessarily represent those of ADB's members, Board of Directors, Management, or staff, and may be preliminary in nature.

GHG = greenhouse gas, HCMC = Ho Chi Minh City, MONRE = Ministry of Natural Resources and the Environment, MOIT = Ministry of Industry and Trade, MOT = Ministry of Transport, NTP = National Target Program, TA = technical assistance, UNFCCC = United Nations Framework Convention on Climate Change.

a. In all cases, baselines and benchmarks will be developed during the TA implementation period.

b. For HCMC, this has been already completed through the ADB–Japan International Cooperation Agency–World Bank study. The focus in this case will be on the action plan.

c. All assessments will include gender-disaggregated impacts.

d. To the extent possible, the action plans, especially those developed for the province and the cities, will integrate gender considerations.

The training modules will integrate the specific capacity needs of women staff and include other gender issues such as the impacts on women, and their roles, of disaster preparedness and risk reduction.

f. The baseline survey to be conducted on community awareness of climate change issues will include the collection of gender-disaggregated data to gain an understanding of awareness, practices, and implications of various climate change issues for men and women. Similarly, the community awareness campaign will be gender-sensitive.

COST ESTIMATES AND FINANCING PLAN
($ ’000)

<table>
<thead>
<tr>
<th>Item</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Nordic Development Fund$^a</strong></td>
<td></td>
</tr>
<tr>
<td>1. Consultants</td>
<td></td>
</tr>
<tr>
<td>a. Remuneration and per diem</td>
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<tr>
<td>i. International consultants (65 person-months)</td>
<td>1,370.00</td>
</tr>
<tr>
<td>ii. National consultants$^b$ (162 person-months)</td>
<td>600.00</td>
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<tr>
<td>b. International and local travel</td>
<td>80.00</td>
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<tr>
<td>c. Reports and communications$^c$</td>
<td>45.00</td>
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<tr>
<td>2. Equipment$^d$</td>
<td>30.00</td>
</tr>
<tr>
<td>3. Training, seminars, and conferences$^e$</td>
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<tr>
<td>4. Design and development of knowledge products</td>
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<tr>
<td>5. Miscellaneous administration and support costs</td>
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<td>6. Contract negotiations</td>
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<td>7. Contingencies</td>
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<tr>
<td><strong>Subtotal (A)</strong></td>
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<tr>
<td><strong>B. Government of Viet Nam</strong></td>
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<tr>
<td>1. Office accommodation and transport</td>
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<tr>
<td>2. Remuneration and per diem of counterpart staff</td>
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<tr>
<td>3. Miscellaneous administration and support costs</td>
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<td><strong>Subtotal (B)</strong></td>
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<td><strong>Total</strong></td>
<td>2,750.00</td>
</tr>
</tbody>
</table>

$^a$ Administered by the Asian Development Bank (ADB). This amount also includes ADB’s administration fee, audit cost, bank charges, and a provision for foreign exchange fluctuations (if any); to the extent that these items are not covered by the interest and investment income earned on this grant.

$^b$ May include individual national consultants, national institutes, or consulting companies.

$^c$ Includes expenses to cover translation of documents from Vietnamese to English and vice versa.

$^d$ Includes the cost of computers and geographic information system software for mapping purposes.

$^e$ These assets will be turned over to the implementing agencies upon completion of the project.

Includes participation by the Vietnamese stakeholders in key regional climate change-related events, where they will learn about best practices elsewhere and share lessons learned from their ongoing efforts under ADB technical assistance.

Source: ADB estimates.
OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. International Consultants

1. The team leader and institutional strengthening specialist (intermittent, 15 person-months) will:
   (i) provide strategic and technical advice to study team members and coordinate study activities;
   (ii) maintain overall responsibility for budget, scheduling, quality control and assurance of TA outputs, and for communication with ADB project officers and Vietnamese counterparts;
   (iii) initiate and coordinate high-level stakeholder meetings and provide regular progress reports to ADB and the Government of Viet Nam;
   (iv) interview and consult decision makers and technical staff in national line ministries and the provinces concerned to assess their capacity in with climate change-related planning and technical issues;
   (v) in collaboration with other specialists in the TA team, develop and implement a capacity-building program for decision makers and technical staff in national line ministries and provinces concerned;
   (vi) collate all TA reports and outputs, and be responsible for quality control and quality assurance; and
   (vii) present study approach and/or results at inception, midterm and final workshops.

2. The climate change modeling specialist (intermittent, 5 person-months) will:
   (i) collect baseline data on climate and hydro-meteorological conditions in the target, areas and on existing adaptation measures;
   (ii) liaise with external specialists and government representatives to finalize a detailed methodology for climate change modeling, including baseline data requirements, choice of models, modeling periods, modeling scenarios;
   (iii) carry out climate change modeling for agreed time slices and model scenarios, and related analysis such as inundation models, incidence of severe weather events, extent of saltwater intrusion, and precipitation patterns for the focus locations (or regions); and
   (iv) prepare a working paper on climate change modeling outcomes relevant to the target areas that documents the methodology employed and results of the modeling activities.

3. The GHG emissions and climate risks assessment specialist–energy and industries sector (intermittent, 7 person-months) will:
   (i) collect baseline data on energy and industry issues relevant to the TA;
   (ii) liaise with national and provincial government representatives and external stakeholders (e.g., nongovernment organizations, project consultants) to identify key issues, including forecasts for future industrial development, trends in types of industrial development, and proposed development of the energy infrastructure;
   (iii) develop emissions projections for the energy and industry sectors to 2030 and 2050 using business-as-usual and alternative scenarios;
   (iii) identify key GHG mitigation options and rank them based on technical and economic viability, political acceptance, and ease of implementation;
   (iv) using results of climate change prediction modeling, assess climate change vulnerability and impacts for the energy and industrial sectors via integrated assessment modeling approaches;
support the GHG monitoring and reporting specialist in designing and building a GHG emissions database and inventory that the Vietnamese can update and maintain in the future; and

prepare a working paper on energy and industry sector climate change assessments that documents methodology employed and projected results of TA implementation activities.

4. The GHG emissions and climate risks assessment specialist–transport sector (intermittent, 7 person-months) will:
   a. collect baseline data on transport issues relevant to the TA including modes of transport, numbers of vehicles, utilization pattern and fuel use, road transport network, incidence and economic cost of severe weather, and climate change-related damage to transport infrastructure;
   b. develop emissions projects for various transport modes out to 2030 and 2050 using business-as-usual and alternative scenarios;
   c. point out key transport trends for the future, including planning for future urban developments, projected land use changes, changes in transport modes and volumes, and proposed development of water, rail, and road transport networks; identify GHG emission mitigation options, and determine and quantify attendant benefits regarding air quality and traffic-related issues;
   d. identify key GHG mitigation options and rank them based on technical and economic viability, political acceptance, and ease of implementation;
   e. using results of climate change prediction modeling, assess climate change vulnerability and impacts for the transport sector via integrated assessment modeling approaches;
   f. support the GHG monitoring and reporting specialist in designing and building a GHG emissions database and inventory that the Vietnamese can update and maintain in the future; and
   g. prepare a working paper on transport sector climate change assessments that documents the methodology employed and projected results of TA implementation activities.

5. The GHG emissions and climate risks assessment specialist–urban planning sector (intermittent, 7 person-months) will:
   (i) collect baseline data on urban settlements in Thanh Hoa, Ho Chi Minh, and Da Nang on issues relevant to the TA including types and numbers of buildings, and their location, related urban infrastructure such as hospitals, schools, and public amenities, and other buildings for public use;
   (ii) develop projections of energy use by urban areas out to 2030 and 2050 using business-as-usual and alternative scenarios;
   (iii) point out key trends in demand for urban infrastructure, including planning for future demographics and urban developments; projected land use changes; changes in transport modes and volumes; and proposed development of water, rail, and road transport networks;
   (iv) support the GHG monitoring and reporting specialist in designing and building a GHG emissions database and inventory that the Vietnamese can update and maintain in the future;
   (v) using results of climate change prediction modeling, assess climate change vulnerability and impacts for the urban sector using integrated assessment modeling approaches; and
(vi) prepare a working paper on urban sector climate change assessments that documents the methodology employed and projected results of TA implementation activities.

6. The GHG emissions and climate risks assessment specialist–social, economic and financial issues (intermittent, 7 person-months) will:
   (i) collect baseline data on socioeconomic issues, including population and demographic trends, and poverty, public health, and gender issues;
   (ii) identify key socioeconomic issues in the target areas, including population projections, population distribution projections, trends within socially vulnerable groups (including gender issues), trends within the public health sector, and estimates of climate migrant movements to and from the study area;
   (iii) specify key social issues as outlined under point (ii);
   (iv) evaluate the likelihood of positive and negative impacts on society from climate change and mitigation efforts, and likelihood of disproportionate impacts on women, children, and indigenous communities;
   (v) develop methodologies for climate change cost estimation and economic analysis of mitigation and adaptation options, and assess climate change vulnerability and impacts related to socioeconomic issues;
   (vi) support the GHG monitoring and reporting specialist in designing and building a GHG emissions database and inventory that can the Vietnamese can update and maintain in the future; and
   (vii) prepare a working paper on socioeconomic and financial climate change assessments that documents the methodology employed and projected results of TA implementation activities.

7. The GHG monitoring and reporting specialist (intermittent, 7 person-months) will:
   (i) assess training needs relating to GHG emissions inventory, monitoring, and reporting at the facility, city, provincial, and ministry levels;
   (ii) with the assistance of the various sector GHG emissions specialists, and the geographic information system (GIS) and database manager, design and implement an online GHG emissions inventory and database that the Vietnamese can update and maintain in the future;
   (iii) design and deliver training programs for facility managers, and government agency and ministerial staff, using the “train the trainer” approach; and
   (iv) support a few early-adopter groups in designing and implementing their own GHG monitoring and reporting system.

8. The public awareness campaign specialist (intermittent, 7 person-months) will:
   (i) conduct a baseline survey and consultations with communities and civil society members to evaluate awareness of climate change-related issues, including development impacts, costs and benefits, and trade-offs; and
   (ii) develop and implement a campaign to raise awareness in Thanh Hoa, Ho Chi Minh and Da Nang, including the use of radio and TV advertisements, public events in collaboration with civic bodies and nongovernment groups, and via the print media.

9. The GIS and database manager (intermittent, 3 person-months) will:
   (i) develop a database system to collect and manage data on GHG emissions, industrial and power sector development plans, and urban settlements;
   (ii) work closely with the climate modeler to generate a GIS platform for displaying results of the climate risk analyses; and
(iii) develop and implement user-friendly interfaces for conducting economic and financial analyses of alternative GHG mitigation and adaptation options.

B. International Consultants

10. The national consultants (intermittent except when specified, 162 person-months) will include (i) deputy team leader and climate change specialist (power and industries) – 24 months; (ii) climate change specialist (transport) – 18 months; (iii) climate change specialist (urban planning) 18 months; (iv) climate change specialist (economic and financial issues) – 18 months; (v) GHG monitoring and reporting specialist – 7 months; (vi) GIS/database manager – 12 months; (vii) climate change modeler – 5 months; (viii) public awareness campaign specialist – 18 months; (ix) institutional strengthening specialist – 18 months; and (x) office manager and logistics specialist – 24 months. It is suggested that the focal points for the executing and implementing agencies be those specialists that have 18–24 month contracts, and that the deputy team leader listed under (i) be the focal point for MOIT.