

**Ex-Post Project Evaluation 2019:
Package II-3 (Viet Nam)**

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JAPAN INTERNATIONAL COOPERATION AGENCY

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Socialist Republic of Viet Nam

FY2019 Ex-Post Evaluation of Japanese ODA Loan Project

“Support Program to Respond to Climate Change (I) – (VII)”

External Evaluator: Toshihisa Iida, OPMAC Corporation

0. Summary

The objective of this program (hereinafter, “the Program”) was to (i) mitigate climate change by Greenhouse Gas (hereinafter, “GHG”) absorption and emission control, (ii) build adaptive capacity to deal with the harmful impacts of climate change, and (iii) enhance measures for cross-sectional issues concerning climate change by supporting the responses to climate change taken by the Government of Viet Nam through policy dialogues, thereby contributing to sustainable economic development by reducing risks such as disasters caused by climate change in Viet Nam and also contributing to the mitigation of climate change. The Program was consistent with the development policy of Viet Nam, its development needs, and with Japan’s ODA policy. In addition, the process of the policy matrix formulation and the institutional arrangements to monitor the implementation of policy actions were appropriate. Thus, its relevance is high. Most of the policy actions were completed, and the targets of all the operation and effect indicators were achieved. Also, it is identified that the project contributed to climate change related funding to some degree and that the policy dialogues and JICA’s technical cooperation made a certain contribution to the progress of the policy action implementation. Furthermore, quantitative effects in the field of energy efficiency and renewable energy have been identified. Thus, its effectiveness/impact is high. After the Program, the Support Program to Respond to Climate Change (hereinafter, “SP-RCC”) has continued to build a legal and regulatory framework for climate change responses with the same institutional arrangements for implementation as before.

1. Project Description



Project Location



Mangroves and Revetment in the Mekong Delta Area Which Are Vulnerable to Climate Change

1.1 Background

The Socialist Republic of Viet Nam (hereinafter, “Viet Nam”), with the rapid economic growth, witnessed its energy consumption increasing by around 2.7 times between 1994 and 2013, and its rate of increase of GHG emissions between 1995 and 2012 ranking the second highest among the major ASEAN countries. Meanwhile, due to its long coastline, stretching to roughly 3,400 km, and the vast Mekong Delta area, Viet Nam was considered to be one of the most vulnerable countries easily affected by climate change, according to research by the World Bank¹ and others. The scenario analysis on the impact of climate change, announced by the Government of Viet Nam in 2009, predicted the average temperature would rise by 2-3%, the sea level by 83cm, and annual precipitation by 5-15% by 2100 (compared to those between 1980 and 1999, respectively). In the coming period, if the rise in sea level reaches 1 m, 10% of GDP would be lost. Therefore, there were concerns that an increase in the frequency and severity of disasters associated with climate change would be an important risk factor for the country’s future sustainable growth.

Under such circumstances, the Government of Viet Nam formulated the *National Target Program to Respond to Climate Change* (hereinafter, “NTP-RCC”) in December 2008, which contained comprehensive measures to address climate change. The Program promoted the formulation and implementation of policy actions for the three priority issues, which are (i) mitigation, (ii) adaptation, and (iii) cross-sectoral issues, in order to support the climate change responses of Viet Nam including the NTP-RCC.

¹ World Bank, *The Impact of Sea Level Rise on Developing Countries: Comparative Analysis*, World Bank Policy Research Working Paper 4136, February 2007

1.2 Project Outline

The objective of the Program was to (i) mitigate climate change by GHG absorption and emissions control, (ii) build adaptive capacity to deal with the harmful impacts of climate change, and (iii) enhance measures for cross-sectoral issues concerning climate change by supporting the climate change response of the Government of Viet Nam through policy dialogues, thereby contributing to sustainable economic development by reducing risks such as disasters caused by climate change in Viet Nam and also contributing to climate change mitigation.

Term	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)
Loan Approved Amount/ Disbursed Amount	10,000 million yen / 10,000 million yen	10,000 million yen / 10,000 million yen	15,000 million yen / 15,000 million yen	10,000 million yen / 10,000 million yen	15,000 million yen / 15,000 million yen	10,000 million yen / 10,000 million yen	10,000 million yen / 10,000 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	May 2010 / June 2010	October 2011 / November 2011	March 2013 / March 2013	March 2014 / March 2014	March 2015 / March 2015	January 2016 / March 2016	January 2017 / January 2017
Terms and Conditions	Interest Rate: (I) 0.25%, (II)-(VII) 0.3% Repayment Period (Grace Period): 40 years (10 years) Conditions for Procurement: General untied						
Borrower / Executing Agency	The Government of the Socialist Republic of Viet Nam/Ministry of Natural Resource and Environment (MONRE)						
Project Completion	March 2017						
Target Area	Viet Nam in its entirety						
Main Contractor(s) (Over 1 billion yen)	None						
Main Consultant(s) (Over 100 million yen)	None						
Related Studies (Feasibility Studies, etc.)	None						
Related Projects	<p>[Technical Cooperation]</p> <ul style="list-style-type: none"> • Study on Master Plan for Energy Conservation and Effective Use in the Socialist Republic of Viet Nam (2008-2009) • Project for Capacity Building for National Greenhouse Gas Inventory (2010-2014) • Advisor for Climate Change Program (2011-2015) • Project for Development of the National Biodiversity Database System (2011-2015) • Project for Establishment of Energy Management Training Center (1st Stage (2011-12), 2nd stage (2013-2015)) • Project on Strengthening the System and Operation on Standards and Conformance for Energy Efficiency and Labeling (2013-2016) • Project on Supporting the Implementation of Policy Actions for SP-RCC (2014-2015) • Project to Support the Planning and Implementation of NAMAs in a MRV Manner (2015-2020) <p>Others</p> <p>[Other donors: Co-financing for the Project]</p> <ul style="list-style-type: none"> • World Bank, First, Second, and Third Climate Change Development Policy Operation (2012, 2013, 2015) • World Bank, Climate Change and Green Development Policy Financing (2017) • AFD, Policy loan “Support Programme to Respond to Climate Change” (2009, 2010, 2011, 2012, 2014) <p>Others</p>						

2. Outline of the Evaluation Study

2.1 External Evaluator

Toshihisa Iida, OPMAC Corporation

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: September 2019 – August 2020

Duration of the Field Study: November 10, 2019 – November 22, 2019,

March 1, 2020 – March 10, 2020

2.3 Constraints during the Evaluation Study

(1) Constraints on evaluation items

Since the Program was a budget support type program, which made it difficult to conduct a quantitative comparison of inputs (financial support to the general budget of the Vietnamese government) and outputs (policy formulation and implementation of climate change response), the efficiency of the Program was not evaluated. Regarding sustainability, since the government's SP-RCC itself was still ongoing at the time of ex-post evaluation, the current program implementation system and implementation status were analyzed. However, the evaluator has not given because the technical and financial aspects of operation and maintenance were not analyzed and some of the rating criteria for the sustainability of the ex-post evaluation did not correspond to the Program. Since the sub-ratings for efficiency and sustainability were not applied, the evaluator has not given an overall rating.

(2) Analysis of effectiveness/impact

Regarding the analysis of effectiveness/impact, most of the policy actions in each term were the development of legislation and strategies/plans. In addition, there are many areas where it will take time to observe the effects of the development and implementation of laws and regulations, and areas where it is difficult to measure the effect (e.g., disaster prevention and coastal management), which are characteristic of responses to climate change. Thus, regarding the analysis of effectiveness, besides the analysis of the implementation status of policy actions and the achievement of the operation and effect indicators, the quantitative analysis included financial effects (effect on the fiscal balance and budget allocation for climate change related activities) and the qualitative analysis included the effects of policy dialogues as well as the effects of JICA experts and technical cooperation on the implementation of policy actions. The analysis of impact was conducted in areas where it was possible to identify the changes caused by policy implementation (e.g., energy conservation and renewable energy).

(3) Constraints on information collection

In the Program, 10 ministries (about 40 departments) were involved in the implementation of policy actions in 8 areas (14 areas in Phase 1) as shown in Table 1 below. At the time of the ex-post evaluation, questionnaires were sent to all the relevant ministries (hereinafter “line ministries”) regarding the status of the implementation of policy actions and subsequent measures to address climate change. Subsequently, responses were obtained from 16 departments of 6 ministries that were available for interviews at the time of the field survey. Thus, the analysis and evaluation judgments were made based on the responses, on interviews with other donors, etc., and on other public information. In addition, since some of the JICA documents related to the Program were not available, the information contained in these documents could not be used in this post-evaluation.

Table 1: Line Ministries for the Program

Field	Line Ministries
1. Disaster preparedness and climate monitoring	<u>Ministry of Natural Resource and Environment (hereinafter, “MONRE”), Ministry of Agriculture and Rural Development (hereinafter, “MARD”), Ministry of Transport (hereinafter “MOT”), Ministry of Construction (hereinafter “MOC”)</u>
2. Food and water security	<u>MONRE, MARD, MOC</u>
3. Proactive responses to sea level rise	<u>MONRE, MARD</u>
4. Sustainable forest management and development	<u>MONRE, MARD</u>
5. Reducing GHG emissions	<u>MONRE, MARD, MOT, MOC</u> , Ministry of Finance (hereinafter “MOF”), Ministry of Planning and Investment (hereinafter “MPI”), Ministry of Industry and Trade (hereinafter “MOIT”), Ministry of Science and Technology (hereinafter “MOST”)
6. Mainstreaming climate change	<u>MONRE, MOF, MPI, MARD</u> , Ministry of Education and Training (hereinafter “MOET”)
7. Community capacity development	MOET, Ministry of Health (hereinafter “MOH”)
8. Financial mechanism	<u>MONRE, MOF, MPI</u>

Note: Ministries underlined in the table above are those that were interviewed or who responded to the questionnaires.

3. Results of the Evaluation

3.1 Relevance (Rating: ③²)

3.1.1 Consistency with the Development Plan of Viet Nam

A description of the importance of addressing climate change in Viet Nam’s national development strategy/plan and climate change sector strategy at the time of the appraisal and ex-post evaluation is summarized in Table 2 below. Viet Nam’s national development strategy consists of the *Ten-Year Social and Economic Development Strategy (hereinafter, “SEDS”)* and the *Five-Year Social and Economic Development Plan (hereinafter, “SEDP”)*, which is the specific plan of the strategy. At the time of the appraisal, the *SEDP (2006-2010)* focused on minimizing the negative impact of climate change on the environment. In addition, during the

² ③: High, ②: Fair, ①: Low

implementation of the Program, the *SEDS (2011-2020)* and *SEDP (2011-2015)* clearly indicated that addressing climate change was one of the main goals. Furthermore, as for development policy to respond to climate change at the time of the appraisal, the *NTP-RCC (2009-2015)*, formulated in December 2008, set out measures to address climate change targeting the year 2020. Moreover, in December 2011, the *National Strategy on Climate Change (hereinafter, “NCCS”)* was approved as a guideline for more comprehensive and cross-sectoral measures against climate change, considering both climate change mitigation and adaptation perspectives followed by the formulation of the *National Green Growth Strategy (hereinafter, “NGGS”)* in 2012.

Table 2: The National Development Plan/Strategy and Climate Change Sector Strategy at the Time of the Appraisal and Ex-post Evaluation

National Development Plan/Strategy and Climate Change Sector Strategy at the Time of the Appraisal	
National Development Plan/Strategy	
SEDS (2011-2020)	One of the main objectives was to deal with climate change, in particular the rise of sea water level, in the environmental sector.
SEDP (2006-2010)	Restricting the negative impact of climate change on the environment as one of the priorities in the field of natural resources, environment and sustainable development
SEDP (2011-2015)	Clearly mentioned that response to climate change is a national priority
Climate Change Sector Strategy	
NTP-RCC (2009-2015)	Specified that response to climate change should be incorporated into development strategies, programs and plans in all areas, and set out climate change responses targeting the year 2020 in the areas of each ministry
NCCS	Positions a low-carbon economy and green growth as key to achieving sustainable development and aims to integrate GHG emission control and reduction into socio-economic development activities
NGGS	Aims at accelerating the process of economic restructuring to achieve more efficient use of natural resources, GHG emission reduction, infrastructure development to improve the efficiency of the whole economy, response to climate change, poverty reduction, and economic development in a sustainable manner
National Development Plan/Strategy and Climate Change Sector Strategy at the Time of the Ex-post Evaluation	
National Development Plan/Strategy	
SEDS (2011-2020)	Same as above
SEDP (2016-2020)	As key priority issues by 2020, actively responding to climate change, preventing natural disasters, and enhancing natural resource management and environment protection are listed.
Resolution of the Central Committee of the Party (No.24-NQ/TW/2013) ³	Promotes a green growth model aiming at sustainable economic development and further strengthening the mainstreaming of climate change
Climate Change Sector Strategy	
NCCS	Same as above
NGGS	Same as above
NDC	Commits: (i) GHG emission reduction by 8% by 2030 compared to the Business as Usual scenario (by 25% with international support) and (ii) continuous implementation of climate change adaptation programs/projects within the scope of the NCCS
PIPA	Specifies 68 policy actions that are categorized into five categories to be implemented by relevant ministries and local governments

³ Resolution of the Central Committee of the Party, *on Active Response to Climate Change, Strengthening Natural Responses Management and Environmental Protection* (No.24-NQ/TW (2013))

At the time of the ex-post evaluation, in addition to the aforementioned *SEDS (2011-2020)*, the *SEDP (2016-2020)* also identified a proactive response to climate change as one of the national priorities by 2020⁴. Furthermore, the Resolution of the Central Party Committee in 2013 also promoted the mainstreaming of climate change. In addition to the above-mentioned *NCCS* and *NGGS*, the *Intended Nationally Determined Contribution to UNFCCC (hereinafter, "NDC")*⁵, which was submitted to the United Nations Framework Convention on Climate Change (hereinafter, "UNFCCC") in 2015, and the *Plan for Implementation of the Paris Agreement (hereinafter, "PIPA")* of October 2016, which formed the basis for the government's commitment to materialize Viet Nam's adaptation priorities and reduce GHG emissions as policies for implementing *NDC*, was formulated.

In light of the above, at the time of the ex-post evaluation, responses to climate change were identified as a priority in the National Development Plan, and efforts to address climate change were still ongoing. Thus, it can be considered that the Program was still consistent with the current development policy.

3.1.2 Consistency with Development Needs of Viet Nam

At the time of the appraisal, Viet Nam's energy consumption had greatly increased with rapid economic growth, with the rate of increase in GHG emission between 1995 and 2012 ranking the second highest among the major ASEAN countries. Thus, it was an urgent issue to formulate and take specific actions to develop and use renewable energy, to promote energy saving, to strengthen waste management, and to promote sustainable forest management for the reduction of GHG emissions. Meanwhile, Viet Nam has a long coastline and, according to the aforementioned research of the World Bank and others, it is considered to be one of the countries most vulnerable to climate change, facing dangers such as floods, storms and rises in sea level. There were concerns that increases in the frequency and seriousness of disasters associated with climate change in the future, such as more frequent and serious floods and typhoons, prolonged droughts, and saltwater intrusion, could be a major risk factor for sustainable economic development. The adverse effects caused by climate change were expected to cause increased damage, especially for poor people with a relatively low adaptive capacity. Thus, further response to climate change, such as implementing climate change actions, was needed through the mainstreaming of climate change response in the formulation of plans and strategies for the social economy and rural development.

⁴ The inclusion of climate change responses in the *SEDS* and *SEDP* is part of policy actions of the Program. The *SEDS (2021-2030)* and *SEDP (2021-2025)* currently being prepared, with technical cooperation from AFD, are also being planned to ensure that responses to climate change are incorporated into these national plans.

⁵ In the decision of COP 21, countries that had already submitted a draft commitment (*INDC*) at the time of the conclusion of the Paris Agreement shall make the *INDC* a *Nationally Determined Contribution (NDC)* by the time of the conclusion of the Agreement.

At the time of the ex-post evaluation, the *third National Communication of Viet Nam to the UNFCCC*, which was submitted to UNFCCC in 2019, indicated that the total of GHG emissions in Viet Nam in 2014 was 284.0 MtCO_{2e}⁶ with the LULUCF (Land Use, Land-Use-Change, Forestry) sector and 321.5 MtCO_{2e} without LULUCF. The total emissions had increased by 2.7 times for the 20 years from 1994 to 2014 (Table 3). Also, according to *NDC*, in the BAU scenario, the total GHG emissions would increase to 787.4 MtCO_{2e} (about a 3.2 time increase from 2010). Thus, it is necessary to continue to take measures to reduce GHG emissions.

Table 3: GHG Emissions in Viet Nam

	1994	2000	2013	2014
Energy	25,367	52,774	151,403	171,621
Industrial processes and product use	3,807	10,000	31,767	38,620
Agriculture	52,445	65,091	89,408	89,752
LULUCF ^(Note)	19,378	15,105	-34,240	-37,540
Waste	2,565	7,925	20,686	21,513
Total (with LULUF)	103,832	150,901	259,204	283,968
Total (without LULUCF)	84,454	135,796	293,264	321,506

Unit: KtCO_{2e}

Source: MONRE, *the Initial Biennial Update Report of Viet Nam to the UNFCCC (BURI)* (2014), *the Second Biennial Update Report of Viet Nam to the UNFCCC (BUR2)* (2017), *the Third National Communication of Vietnam to the UNFCCC* (2019)

Note: Negative emissions in the column for LULUCF means that the amount of GHG absorption surpasses the amount of GHG emissions in Land use, land-use-change and forestry.

As shown in Table 4 below, in order to reduce GHG emissions, many policies and strategies/plans/regulations have been formulated and implemented throughout the country and in related sectors.

Table 4: Major Mitigation Policies

Cross-sectoral policies	Sector strategies/plans/regulations
<ul style="list-style-type: none"> • National Strategy on Climate Change (NCCS) (2011) • National Green Growth Strategy (NGGS) (2012) • Revised Law on Environment Protection (2014) • Plan on GHG emission management and the management of carbon credit businesses activities (2012) • New NTP-RCC (2012-2015) (2012) • National Action Plan on Green Growth in Viet Nam (2014-2020) (2014) • Nationally Determined Contribution (2015) • Plan for Implementation of Paris Agreement on climate change (2016-2020) (2016) 	<ul style="list-style-type: none"> • Law on Economical and Efficient Use of Energy (2011) and its implementation measures (2011) • Introduction of qualification and certification requirements for energy managers and auditors (2011) • Energy labeling for energy-consumer devices and equipment, and Minimum Energy Performance Standards (2011) • Energy Efficiency Building Code (2013) • Incentive measures to promote renewable energy (wind power, solar power, biomass, and others) (2014-) • Development Strategy of Renewable Energy of Viet Nam by 2030 with the vision to 2050 (2015) • Introduction and strengthening emission gas regulations for vehicle (2008, 2017) • Revised National Power Development Master Plan for 2011-2020 (2016) • Revised National Action Program on the Reduction of GHG emissions through the reduction of deforestation and forest degradation, sustainable management of forest resources, and REDD+ by 2030 (2017)

⁶ The Unit that converted the amount of GHG emissions to CO₂ equivalent

On the other hand, due to its geographical features, Viet Nam is vulnerable to meteorological conditions such as typhoons, landslides, floods and droughts.⁷ According to the report *Global Warming of 1.5C*, announced by IPCC (Intergovernmental Panel on Climate Change) in 2018, Viet Nam is one of nine countries where at least 50 million people are exposed to sea level rise and storms.

Thus, at the time of the ex-post evaluation, Viet Nam continued to be vulnerable to climate change due to its geographical features, and in addition, its GHG emissions were expected to increase. Therefore, the Vietnamese government has implemented policies such as *NCCS*, *NGGS* and other national climate change responses, *NDC* and *PIPA* to reduce GHG emissions, as well as policies such as the promotion of energy savings and renewable energy generation and the strengthening of forest management. In addition, the government has aimed at green economic growth with climate change responses, integrating climate change response into the government's economic and development plans, such as *SEDS* and *SEDP*. As mentioned above, the need to address climate change is still a high priority area in the government's development policy.

3.1.3 Consistency with Japan's ODA Policy

Japan's policy for supporting developing countries in the field of climate change response included *Cool Earth Initiative* (January 2008)⁸, the *Hatoyama Initiative*⁹ (September 2009), and *ACE: Action for Cool Earth* (2013)¹⁰, in which Japan proactively supports developing countries working on climate change responses. The *Country Assistance Program for Viet Nam* (June 2009) of the Ministry of Foreign Affairs stated that the assistance should encourage Viet Nam to mainstream adaptation measures for adverse effects caused by climate change in its development policies as well as to contribute to mitigation measures against climate change. Also, the *Country Assistance Policy for Viet Nam* (December 2012) of the Ministry of Foreign Affairs placed support for "Viet Nam to achieve sustainable development by strengthening international competitiveness, overcoming vulnerability and creating a fair society and country" in its priority area. In the area of "overcoming vulnerability," it stated that Japan supported the addressing of threats such as disasters and climate change. Thus, the Program was consistent

⁷ For example, a coastline of more than 2,500 km lies on the east side of Viet Nam, where many typhoons arrive every year. The northern mountainous areas are vulnerable to landslides and flash floods. Furthermore, the Mekong Delta region is considered to be one of the most vulnerable regions in the world to sea level rise.

⁸ At the Davos Conference in 2008, then Prime Minister Fukuda announced a plan for future efforts to address climate change and expressed his determination to work together with major emitting countries to set a national total GHG emission reduction targets.

⁹ At the UN Climate Change Summit, then Prime Minister Hatoyama advocated the necessity of transferring funds and technology to developing countries to reduce GHGs emissions, respond to natural disasters caused by climate change, and conserve biodiversity.

¹⁰ At the 19th Conference of the Parties (COP19) to the UNFCCC in November 2013, it was proposed that public and private funds be mobilized to support mitigation and adaptation measures in developing countries, totaling 1.6 trillion yen over the three-year period from 2013 to 2015.

with the Japan's policy to support climate change issues and with Japan's ODA policy for Viet Nam at the time of the appraisal.

3.1.4 Relevance to Appropriateness of Project Planning and Approach

3.1.4.1 Appropriateness of the Policy Matrix Formulation Process

In the Program, in order to support the Vietnamese government's climate change initiatives, policy actions for the promoting of climate change response were set up in each term, and funds from donors were disbursed based on an evaluation of the progress of these actions. The policy actions in each term were selected in three priority areas, that is, mitigation, adaptation and cross-sectoral issues, and were categorized into 12 fields¹¹ in the 1st phase ((I) - (IV)) to achieve the policy objectives of the NTP-RCC and eight 8 fields¹² in the 2nd phase ((V) - (VII)) based on the policies set forth in the NCCS. Thus, the policy actions in the Program were consistent with the issues set forth in the national climate change policies. The policy actions in each term were determined after full consultation on the actions presented by the line ministries took place with the development partners (donors and NGOs concerned) in policy dialogues. The consistency of the policy actions with the NTP-RCC and/or NCCS was confirmed through the discussion process with the SP-RCC focal points in the line ministries, the Climate Change Department of MONRE, and the development partners.

In addition, the policy actions in each term, which were decided after discussions with development partners, were submitted for approval to the National Committee for Climate Change (hereinafter, "NCCC"), which is an advisory body to the Prime Minister on the implementation of climate change responses. Thus, it is considered that the policy actions were formulated by an appropriate mechanism that ensured commitment at a high level of government.¹³

In terms of the number of policy actions, a total of 254 policy actions were set for all seven terms, and more than 50 policy actions were set for the terms of (II) and (III) in particular. Most of the policy actions were for the development of institutional frameworks, such as laws, policies and plans that would form the foundation to address climate change. Since more detailed activities were included in the 1st phase, the focus was on the policy-based actions in the 2nd phase. Given the large number of policy actions and the amount of work required to monitor progress, it is considered that taking into account the importance of the policy actions and their position in the overall picture, it would be possible to monitor the overall progress of

¹¹ The policy actions in the 1st phase were categorized into 12 areas: Energy efficiency, Renewable energy, Forestry management, Waste management, Water resources, Integrated coastal management, Natural resources management, Infrastructure, Health, Agriculture/Food security, Climate change response, and Financial mechanism.

¹² The policy actions in the 2nd phase were categorized into 8 areas: Disaster management/Climate monitoring, Food and Water security, Response to sea level rise, Forestry and Biodiversity, GHG reduction, Mainstreaming, Strengthening communities, and Financial mechanism.

¹³ The NCCC supervises and coordinates the line ministries and monitors climate change response in formulating policies on climate change.

response to climate change without increasing the workload if the number of policy actions was narrowed down to a number that would allow the identification of the progress of major responses to climate change.

3.1.4.2 Appropriateness of Implementation Structure

The implementation structure of the SP-RCC is in line with the Program framework approved by the Prime Minister in April 2011.¹⁴ The Program Coordination Unit (hereinafter, “PCU”) in MONRE, the executing agency, has been responsible for overall program implementation including policy dialogue coordination, the compiling of policy action formulation and the implementation status of policy actions, coordination of improving inter-ministerial policies and institutions, donor coordination, and the operational planning of the SP-RCC and the reporting of results, with the cooperation of the line ministries and other stakeholders. The line ministries appointed focal points to act as points of contact for the implementation of the SP-RCC, which is responsible for internal coordination within the ministries, inter-ministry coordination, coordination and liaison with the PCU, and strengthening of the network with the line ministries.

The implementation status of the policy actions was confirmed through discussion with the development partners at the policy dialogues in each term. For policy actions that had not yet been achieved at that time, the development partners and the ministries in charge confirmed the schedule and issues to be achieved, and the advice necessary to solve the issues was provided by the development partners. In addition, a monitoring system for implementation status at a high-level in government was established by reporting on the status to the NCCC. Several line ministries commented that the reporting of the implementation status to the NCCC has led to the promotion of the implementation of policy actions through information sharing at a high level of government.

The decision to disburse donor funds for each term was made after considering the overall achievement of policy actions for each term as well as the prospects for the future achievement of unaccomplished actions.¹⁵ If the overall achievement rate of policy actions was insufficient, funds were disbursed, after JICA and other development partners had reconfirmed the implementation status of unaccomplished policy actions, which is considered to be an appropriate response. While the status of most of the unaccomplished policy actions was reviewed at the time of the follow-up meetings and/or subsequent policy dialogues, there were a few cases where the subsequent follow-ups for unaccomplished actions where progress had been delayed had not been carried out. It would have been desirable to have established a

¹⁴ Government Office Letter no. 2033/VPCP-QHQT dated 4 April 2011

¹⁵ Although there were no clear criteria for the fund disbursement for each term, funds were disbursed as long as the achievement rate of policy actions was approximately the same as the previous year.

system to continuously check the implementation status of all policy actions that had not been achieved at the time of the policy dialogues and/or at follow-up meetings.

3.1.4.3 Appropriateness of Promoting Responses to Climate Change through a General Budget Support Framework

In the Program, Japanese ODA Loans were provided for 7 terms in the form of general budget support in order to support the implementation of policy reform to respond to climate change in Viet Nam. At the start of the Program, policy reform for the response to climate change was a new challenge for Viet Nam, and implementation required financial support as well as knowledge and technical support from development partners, including donors, in order to promote the policy reform. While a large number of ministries were involved in climate change issues, there were multiple donors who supported the activities of these ministries. Thus, it was necessary to build a platform that would enable coordination between the ministries and between the donors concerned, and also to enable continuous dialogue between the ministries and the donors, and the promotion of technical cooperation and knowledge sharing. Furthermore, the implementation of a series of policy actions over multiple years was required for the policy reforms for the response to climate change, and a mid to long-term timeframe was needed to identify the results of policy implementation. Given these considerations, JICA's multi-year financial support in the form of general budget support was appropriate.

In light of the above, the Program has been highly relevant to Viet Nam's development plan and development needs, as well as to Japan's ODA policy. Therefore, its relevance is high.

3.2 Effectiveness and Impacts¹⁶ (Rating: ③)

3.2.1 Effectiveness

As stated in "2.3 Constraints during the Evaluation Study," in this evaluation, the evaluation judgment was carried out through the analysis of financial effects (effects on the fiscal budget and the budget for climate change response), the effects of policy dialogue, and the effects of JICA experts and technical cooperation projects on the implementation of policy actions, in addition to confirming the achievement of policy actions as well as the effect indicators. Impacts were analyzed in areas where changes due to the implementation of the policy actions were relatively easily identified (e.g., energy conservation and renewable energy).

3.2.1.1 Achievement Status of Policy Actions

As mentioned previously, the Program set policy actions for activities to be accomplished during the year in every term, and the status of accomplishment was confirmed at the time of

¹⁶ Sub-rating for Effectiveness is to be put with consideration of Impacts.

the policy dialogue. The Japanese ODA loans were disbursed based on the confirmation. A total of 254 policy actions were set up from the term (I) to (VII) of the Program, and 236 policy actions (93% of the total) were confirmed to have been achieved at the time of the ex- post evaluation, resulting in the establishment of important policies and institutional frameworks to promote climate change response. Of the policy actions that were not confirmed to have been accomplished, three actions were canceled, two actions have since been implemented, and one action was not confirmed to have been implemented by the line ministry. As for the remaining 12 actions, no responses were obtained from the line ministries concerned and no confirmation of achievement could be identified from existing documents¹⁷. The policy actions that were canceled were two actions related to irrigation management and one action related to the GHG emission baseline for the implementation of *NGGS*. The cancellations are considered to have been unavoidable due to changes in the management scheme of irrigation facilities¹⁸ and the fact that the ministry in charge did not have enough technical expertise, and similar actions were conducted in another policy action.¹⁹ In addition, two actions under implementation (the addition of renewable energy-related provisions to the Electricity Act and the development of green building development strategies) have been changed to enacting the *Renewable Energy Act* and developing green building development plans, both of which were still in progress at the time of the ex-post evaluation. The main policy actions achieved in the key areas were as follows (see Table 5 for the main policy actions achieved in each area).

(1) New Energy and Renewable Energy

The Renewable Energy Development Strategy was formulated in 2015 with the goal of developing renewable energy in line with the *National Power Development Master Plan* (increasing the ratio of the generation capacity for renewable energy to the total energy generation capacity to 5.6% by 2020 and 9.4% by 2030). In addition, a support mechanism for wind, biomass, and waste power generation, as well as regulations and a system for power purchase price for biomass and waste power generation were developed to promote renewable energy projects.

¹⁷ The actions that could not be confirmed were nine actions for MARD, two actions for MOET, and one action for MOH.

¹⁸ The transfer of the management of irrigation facilities in the secondary rivers and canals to water users' associations were listed as the policy actions. However, the management system of irrigation facilities was changed from the Tier 1 to Tier 3 level classification of rivers and canals for two classifications: large facilities and small facilities.

¹⁹ MPI in charge of *NGGS* was assigned to this action, but this action was canceled due to the weak technical expertise of the MPI and the fact that the 1st edition of the biennial report (*BURI*) submitted by MONRE to the UNFCCC in 2014 established a baseline for GHG emissions. In 2017, ADB's research report *Pathways to low-carbon development for VIET NAM* conducted a baseline analysis in the *NGGS*.

(2) Energy Saving and Energy Efficiency

In order to achieve the reduction targets for domestic energy consumption in the *Viet Nam Energy Efficiency Program* (hereinafter, *VNEEP*) (3% to 5% in the *1st VNEEP (2006-2010)* and 5% to 8% in the *2nd VNEEP (2012-2015)*), the *Law on Economical and Efficient Use of Energy* and its implementation rules were developed. In addition, qualification and certification requirements for energy managers and energy auditors, energy management plans and reporting and auditing procedures to promote energy efficiency, and benchmarks for energy efficiency standards for the efficient use of energy in the industrial sector were introduced.

(3) Forest Management and Development

For forest conservation and forest management, the *Forest Protection and Development Plan for 2011-2020* was enacted in 2012 with the goal of increasing the forest coverage ratio to 42-43% by 2015 and 44-45% by 2020. The implementation procedures for forest management were clarified, including the formulation of guidelines for sustainable forest management, the establishment of a legal framework for the punishment of infringements on forest management, and the development of a system for the special use of forest system management. In the field of biodiversity, the *Law on Biodiversity Conservation* and its detailed regulations were enacted, and the National Biodiversity Database and the *Master Plan for Biodiversity Conservation to 2000* were developed. As for REDD+, the *National REDD+ Action Program* and the guidelines for developing an action plan for the provincial REDD+ Action Program based on the *National REDD+ Action Program* were established, together with a national REDD+ fund. A financing mechanism and a benefit-sharing system to promote REDD+ were developed.²⁰

(4) Mainstreaming Climate Change

Responses to climate change were included in the *SEDS (2011-2020)*, *SEDP (2011-2015)* and *SDEP (2016-2020)*, which are national economic development policies, as priorities to be addressed to build a low-carbon society. The *NCCS* and the *National Climate Change Action Plan*, guidelines for climate change response, were formulated. Furthermore, in accordance with the provisions of the UNFCCC, the preparation and submission of the *Initial Biennial Report (hereinafter "BUR1")* (2014) and the updated version (*BUR2*) (2017) containing inventory information on GHG emissions and absorption performance and information on climate change response was carried out, together with the establishment of a national GHG inventory system (2015).

²⁰ REDD+: Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries.

(5) Financial Mechanism

A mechanism to mobilize SP-RCC donor funds for *NTP-RCC* implementation was established as the SP-RCC funding mechanism, and the budget allocation mechanism for climate change actions by MONRE, MPI and MOF was put into operation. In addition, the introduction of an environmental conservation tax, the development of a system to promote CDM, and the development of a system for the formation and implementation of JCM projects were implemented.

Table 5: Key Policy Actions Achieved

Field	Key Policy Actions Achieved
1. Disaster preparedness and climate monitoring	<p>[Enhancing disaster risk reduction]</p> <ul style="list-style-type: none"> Reviewed the functions and mandate authority of the Central Committee for Flood and Storm Control (CCFSC), an inter-ministerial institution (2010) Formulated the Law on Natural Disaster Prevention and Control (2013)
	<p>[Early Warning]</p> <ul style="list-style-type: none"> Developed an action plan for the implementation of the Development Strategy of the Hydro-Meteorological sector (2012) Developed the Law on Hydro-Meteorology (2015)
2. Food and water security	<p>[Food security]</p> <ul style="list-style-type: none"> Formulated a National Strategy on irrigation development to increase efficiency and safety (2009) Conducted impact assessment of climate change on crop production (2010), formulated regulations on large scale crop production to increase investment return and reduce GHG emissions (2013) Formulation of the Law on Irrigation and Drainage (2017)
	<p>[Enhancing the capacity of water resource management]</p> <ul style="list-style-type: none"> Developed the Law on Water Resources which encompasses the concept of integrated water resource management (2012), Developed a National Action Plan to promote the Law on Water Resources (2014), Developed circulars guiding the implementation of the Law on Water Resources (2014-15) Developed a decree on the identification and management of corridors for water resource protection (2015) Developed a decree on incentives for the effective use of water resources (2015)
3. Proactive responses to sea level rise	<p>[Appropriate response to sea level rise]</p> <ul style="list-style-type: none"> Conducted impact assessment and proposed adaptation solutions to climate change and sea level rise in the transportation sector (2011) Conducted assessment of climate change in the construction sector (2011) Integrated climate change responses into transport development strategy (2013) Integrated climate responses to the railway transport development plan (2015) Revised technical regulations with the consideration of climate change in the construction sector (2015-16), Developed the Green Growth Action Plan for the construction sector (2017)
	<p>[Integrated coastal management]</p> <ul style="list-style-type: none"> Adopted a framework of integrated coastal management (ICM) (2009), Developed provincial ICM plans (2011) Developed the National Strategy on ICM integrating climate change factors (2014) and the National Action Plan for the implementation of the Strategy on the ICM integrating Climate Change factor (2016) Developed the Law on Natural Resources and Environment of Sea and Islands (2015)

Field	Key Policy Actions Achieved
4. Sustainable forest management and development	<p>[Sustainable forest management and conservation, increase in GHG absorption, and biodiversity conservation]</p> <ul style="list-style-type: none"> • Formulated coastal mangrove rehabilitation and development programs (2009) • Formulated forest protection and development plans (2012) • Developed a legal framework for the punishment of infringements on forest management (2009-11) • Enacted the Law on Biodiversity (2009), developed a decree to implement the Law on Biodiversity (2010) • Developed a decree on the special use of forest system management (2010) • Formulated the Forest Protection and Development Program (2012) • Developed guidelines for the management of the national budget in implementing the Forest Protection and Development plan 2011-2020 (2013) • Developed the National REDD+ action program (2012), Developed circulars guiding the implementation of the National REDD+ action program (2015), Established the REDD+ Fund (2015), Developed the Benefit Distribution System to implement REDD+ (2015) • Developed the National Master Plan for Biodiversity Conservation to 2020 (2014), developed provincial master plans for Biodiversity Conservation, Developed the National Biodiversity database (2015) • Developed a decree on the management, protection and development of coastal forests (2016) • Formulated a guideline for the formation of sustainable forest management (2014, 2018)
5. Reducing GHG emissions	<p>[New Energy, Renewable Energy]</p> <ul style="list-style-type: none"> • Developed the process and procedures of submission for approval of wind power planning (2013) • Developed decisions on a supporting mechanism for development of wind power, biomass, waste-to-energy (2014) • Developed the Renewable Energy Development Strategy (2015) • Developed regulations on implementing biomass energy projects and waste-to-energy projects, and the standard PPA (2015) <p>[Energy saving and energy efficiency]</p> <ul style="list-style-type: none"> • Formulated the Law on Economical and Efficiency Use of Energy (2010), and a decree to implement the Law (2011) • Developed regulations on the application of energy management, reporting plans, and energy auditing, and qualification and certification requirements for energy auditors and energy managers (2012) • Adopted a labeling system for energy products (2012,2015) • Adopted the National Energy Efficiency Building Code (2013) • Issued regulations on the technical guidelines to improve understanding of energy saving in the construction sector (2016) • Developed regulation on measures to use energy economically and efficiency in industrial sectors (2014) • Developed benchmark for setting energy efficiency measures (beverage (2015), steel (2015)) • Improvement of energy efficiency standards for household air-conditioners (2015) • Introduction of pilot voluntary agreements on energy efficiency management in energy-intensive enterprises (2016) • Development of regulations on energy efficiency measures for implementation in key energy-intensive industrial sectors and the establishment of an energy efficiency database of selected energy intensive enterprises (2015, 2016) <p>[Waste management]</p> <ul style="list-style-type: none"> • Issued regulations for exhaust gas emission controls and measures for energy saving and efficiency in transport operation (2010, 2011) • Formulated a program on solid waste recycling (2013) • Issued vehicle emission regulations (Euro 3 for new motorbikes (2014), and new Euro 4 for automobiles (2015)) • Development of an Action Plan to respond to climate change for the transportation sector (2016-2020) (2016) • Development of an Action Plan to reduce CO₂ emissions for civil aviation (2017) • Development of a Decree on waste and scrap management (2015 & 2018)
6. Mainstreaming climate change	<p>[Promoting mainstreaming of climate change in government practices]</p> <ul style="list-style-type: none"> • Mainstreaming climate change in the formulation of SEDS/SEDP (2010-11) • Formulation of the Action Plan for Climate Change (2012) • Preparation and submission of BUR to the UNFCCC (BUR1 (2014) and BUR2 (2017) • Establishment of the National GHG Inventory System (2015)

Field	Key Policy Actions Achieved
7. Community capacity development	<p>[Improvement of community healthcare systems]</p> <ul style="list-style-type: none"> • Produced hazard maps with consideration of potential medical risks by climate change (2010) • Developed materials and conducted training to improve the capacity of health workers (2009-12) • Developed a model for preventing accidents caused by natural disasters in coastal areas (2013) • Development of guidelines on integrating the Climate Change Action Plan into provincial health plans (2013) • Implemented capacity building for the implementation of action plans at provincial levels, and formulated the M&E framework (2014-15) <p>[Awareness raising, education and training]</p> <ul style="list-style-type: none"> • Developed materials and conducted training aimed at raising awareness of climate change and disaster prevention (2009-15) • Implementation of the plan for “Integrating responses to climate change content into education and training programs” and the scheme “Integrating knowledge of disaster prevention and mitigation into schools in the education sector” (2013) • Development of a methodology for assessment of the impacts of education for a response to climate change and disaster risk prevention in schools (2016)
8. Financial mechanism	<p>[Diversification of financial resources, efficient and effective investment]</p> <ul style="list-style-type: none"> • Developed a financial mechanism for NTP-RCC (2010) • Introduction of an environment tax (2012) • Strengthened the framework for promotion of investments in CDM projects (2010) • Developed the guidelines for the SP-RCC financial mechanism (2013), report on implementation of SP-RCC financial mechanism (2015), and implementation of the mechanism (29 projects have been implemented under the mechanism) • Formulation of the action plan for the National Green Growth Strategy (2014) • Integration of Green Growth and Climate Change issues into SEDP (2016-2020) (2016) • Developed the report Climate Change Public Expenditure and Investment Review (2015) • Formulated a system prescribing the formulation and implementation of JCM projects (2015)

Source: documents provided by JICA, the line ministries, others

3.2.1.2 Quantitative Effects

(1) Operation and Effect Indicators

Regarding the operation and effect indicators for the Program, the following indicators were established at the time of the appraisal for the 1st phase and 2nd phase.

- 1st phase (from the term (I) to (IV)): domestic energy consumption, forest coverage ratio, and the number of provinces that have formulated a disaster control plan
- 2nd phase (from the term (V) to (VII)): the number of new projects for wind power generation, the number of JCM pilot projects and the number of policies, strategies and plans newly formulated

As shown in Table 6 and Table 8, all indicators were satisfied.

Table 6: Effect Indicators ((I) – (IV))

	Baseline	Target	Actual		
	2008	2013	2013	2015	2019
		1 Year After Completion		1 Year After Completion	At the time of the ex-post evaluation
Domestic energy consumption (million TOE) ^(Note1)	42.3 ^(Note2)	40.2 ^(Note3)	37.0	41.5	NA
Forest coverage (%)	39.1 (2009)	40.7	41.0	41.2	41.7
The number of provinces that have formulated a disaster control plan	0	63 (all provinces)	63	63	63

Source: documents provided by JICA, the line ministries, *NDC*, MOIT, *National Energy Efficiency Program (2019-2030) Draft*, Dec 2018

Note1: Tons of oil equivalent

Note2: Estimated amount of domestic energy consumption in 2013 on the basis of BAU as of 2008

Note3: Estimated amount of domestic energy consumption when energy saving measures are taken: 5% reduction compared to the BAU case

As for the amount of domestic energy consumption, the actual domestic energy consumption in the target year, 2013, was 37.0 million TOE, which was a 12.5% reduction from the estimated consumption on a BAU basis (42.3 million TOE) in 2013 at the time of the appraisal. This far exceeded the 5% reduction target. The actual rate of reduction in domestic energy consumption based on 2010 (Table 7), which is the base year for GHG emissions reduction in the *NDC* in Viet Nam, was a 6.5% reduction compared to the BAU case in 2013 and a 6.9% reduction in 2015. In addition, there was a 6.0% reduction in total energy consumption from 2011 to 2015.

Table 7: Domestic Energy Consumption

	2010	2011	2012	2013	2014	2015
Estimated amount of domestic energy consumption (million TOE)	33.6	35.7	37.5	39.6	41.9	44.5
Actual amount of domestic energy consumption (million TOE)	33.6	34.5	35.2	37.0	39.1	41.5
Ratio of reduction (%)	0	3.3	6.2	6.5	6.6	6.9

Source: MOIT, *National Energy Efficiency Program (2019-2030) Draft*, Dec 2018

The forest coverage ratio has continued to increase due to the review and improvement of afforestation plans, and the target of *SEDP (2016-2020)* is to increase the ratio up to about 42% by 2020. Regarding the disaster control plan of each province, all provinces had developed disaster control plans by 2014 and were transiting to implementation. Also, guidelines on *Risk Management in River Basins*, which was developed with the support of JICA technical cooperation²¹, were completed in 2018. Based on the guidelines, disaster risk management plans for rivers were incorporated into the disaster control plans of provinces which have a large scale of rivers.

²¹ Project for Strengthening Capacity of Water Environmental Management in River Basin (2015-2019)

Table 8: Effect Indicators ((V) – (VII))

	Baseline	Target	Actual	
	2012	2018	2018	2019
				At the time of the ex-post evaluation
The number of new projects for wind power generation	0	3 or more (cumulative total value)	4	7
The number of JCM pilot projects (Note)	0	4 or more (cumulative total value)	9	14
The number of policies, strategies, plans, etc. newly formulated	-	50 or more (cumulative total value)	350 or more	350 or more

Source: documents provided by JICA and Line Ministries

Note: JCM (Joint Crediting Mechanism): a mechanism under which GHG reduction efforts by the diffusion of leading low carbon technologies, etc., are made in cooperation with developing countries and the achievement of these reductions are shared between the two countries.

In terms of the number of new wind power projects, seven new wind power projects were licensed as of June 2019, against a target of three or more, bringing the total wind generation capacity to 350 MW. The JCM program was launched in 2015, and 14 projects had been registered at the time of the ex-post evaluation. The registered projects are all energy-saving projects except for one solar project.

(2) Financial Effects

In the Program, a total of 1,268 million USD (including 775.6 million USD from JICA (about 60% of the total amount)) was provided from all donors to the Government of Viet Nam for 7 years from the term (I) to (VII), as shown in Table 9.²² The financial effect of the Program is considered in (a) effect on the government's fiscal balance, and (b) effect on the fund allocation for climate change responses.

²² In converting the financial contribution by JICA, AFD, DFAD and DFAT to USD, the foreign exchange rate at the end of year from the IMF's *International Financial Statistics* was used.

Table 9: Donors' Contribution to the Program

	(I) (2010)	(II) (2011)	(III) (2013)	(IV) (2014)	(V) (2015)	(VI) (2016)	(VII) (2017)
JICA (Loan) [% of JICA]	10,000 million yen (122.8 million USD) [82.1%]	10,000 million yen (128.7 million USD) [56.8%]	15,000 million yen (142.5 million USD) [51.0%]	10,000 million yen (82.9 million USD) [41.0%]	15,000 million yen (124.5 million USD) [85.1%]	10,000 million yen (85.6 million USD) [100%]	10,000 million yen (88.6 million USD) [49.6%]
AFD (Loan) (Note1)	20 million euro (26.7 million USD)	20 million euro (25.8 million USD)	20 million euro (27.6 million USD)	20 million euro (24.3 million USD)	20 million euro (21.8 million USD)	—	—
World Bank (Loan)		70 million USD	70 million USD	70 million USD			90 million USD
Korean EXIM (Loan)			30 million USD	20 million USD			
DFATD (Note 2) (grant)		4.45 million CAD (Note 4) (4.3 million USD (Note 5))					
DFAT (Note 3) (grant)			8 million AUD (7.1 million USD)	6 million AUD (4.9 million USD)			
Total	149.5 million USD	226.7 million USD	279.2 million USD	202.1 million USD	146.3 million USD	85.6 million USD	178.6 million USD

Source: documents provided by JICA

Note 1: Agence Française de Développement

Note 2: Canada, Department of Foreign Affairs, Trade and Development

Note 3: Australia, Department of Foreign Affairs and Trade

Note 4: DFATD provided one-time funding for two years.

Note 5: For convenience of calculation, the total amount of 4.45 million CAD provided by DFATD was divided into (II) and (III) equally.

(a) Effect on the government's fiscal balance

Looking at the fiscal situation of Viet Nam, the annual budget deficits during the Program period hovered between 29 trillion VND and 270 trillion VND, or between 1.4 billion USD and 12.3 billion USD. The ratio of the total donor funding (1.27 billion USD) to the total budget deficit (67.8 billion USD) over the same period was 1.9% (1.1 % with the Japanese ODA Loan only), and, on a single-year basis, it was less than 3% (1.5% with the Japanese ODA loan only) for all respective years except for 2010 and 2011. Thus, while the funds provided by donors under the Program contributed to the budget deficit to some extent, their effect was limited. Similarly, the ratio of the amount of funds provided by the donors under the Program to the amount of external borrowing by the Vietnamese government each year ranged from 3.2% to 8.4%, confirming a certain effect of the Program.

Table 10: Viet Nam's Fiscal Balance and the Program Effect

	(2009)	(I) (2010)	(II) (2011)	(2012)	(III) (2013)	(IV) (2014)	(V) (2015)	(VI) (2016)	(VII) (2017)
Fiscal Balance (trillion VND)	-109	-59	-29	-223	-207	-248	-270	-174	-236
External borrowing (trillion VND)	93	89	56	47	78	97	67	52	50
Fiscal Balance (million USD)	-6,075	-3,116	-1,392	-10,707	-9,840	-11,673	-12,334	-7,852	-10,524
External borrowing (million USD)	5,184	4,701	2,689	2,257	3,708	4,566	3,061	2,347	2,230
Total amounts provided by all donors under the Program/Fiscal Balance (%)	-	4.8	16.3	-	2.8	1.7	1.2	1.1	1.7
Total amounts provided by all donors under the Program/Foreign borrowing (%)	-	3.2	8.4	-	7.5	4.4	4.8	3.7	8.0
Total Japanese ODA Loans/Fiscal Balance (%)	-	3.9	9.2	-	1.4	0.7	1.0	1.1	0.8
Total Japanese ODA Loans/External Borrowing (%)	-	2.6	4.8	-	3.8	1.8	4.1	3.7	4.0

Source: IMF, *Staff Report for the Article IV Consultation*, 2014, 2015, 2016, 2017, 2018, documents provided by JICA

(b) Effect on the fund allocation for climate change responses

The funds provided by donors under the Program were incorporated into the general treasury account of the Government of Viet Nam in the form of general budget support without linking to the projects related to climate change. Therefore, a financial mechanism was formed to allocate the funds provided by the donors to SP-RCC for climate change related budgets as one of the policy actions of the Program.²³ While data on annual funds allocation for climate change related activities could not be obtained from MOF and MPI, documents provided by JICA showed that (i) the fund allocation for the NTP-RCC in 2010 increased from the original 67.5 billion VND to 141.8 billion VND and (ii) the fund allocation for the NTP-RCC and SP-RCC in 2012 was 349 billion VND. The data indicates that the fund allocation for climate change related budgets largely increased.

In addition, the “Climate Public Expenditure and Investment Review” produced by MPI, the World Bank and UNDP in 2015 found that the share of the budget for climate change action among the total budgets of the major ministries involved in climate change response (MONRE, MARD, MOIT, MOT and MOC) was around 18% between 2010 and 2013, with the budget for climate change actions occupying a significant position. While the budget for the climate change related activities of the five ministries above decreased from 4.3 trillion VND in 2010 to 3.8 trillion VND in 2013 due to measures to tighten public investment budgets²⁴, the rate of increase in the budget for climate change related activities in each ministry from 2010 to 2013

²³ Government Office Letter No. 8981/VPCP-QHQT dated 10 December 2010 on the Approval of the Financial Mechanism of SP-RCC.

²⁴ Decree 1792/CT-TTg, 5/10/2011

was maintained at almost the same level as the rate of increase in the total budget of each ministry. This could indicate that in the context of the policy of tightening public budgets, there was an emphasis on securing a budget for climate change response. Furthermore, according to the *Climate and Green Growth Public Expenditure and Investment Review in the Mekong Delta* released by MPI in 2019, the amount of public investment for climate change and green growth in 13 provinces in the Mekong Delta region increased from 8.2 trillion VND in 2015 to 9.8 trillion VND in 2017.

Furthermore, in connection with the Program, as an independent initiative, the Vietnamese government initiated a financial mechanism to enable the financing of infrastructure projects that contribute to climate change adaptation measures for provinces and cities that are vulnerable to climate change (the selection criteria for the projects²⁵ and the joint circular of MONRE, MOF, and MPI on operation, monitoring, and reporting²⁶ for the financial mechanism were policy actions of the Program). Under this financial mechanism, 62 projects were approved between 2009 and 2015, of which 29 projects were allocated a total of 1.96 trillion VND²⁷, 50% of which were funded by donors. In addition, the total budget for the financial mechanism from 2016 to 2020 increased significantly to about 15.9 trillion VND, with more than 90 percent of the funding to come from donors.

Interviews with MONRE and MPI indicated that the promotion of mainstreaming climate change, including the government's commitment to tackle climate change issues and the integration of climate change response into the *Five-year Economic Plan*, has led to an increase in the budget allocation for climate change response, and that the SP-RCC has been contributing as part of this increase. Although the amount of the annual fund allocation for climate change response in each year was not available, existing documents show that the budget for climate change response has been increasing and that a large part of the increase has been funded by donors as mentioned above. Thus, the Program is judged to have made some contribution to the increase in the budget allocation for climate change response. On the other hand, since the Program was a general budget support loan, in which the funds provided by the donors under the Program were not necessarily allocated to the formulation and implementation of policy actions under the Program, practitioner-level staff at the line ministries expressed a desire for additional financial support in the form of direct funding for the implementation of policy actions under the Program and/or sector loans.

²⁵ Decision No.1719/2011/QĐ-TTg dated on 4 October 2011.

²⁶ Inter-ministerial Circular Ref. 03/2013/TTLT-BTNMT-BTC-BKHDT dated on 5 March 2013

²⁷ Under the financial mechanism, 62 high-priority projects were approved. However, since the projects needed to be approved by the Diet, which required a long approval process, some urgent projects were financed by other financial resources such as provincial's own resources. Thus, the budget was finally distributed to 29 projects.

3.2.1.3 Qualitative Effects (Other Effects)

(1) Effect of policy dialogues

The Program formed a platform for policy dialogues that brings together the ministries concerned in climate change response with development partners which are interested in supporting Viet Nam's initiative to address climate change in order that they can hold regular consultations on policy action formulation and the implementation status of the policy actions, besides providing funds. Interviews with the executing agency and several line ministries revealed the following effects of policy dialogue: (a) the effect on promoting the implementation of policy actions, (b) useful policy and technical inputs from the development partners, and (c) strengthening communication and networks among the line ministries.

(a) Effect on promoting the implementation of policy actions

A number of the line ministries commented that monitoring the implementation status of policy actions at the time of the policy dialogues put pressure on the line ministries to promote the implementation of policy actions, which in turn contributed to the progress of implementation. In addition, some line ministries confirmed that participation of deputy ministerial level of the line ministries in the policy dialogues raised awareness of the importance of the implementation of SP-RCC policy actions within the line ministries. The report of the implementation status of policy actions discussed in the policy dialogues with the NCCC has been recognized as an international commitment at the national level. These have led promotion of the progress of policy action implementation.

(b) Useful policy and technical inputs from development partners

The executing agency confirmed that at the start of the Program, policy formulation for climate change was a new challenge for the line ministries and that the experience of other countries, knowledge and technical inputs from the development partners through policy dialogues contributed to the formulation and implementation of the necessary policies. In addition, interviews with line ministries revealed that during the policy dialogues, technical and policy solutions and advice from the development partners were available when the progress of policy actions began to lag, which contributed to the promotion of policy action implementation and changes in the appropriate direction for the next steps. Furthermore, some line ministries commented that in areas where donors provided technical cooperation as a priority, they contributed to the selection and implementation of policy actions and the improvement of their quality by sharing their knowledge and skills with line ministries, including activities necessary for policy reforms, the sequence of such activities, experience from other countries and the survey results in Viet Nam. Thus, policy dialogue is considered

to have contributed to the implementation of policy actions as a platform for knowledge and skill sharing by the donors.

- (c) Strengthening a system to address cross-sectoral issues by promoting communication and information sharing among the line ministries and the donors

Interviews with the executing agencies and the line ministries revealed that consultation with other line ministries became easier due to the coordination between the line ministries and the donors which was formulated through the policy dialogues. In particular, the executing agency confirmed that the ability of MONRE to coordinate with the line ministries and the donors was enhanced and that networking among the line ministries was strengthened by the fact that MONRE, as an executing agency, coordinated the formulation of policy actions, monitored the implementation status of the policy actions, and coordinated with the donors. The line ministries also responded that inter-agency coordination was necessary for the implementation of policy actions across multiple line ministries, and that policy dialogues facilitated such coordination. This is judged to have contributed to the strengthening of the system to address cross-sectoral issues.

As mentioned above, it is considered that the policy dialogues have made a certain contribution to the promotion of response to climate change in Viet Nam. On the other hand, as the project progressed and the capacity of the line ministries for policy formulation and implementation was strengthened, a few line ministries which had no issues with the progress of policy actions and had not received technical support from donors, commented that the policy dialogue only confirmed the progress of policy actions and did not necessarily provide concrete and useful input from donors, thus diminishing the benefits of participation in the policy dialogue as mentioned above and subsequently reducing motivation to participate in the SP-RCC. One of the reasons for this is that two-way discussions between the line ministries and the development partners concerned have been constrained by a lack of elaborate preparations for the policy dialogues, as described in “3.3 Sustainability” below. A decline in the motivation of the line ministries to participate in the SP-RCC leads to a negative spiral effect that reduces the effectiveness of the policy dialogue which is an important component of the Program. Therefore, it is necessary to create a mechanism to maintain the usefulness of the policy dialogues and to maintain the motivation of the line ministries to participate. The MPI and MOF budget departments also participated in the policy dialogues. Several line ministries suggested that considering the need to implement new policies on climate change, budget-related ministries should participate in the policy dialogues and donor consultations as they are in charge of development budgets, etc., and because their participation has a positive impact on the budget allocation for climate change response, such as making it easier for the line

ministries to provide explanations when requesting related budgets. Their participation enables them to understand the overall trends in addressing climate change, including the implementation status of the overall climate change response as well as the line ministries' activities and priorities.

(2) Effect of JICA's efforts to promote policy actions through collaboration with experts and technical cooperation

A number of technical cooperation projects were provided by JICA in connection with the policy actions under the Program. JICA's technical cooperation projects and long-term experts directly related to the implementation of the policy actions are listed in Table 11 below. Among these, with regard to the technical cooperation project named "Project for Development of the National Biodiversity Database System," the ministry concerned commented that the development of the National Biodiversity Database System was included in the policy action on biodiversity conservation of the SP-RCC, and that this technical cooperation contributed to ensuring the implementation of the policy action. With regard to the energy efficiency and saving field, which was focused on by JICA, the ministry concerned revealed that a series of JICA technical cooperation projects to promote energy efficiency and saving, such as the development study named "Study on Master Plan for Energy Conservation and Effective Use in the Socialist Republic of Viet Nam (2008-2009)," technical cooperation named "Project on Strengthening the System and Operation on Standards and Conformance for Energy Efficiency and Labeling (2013-2016)," technical cooperation named "Project for Establishment of Energy Management Training Center (1st Stage (2011-12) & 2nd stage (2013-2015))," and an ODA loan named "Energy Efficiency and Renewable Energy Promoting Project," together with other support, contributed to spreading awareness of energy efficiency and saving in Viet Nam, and it is judged that JICA's assistance has contributed to ensuring the implementation of policy actions and further policy development. Furthermore, through a JICA technical cooperation project named "Project to Support the Planning and Implementation of National Appropriate Mitigation Action (NAMA) in a MRV manner," the establishment of GHG inventories, the measurement, reporting and verification of GHG emissions at national level, and the strengthening of the national capacity to respond to climate change was carried out.

In addition, with regard to the JICA advisor for climate change programs, who was dispatched to strengthen the implementation capacity of the PCU of the executing agency, the executing agency commented that the PCU was initially unfamiliar with policy reforms and lacked sufficient coordination capacity, so the advisor worked with PCU staff to coordinate within MONRE and among the line ministries, as well as among the donors, and that OJT-based training led to the strengthening of the PCU staff capacity. Interviews with some line ministries and donors also revealed that coordination among the line ministries and donors had proceeded

smoothly thanks to the contribution of the JICA experts to the PCU. In addition, interviews with the executing agency confirmed that the participation of JICA experts dispatched to the line ministries in the policy dialogues enabled them to reflect their opinions on the ground in each line ministry in the policy dialogues, and also to reflect the discussions in the policy dialogues into the policy formulation of the line ministries. Thus, it is judged that both types of JICA experts played an important role in the policy dialogues and contributed to promoting the implementation of policy actions.

Table 11: JICA’s Technical Cooperation Projects Directly Related to the Implementation of Policy Actions

Area	JICA Technical Cooperation Projects	Related Policy Actions
Overall	Long-term advisor “Advisor for Climate Change Program (2011-2015)”	<ul style="list-style-type: none"> Support the PCU of the executing agency
	Technical Cooperation “Project on Supporting the Implementation of Policy Actions for SP-RCC (2014-2015)”	<ul style="list-style-type: none"> After the completion of the 1st phase, technical assistance was provided to promote the implementation of policy actions in 2014, which were not adequately addressed due to the technical and budgetary constraints of the line ministries.
Sustainable forest management and development	Technical Cooperation “Project for Development of the National Biodiversity Database System (2011-2015)”	<ul style="list-style-type: none"> Develop the national master plan for biodiversity conservation to 2020 ((III)-(VI)) and implement the master plan (VII) Development of the National Biodiversity Database (III)
	Technical Cooperation “Dien Bien REDD+ Pilot Project (2012-2013)”	<ul style="list-style-type: none"> Develop a policy to provide for piloting the Benefit distribution system to implement REDD+ pilot projects (VI)
Energy Saving and conservation	Development Study “Study on Master Plan for Energy Conservation and Effective Use in the Socialist Republic of Viet Nam (2008-2009)”	<ul style="list-style-type: none"> Prepare the regulatory framework for improving energy efficiency and conservation (I), and prepare the regulations to enforce the Law on energy efficiency and conservation (II)
	Technical Cooperation “Project for Establishment of Energy Management Training Center (1 st Stage (2011-12) & 2 nd stage (2013-2015))”	<ul style="list-style-type: none"> Adopt a certification system for energy managers (IV) and develop an examination and qualification system for energy managers and energy auditors (VII)
	Technical Cooperation “Project on Strengthening the System and Operation on Standards and Conformance for Energy Efficiency and Labeling (2013-2016)”	<ul style="list-style-type: none"> Adopt a labeling system for energy products (IV) Energy efficiency testing for household air-conditioners and refrigerators (VII)
Strengthening Climate Change	Technical Cooperation “Project for Capacity Building for National Greenhouse Gas Inventory (2010-2014)”	<ul style="list-style-type: none"> Establish the National GHG Inventory system (V) & (VII) Develop BUR1 (V) and BUR2 (VII)
	Technical Cooperation “Project to Support the Planning and Implementation of NAMAs in a MRV Manner (2015-2020)”	<ul style="list-style-type: none"> Conduct a study to make recommendations on the development of M&E tools to monitor and evaluate the implementation of the NCCS (VI) Prepare a framework for the MRV system for GHG mitigation activities in Viet Nam (VII)

Source: documents provided by JICA, JICA, *Study on the outcomes and challenges of the program loans to response to climate change*, December 2015

(3) Other effect indicators

In addition to the aforementioned indicators, the following Result Framework, which was agreed upon by the Government of Viet Nam and the World Bank at the implementation of the World Bank's projects²⁸, was set as other indicators in the term (III) (Table 12). As of 2016, all indicators had been achieved according to the World Bank's project completion report. With regard to the data collection for these indicators, the ex-post evaluator could not confirm the agreements between MARD, MOIT, etc. who supposed to provide these indicators and JICA regarding the collection of the data after the completion of the World Bank project completion report and the provision of the data for JICA's ex-post evaluation.

Table 12: Result Framework for the World Bank Projects

Area	Target	Actual (2016)
Water Resources Management	Coordinated program with a new legal framework for integrated water management in place and operation	3 new legal integrated water resource management instruments taken ((i) New Law on Water Resources, (ii) National Action Plan for Water Resources Management, and (iii) Implementation of Decree of the Law on Water Resources)
	3 irrigation management schemes being transferred at secondary level	(This indicator was canceled due to a change in the method of irrigation management.)
Energy Saving and Conservation	100 energy auditors completed training courses in the industrial sector (of which 50 fully certified auditors)	250 energy auditors fully certified by the MOIT
	1,000 energy managers certified in the industrial sector	2,500 energy managers certified by the MOIT
	1,000 energy efficiency plans and implementation reports of large energy end-users of the industrial sector are received by MOIT or provincial DOITs (of which 600 have been prepared by certified energy managers.)	1,725 energy efficiency plans and implementation reports received from large energy end-users of the industrial sector
Strengthening Climate Change	Adaptation methodology to guide prioritization is available.	Adaptation prioritization framework is in operation and is being used in planning including the annual SEDP.
	Low carbon development assessment initiated	(This indicator was canceled later.)
	All provinces have disaster risk management plans and 2 provinces are identified for the piloting of monitoring and evaluation.	All 63 of provinces have disaster risk management and reduction plans.
	Comprehensive legal framework for multi-hazards in place establishing a unifying legal framework for disaster risk action	The new Law on Disaster Prevention and Control, which provides a comprehensive unified legal framework to address climate hazard, was established in 2013 (this indicator was modified from the original one).
	National platform in place for all stakeholders to coordinate disaster risk management and reduction and climate change adaptation actions	
Financial Mechanism	Financial mechanism for using ODA for climate financing	Circular 03/2013/ TLT-BTNMT-BTC-BJHD provided clear guidance on management of the climate change financial mechanism including priority planning and sectoral allocation (this indicator was modified from the original one).
	Task force facilitates information sharing, coordination of and access to climate finance including market-based instruments.	

Source: The World Bank, *Implementation Completion and Result Report for Climate Change Development Policy Operation*, September 2016

²⁸ The World Bank, *First Climate Change Development Policy Operation*, December 2011

3.2.2 Impacts

3.2.2.1 Intended Impacts

The expected impact of the Program at the time of the appraisal was sustainable economic development by reducing disaster risks related to climate change in Viet Nam and climate change mitigation. While activities for disaster risk reduction were included in the policy actions of the Program, it was difficult to measure the impact of the risk reduction on economic development. Similarly, with respect to climate change mitigation, the government was in the process of calculating GHG emissions at the time of the ex-post evaluation, so it was difficult to measure the quantitative effects. In addition, since the policy actions implemented in the Program were mainly the establishment of a legal and regulatory framework for the response to climate change, and as identifying the effects and impacts of climate change mitigation actions requires a mid to long term period, it was difficult to measure the qualitative effects of the mitigation actions in this ex-post evaluation. Thus, all of these factors made it difficult to measure the overall program impact at the time of ex-post evaluation. Therefore, as described in “2.3 Approaches and Constraints of Evaluation”, the quantitative analysis of the impact only covers areas where quantitative effects could be identified (e.g., energy saving and conservation and renewable energy), while the qualitative analysis was carried out to the extent that it could be grasped in changes caused by the implementation of policy actions and the effects of JICA’s technical assistance.

(1) Quantitative Effect

The quantitative effects of climate change actions have been observed in terms of energy savings and conservation and renewable energy. Regarding energy savings and conservation, according to the 3rd *VNEEP (2019-2030)* issued in 2019, a 3.4 % reduction in commercial energy consumption reduction was achieved in the 1st *VNEEP (2006-2010)* period, compared to the target of 3-5% reduction in commercial energy consumption in the same period of time. Similarly, compared to a 5-8% reduction in the total energy consumption target of the 2nd *VNEEP (2012-2015)*, a 5.7% reduction in total energy consumption was achieved over the same period. It can be considered that these have resulted from the enactment and implementation of the *Law on Energy Efficiency and Conservation*, the introduction of the system of energy managers and energy auditors, and the implementation of policies to promote energy saving and conservation, including the introduction of energy saving standards for building construction and energy saving labeling for home appliances. Regarding the renewable energy sector, the *National Power Development Master Plan (2011-2020)* formulated in 2011 set targets for the share of renewable energy (mini-hydro power, solar power, wind power, biomass power, and waste to power) in the total power generation capacity at 5.6% (about 4,000 MW) in 2020 and 9.4% (about 13,800 MW) in 2030. On the other hand,

the revised plan in 2016 significantly raised the target share of the renewable energy capacity to 9.9% (about 6,000 MW) in 2020 and 21% (about 27.3%) in 2030. According to interviews with MOIT, as of May 2019, the renewable energy generation capacity was over 5,000 MW, which was a significant increase on a basis that this was well above the original plan.

(2) Qualitative Effect

- (a) Status of the implementation of climate change actions after the completion of the project and actual changes due to the implementation of policy actions

(Energy Savings and conservation)

In the field of energy savings and conservation, efforts have continued to be made in industries, buildings, and urban development, including the establishment of minimum energy performance standards in industries (so far, implemented in six industries: steel, seafood processing, beverages, plastic, food processing and cement), the introduction of regulations for energy conservation labeling for home appliances and industrial machinery, training for energy managers and energy auditors, the establishment of NAMA in the cement industry, the establishment of energy-saving building construction standards, and the introduction of energy saving street lighting systems. In addition, the 3rd VNEEP (2019-2030), enacted in 2019, targeted a 5-7% reduction in commercial energy consumption between 2019 and 2025, and an 8-10% reduction in total energy consumption between 2019 and 2030. In the transportation sector, before 2017, newly assembled and imported vehicles were subject to the Euro 2²⁹ emission technical regulation, but since 2017, the Euro 4 emission technical regulation has been applied to newly assembled gasoline motor vehicles, and from 2018, it has been applied to in-use motor vehicles as well as new gasoline and diesel vehicles.³⁰ In addition, regulations on energy labeling for cars began in 2017, with the requirement for newly produced, assembled and imported cars of 9 seats or less being applied from 2017, and for motorbikes from 2018. Under the regulations for in-use vehicles, the regulations for exhaust gas emission control were introduced in 2019, and emission testing has been required from 2020.³¹

²⁹ Step-by-step automotive emission regulations in the EU, starting with Euro 1 in 1992 and scheduled to be followed by Euro 7 in 2020. Emission standards have been set for carbon monoxide, hydrocarbons, nitrogen oxides, particulate matter, etc., and the emission standards get stricter from Euro 1 to Euro 7.

³⁰ According to the World Bank's Implementation Completion and Results Report, *Climate Change and Green Growth Development Policy Financing*, June 2019, NOx emissions from small cars fell by 7.49% in the two years from 2017-2018 after the introduction of Euro 4 regulations.

³¹ While emission testing for vehicles has been implemented since 1999, it becomes mandatory from 2020.

(Renewable energy)

In the field of renewable energy, in order to promote renewable energy projects, a financial support mechanism was established including measures to make purchase prices for wind power, solar power, biomass, and waste to power generation more flexible (Feed-in-Tariff), and the creation of a database (online map) on renewable energy (biomass, solar, and wind) (2018) were implemented. The master plans related to renewable energy, such as solar, wind, biomass, and mini-hydro, were integrated under the *Law on Planning*, which came into effect in January 2019.



Wind power plant
(Nin Thuan province)

(Forest management and conservation)

The new *Law on Forestry* enacted in 2018 integrates forest protection and development plans and special uses of forests, etc., which were in the policy actions, while also allowing for the participation of private companies and communities in forest protection and development regulations, which is expected to lead to more efficient forest management.

(Disaster risk management)

In terms of disaster risk management, the measures to reduce disaster risk including rehabilitation to improve the strength of river basins, the proper management of reservoirs, river basin erosion protection, mangrove forest development, and coastal and coastal dike protection have been implemented, although it is difficult to measure the specific effects of these actions. However, the strength of dikes has been increased by 40%, and disaster response has been strengthened from a response to a disaster occurring at the level of one in 100 years to a disaster occurring at the level of one in 300 years.

(b) Impact of collaboration with JICA technical cooperation

As described in “3.2.1.3 Qualitative Effects (Other Effects)” above, a number of technical cooperation projects were provided in several fields to promote the implementation of policy actions under the Program and contributions were made. Among them, for the JICA’s technical cooperation project, “Project for Development of the National Biodiversity Database System,” the data in the database developed with the support of this technical cooperation has been utilized as basic data for the *Master Plan for Biodiversity Conservation*, baseline reports for the Convention of Biological Diversity, the development of guidelines for biodiversity inventories, amendments to the *Law on Biodiversity Conservation* and amendments to the

National *Biodiversity Strategy*, etc., and it can be said that the JICA support has contributed to the implementation of subsequent policies on biodiversity conservation. With regard to JICA's technical cooperation project, the "Project on Strengthening the System and Operation on Standards and Conformance for Energy Efficiency and Labeling," this project facilitated the establishment of the first energy efficiency labeling and energy efficiency standards for products in Viet Nam. The energy efficiency measurement format for air conditioners and refrigerators developed in this project has been also applied to measuring the energy efficiency of other electrical appliances. At the time of the ex-post evaluation, 18 products (home appliances such as refrigerators, air conditioners, and LED TVs, industrial equipment, emission standard stickers for motorcycles and cars) were subject to energy efficiency labeling, and it can be said that a certain ripple effect has been recognized.

As mentioned above, the quantitative impact has been confirmed in the field of energy savings and conservation and renewable energy, and it can be judged that the actions to establish an institutional framework for energy savings and conservation and the actions to promote renewable energy projects, which were implemented through the policy actions in the Program, have contributed to these impacts.

Examples of Energy Efficiency Labeling (emission standard labeling)



Drier



Rice cooker



Car

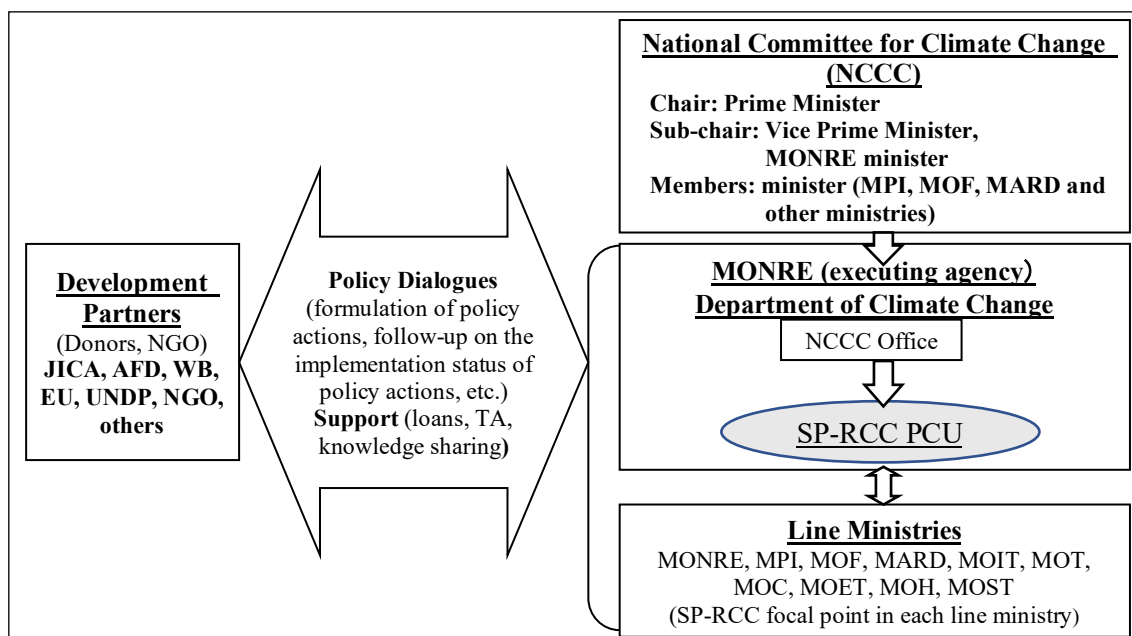
From the above, it can be seen that most of the policy actions (93% of the total) in the Program were achieved, and that all operational and effect indicators met their targets. In addition, the budget allocation for climate change response has been increased, and it is judged that the Program made a certain contribution to this increase. It was confirmed that the policy dialogues promoted the implementation of policy actions and strengthened inter-agency and inter-donor coordination, and that JICA's technical cooperation contributed to ensuring the implementation of the relevant policy actions. In particular, the activities of the JICA long-term experts dispatched to the PCU of the executing agency and the line ministries were judged to have played an important role in the progress of the policy dialogues. In terms of project impact, quantitative effects have been identified in the field of energy savings and conservation and renewable energy, and the development of a legal and institutional framework in each field has continued. In light

of the above, the Program has largely achieved its objectives. Therefore, the effectiveness and impacts of the program are high.

3.3 Sustainability

3.3.1 Institutional/Organizational Aspect of Operation and Maintenance

Although the Japanese ODA loan to the SP-RCC ended in 2017, the SP-RCC has continued. The current organizational arrangement is being implemented in line with the Program framework approved by the Prime Minister in April 2011, as described in “3.1.4.2 Appropriateness of Implementation Structure” (Figure 1). On the other hand, the current PCU of the executing agency has three members, including the Deputy Director General of the Department of Climate Change, which has been reduced from the previous nine members (seven of whom were employed through the JICA support). Interviews with the executing agency, the line ministries, and the donors revealed the following points: (i) the current PCU of the executing agency has not been able to sufficiently check and revise the implementation status of policy actions submitted by the line ministries, which has resulted in the PCU simply compiling the information collected, and (ii) since materials related to implementation of policy actions are sent to the donors just before the policy dialogues, it is difficult for the donors to make sufficient preparation for the policy dialogues, leaving staff in the Viet Nam offices of the donors to deal with the situation, instead of inviting the relevant staff from the headquarters. This limits the usefulness of the policy dialogues for both the line ministries and the donors concerned, and, for example, results in the inability to make useful proposals in a timely manner. In addition, since practitioner-level staff are assigned as the focal points of the line ministries for the SP-RCC, the coordination tasks for the SP-RCC are an additional workload for these staff, and it is often difficult for them to carry out substantive coordination within the ministries. This makes it for them to perform more than their role as coordinators within the ministries. It is considered that these are some of the factors that inhibit the motivation of the line ministries to actively participate in the SP-RCC. Thus, it is necessary to better motivate the line ministries to participate in the SP-RCC by increasing the usefulness of the policy dialogues through the establishment of a system that allows the line ministries and the donors to prepare adequately for the policy dialogues and allows for the exchange of useful opinions and knowledge in a two-way manner at the policy dialogues.



Source: documents from JICA

Figure 1: SP-RCC Implementation Structure

3.3.2 Status of Operation and Maintenance

The 3rd phase of SP-RCC (2016-2020), which is currently being implemented, has policy actions built on the policy measures presented in the *NCCS* and *NGGS*. To date, the AFD and the World Bank have provided loans of 1 million euros and 90 million USD in 2019 and 2017, respectively, for the 3rd phase, and it is planned that a further loan of approximately 79 million USD will be provided by the World Bank in 2020. The main policy actions achieved in the 3rd phase are shown in Table 13 below, where policies and regulations pertaining to mitigation and adaptation continue to be enacted in each area.

Table 13: Main Policy Actions Achieved in the SP-RCC 3rd Phase

Area	Major policy actions achieved
1. Proactive disaster preparedness and climate monitoring	<p>[Enhancing disaster risk reduction, early warning and climate monitoring]</p> <ul style="list-style-type: none"> Developed a guideline for assessment of climate change impact and national climate (2016) Developed a guideline for the implementation of the Hydro-Meteorology Law and a regulation for the monitoring activities of the network of national hydro-meteorological stations (2016) Developed a regulation on the type and duration of news on hydro-meteorology forecasts and warnings, and regulation on administrative sanctions in the field of hydro-meteorology (2017) Formulated the Hydrometeorology Development Strategy (2021-30) (2019)
2. Food and water security	<p>[Food Security]</p> <ul style="list-style-type: none"> Developed a Decree on the incentive mechanism and guidelines for encouraging the development of small irrigation systems, infield irrigation systems, more advanced and efficient irrigation systems (2018) <p>[Water resource management]</p> <ul style="list-style-type: none"> Developed regulations on the identification of sanitary protection zones for water supply (2016), and developed a list of priority water source protection corridors identified and adopted at provincial level (2017) Developed a guideline for the filling of unused drilling wells, underground water protection, and safe sewerage management (2017,2018)

Area	Major policy actions achieved
3. Proactive responses to sea level rise	<p>[Strengthening the climate-resilience of infrastructure]</p> <ul style="list-style-type: none"> • Developed a regulation on the procedures on green building assessment (2018) <p>[Integrated coastal management]</p> <ul style="list-style-type: none"> • Proposed a multi-sectional coordination mechanism on climate change response on the Mekong River Delta (2016) • Developed a guideline on directing coastal provinces in the development of provincial integrated coastal management (2017) • Developed a guideline for the development of a national master plan for sustainable exploitation and use of coastal resources and a Decision on national coastal functional zoning (2017)
4. Sustainable forest management and development	<p>[Strengthen the sustainability of forest management and biodiversity conservation]</p> <ul style="list-style-type: none"> • Submitted the National Forest Reference Emission Level and/or Forest Reference Level to UNFCCC (2016) • Developed a guideline for the technical guidelines for the development of coastal forests (2016) • Developed a guideline for the review of coastal protection forest planning (2017) • Formulated the new Law on Forestry (2017) • Formulated the revised Law on Biodiversity (2018) • Formulated the revised National REDD+ Action Program to 2030 (2017)
5. Reducing GHG emissions	<p>[Renewable energy]</p> <ul style="list-style-type: none"> • Developed a support mechanism for the development of solar energy (2017) and a support mechanism for solar energy development post-2018 (2019), Developed a regulation on procedures for the development of the projects and the PPA for solar power projects (2017) • Developed a revised incentives mechanism to develop wind power projects (2018), and developed a regulation on the revised PPA for wind energy (2019) • Developed the revised 7th National Power Sector Development Plan (2011-2020) • Developed the database (online map) of renewable energy (biomass, solar and wind) (2018) • Formulated the Roadmap for the implementation of the Renewable Energy Development Strategy for the period to 2030 (2019) <p>[Energy saving and efficiency and GHG emissions reduction]</p> <ul style="list-style-type: none"> • Developed the technical standards for EE testing for household refrigerators (2016) • Developed a regulation on automatic continuous monitoring for industrial sources (2016) • Developed the energy saving and efficiency benchmark (steel, beverages, plastic, pulp and paper, food processing, seafood processing) (2016-18) • Promoted training of energy managers and auditors (2016) • Developed a NAMA for the cement sector (2017) • Developed the plan for urban green growth development (2018) • Developed the National Program on Energy Savings and Efficiency to 2030 (VNEEP3) (2019) • Developed regulations on energy labeling (newly produced, assembled and imported motorbikes, cars of 9 seats or less) (2017, 2018) • Developed the roadmap for applying new emission standards for in-use cars, and used imported cars) (2019)
6. Strengthen government capacity for climate change response	<p>[Promoting mainstreaming of CC in national appropriate actions to reduce GHG emissions]</p> <ul style="list-style-type: none"> • Developed M&E tools for NCCS (2016) • Developed the plan to implement the Paris Agreement on Climate Change (2016)
7. Community capacity development	<p>[Enhancing capacity of health sector]</p> <ul style="list-style-type: none"> • Developed the action plan to respond to climate change for the health sector for the period 2018-2023 (2018) <p>[Awareness raising education and training]</p> <ul style="list-style-type: none"> • Developed guideline documents on safe schools for primary and secondary school level and high schools (2016-2018)

Area	Major policy actions achieved
8. Financial Mechanism	<p data-bbox="432 264 1161 293">[Diversifying financial resources and efficient and effective investment]</p> <ul style="list-style-type: none"> <li data-bbox="432 293 1182 322">• Developed a regulation on climate change expenditure classification (2018) <li data-bbox="432 322 1356 383">• Introduced a new market mechanism (low carbon hotels, high efficiency transformers in the power distribution system, others) (2016) <li data-bbox="432 383 1356 443">• Developed guidelines for the procedure to design and implement investment projects eligible for GCF funds (2017) <li data-bbox="432 443 1356 504">• Completed reports on the review of the design of a selected number of major climate change and green growth projects (2017) <li data-bbox="432 504 1356 564">• Developed provincial green growth action plans taking into account GHG emissions reduction (2018) <li data-bbox="432 564 1318 593">• Developed the report on climate change public expenditure and investment review (2019)

Source: executing agency, the line ministries, etc.

The mechanism for providing loans for projects that contribute to climate change adaptation, which was launched as an independent initiative of the Vietnamese government in connection with the Program, is still being implemented for provinces and cities that are vulnerable to climate change. As mentioned earlier in “3.2.1.2 Quantitative Effects,” budgets were distributed to 29 projects for the 2010-2015 program. For the 2016-2020 program, 61 projects have been approved by the Prime Minister to allow for smooth funding, and this funding mechanism is planned to be implemented beyond 2020.

3.4 Added Value by JICA

JICA played a leading role as the lead donor in the Program, not only in terms of funding but also in terms of support for the implementation system of the Program. In particular, due to the Program’s nature as general budget support, funds provided were not directly allocated to the line ministries, and instead, a platform was formed for policy dialogues between the development partners and the line ministries, where discussion on policies and activities needed to address climate change took place. The most important aspect of the effective use of this platform is the coordination ability of the PCU as the executing agency among the line ministries and the donors. Due to the fact that climate change is a relatively new topic in Viet Nam, and due to the nature of Viet Nam’s vertically-divided administrative system, the task of coordinating the line ministries is not easy. Therefore, in the Program, aiming at building the capacity of the PCU of the executing agency, JICA dispatched long-term experts to the PCU to strengthen the capacity to conduct its tasks, including inter-ministerial coordination and inter-donor coordination, on an OJT basis. It was confirmed by the PCU of the executing agency as well as the line ministries and other donors that this enabled the platform for policy dialogues to work effectively. The dispatch of Japanese experts was very meaningful, taking into account the practical capabilities of the PCU of executing agency, in projects that required coordination with many line ministries and donors. Since few donors have the mechanism to dispatch long-term experts, JICA’s dispatch of long-term experts was very effective in the Program.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The objective of the Program was to (i) mitigate climate change by GHG absorption and emission control, (ii) build adaptive capacity to deal with the harmful impacts of climate change, and (iii) enhance measures for cross-sectional issues concerning climate change by supporting the responses to climate change taken by the Government of Viet Nam through policy dialogues, thereby contributing to sustainable economic development by reducing risks such as disasters caused by climate change in Viet Nam and also contributing to the mitigation of climate change. The Program was consistent with the development policy of Viet Nam, its development needs, and with Japan's ODA policy. In addition, the process of policy matrix formulation and the institutional arrangements to monitor the implementation of policy actions were appropriate. Thus, its relevance is high. Most of the policy actions were completed, and the targets of all operation and effect indicators were achieved. Also, it is identified that the project has contributed to climate change related funding to some degree and that the policy dialogues and JICA's technical cooperation has had a certain contribution to the progress of the policy action implementation. Furthermore, quantitative effects in the field of energy efficiency and renewable energy have been identified. Thus, the effectiveness/impact of the Program is high. SP-RCC has continued to build a legal and regulatory framework for climate change responses after the Program with same institutional arrangement for implementation as before.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

None

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

(1) Inclusion of a mechanism to increase the motivation of relevant ministries to participate in budget support loans that support climate change responses

Interviews with the line ministries confirmed that, due to the nature of the general budget support program where loan funds were not necessarily allocated for the implementation of policy actions under the Program, some were less motivated to participate in the Program. In the case of budget support loan programs for climate change responses, in addition to providing loan funds, policy dialogues with the relevant ministries and relevant donors are conducted to monitor the implementation of policy actions and discuss other issues. However, since the loan funds provided are credited to the national general account without linking to the Program, depending on the

circumstances, the participating ministries may be less motivated to participate in the policy dialogues. Therefore, it is necessary to adopt measures to continuously increase motivation to participate in the policy dialogues. For this, the following measures can be considered:

- (i) Policy dialogue should not be merely an opportunity to monitor policy actions, but should be a place where two-way discussions between participating ministries and relevant donors are conducted. They should include the provision of international experience and information from donors to participating ministries on policy formulation and implementation related to climate change response, the proposal of solutions in case of delays in the progress of policy actions, and the proposal of requests from participating ministries for knowledge and experience on promoting climate change policy, including the implementation of policy actions;
- (ii) Participants from relevant ministries and development partners in the policy dialogues should be higher ranking in order to raise the importance of climate change response within relevant ministries and motivate the staff involved; and
- (iii) Development partners should encourage a government to create a financial mechanism, as the government's own initiative, which enables the allocation of funds provided by donors for climate change actions, such as the financial mechanism for climate change adaptation actions created by the Vietnamese government on its own initiative in relation to the Program.

In order to implement (i), it is necessary to conduct thoughtful preparation for policy dialogues, provide necessary information in advance so that donors can accurately contribute to the needs of relevant ministries, set policy actions in each term with the clarification by relevant ministries of mid-term targets for the next three to five years in each field, and discuss the knowledge and support necessary from donors at policy dialogues. In addition, as a prerequisite of the implementation of the above, it is desirable that after a thorough review of whether the PCU of the executing agency has the institutional capacity to sufficiently manage inter-ministerial and donor coordination, and whether relevant ministries have the sufficient capacity to formulate policies on climate change response at the time of the appraisal, measures to improve the institutional capacity of the PCU and strengthen the policy-making capacity of the relevant ministries, such as the dispatching of JICA experts to the PCU and the relevant ministries as necessary, should be implemented in conjunction with the project.

(2) Utilizing JICA long-term experts in policy support loans

In the Program, a JICA long-term expert was dispatched to the PCU of the executing agency with the aim of strengthening the implementation capacity of the PCU, supporting their coordination works with the line ministries and the donors on an OJT basis, and thereby facilitating policy dialogues. In addition, the participation of JICA long-term experts dispatched

to the line ministries in the policy dialogues was very beneficial not only for the technical responses in the policy dialogues but also for bringing the discussion of the policy dialogues into the policy formulation of the line ministries. When policy support loans involving multiple ministries are provided, taking into account the extreme importance of the coordination capacity of the executing agency in such projects, providing support to strengthen the coordination capacity of the executing agency is considered to be essential for the smooth implementation of such projects. Furthermore, the relevant ministries often need knowledge transfer and technical cooperation for their policy formulation activities. Support from JICA experts to the relevant ministries in their policy formulation activities can help understanding of the policy direction and challenges of the recipient countries in policy formulation, which can make it easier for JICA to take the appropriate responses to the ministries. For this reason, it is advisable that JICA utilize long-term experts by dispatching them to positions close to policy makers in the relevant ministries as an effective tool in ODA loans which support policy reform. While utilizing long-term experts who are already dispatched to the relevant ministries can be considered, in such cases, it is necessary to take measures to encourage the participation of such experts, including modifying their TOR.

(3) Enhancing the monitoring of the implementation of policy actions in policy support loans

In the Program, the implementation status of policy actions in each term was confirmed at the policy dialogues of each term, and ODA loans were disbursed after taking into account actions achieved as well as the likelihood of achievement of the actions that were not yet achieved at the time of the policy dialogues. Although the implementation status of the actions that had not yet been achieved at the time of the policy dialogues were rechecked at the time of follow-up or the of the policy dialogues from the following year, there were a few cases where their progress was not rechecked subsequently. In policy support loans over multiple years, monitoring of the implementation of policy actions tends to be concentrated in the year in question. However, it is desirable that the implementation status of unachieved actions is checked in subsequent policy dialogues and/or at other opportunities in order to confirm the appropriateness of loan disbursements.

(4) Agreement on the establishment of key monitoring topics and information collection in policy support loans, taking into account the capacity of the agencies concerned

The ex-post evaluation of a policy support loan is supposed to confirm the achievement status of policy actions and the progress made after the achievement of the policy actions using the evaluation items of effectiveness/impact at the time of ex-post evaluation. Effect indicators which were established to measure the project effectiveness are also confirmed at the time of the ex-post evaluation. The Program was implemented over seven terms beginning in 2009, with 254 policy

actions in which 10 ministries (about 40 departments) were involved for the implementation. Under these circumstances, the line ministries and other entities experienced a heavy workload in confirming the implementation status of all policy actions at the time of ex-post evaluation. Thus, it is desirable that a method is set up for obtaining the achievement status of policy actions at the time of ex-ante evaluation in such a way that the workload of line ministries and the ex-post evaluators will not be excessive. In this case, considering the number of policy actions to be confirmed and the status of their achievement obtained by an executing agency, the scope of the policy actions to be confirmed at the time of ex-post evaluation could be: (i) limited to policy actions in the priority areas for JICA, (ii) limited to only major trigger actions, with the expansion of the number of major trigger actions to the extent that the overall progress of the Program can be captured, (iii) limited to policy actions set as operation and effect indicators, with the expansion of the number of these indicators to the extent that the overall project effect can be captured, or (iv) all policy actions in the program.

While the indicators set in the World Bank projects were used as other indicators in the Program, at the time of ex-post evaluation it was not possible to confirm whether an agreement had been reached with line ministries to provide the relevant data for JICA's ex-post evaluation purpose. It is desirable that JICA is in agreement with an executing agency as well as with the ministries that provide relevant data for indicators on data collection methods and that the data is provided at the time of JICA's ex-post evaluation in the project appraisal stage, and the agreement is recorded in writing.

End

Socialist Republic of Viet Nam

FY2019 Ex-Post Evaluation of Technical Cooperation Project

“Project for Development of the National Biodiversity Database System”

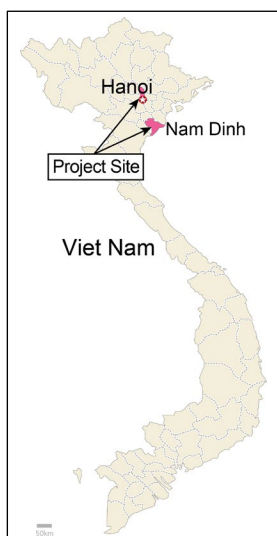
External Evaluator: Mitsue Mishima, OPMAC Corporation

0. Summary

The aim of the project was to develop the first generation National Biodiversity Database System (hereinafter referred to as “NBDS”) by the end of the project, whose four outcome targets were: to establish a basic design of the database system; to propose a cooperation mechanism between related organizations; to construct a database in Nam Dinh Province; and to raise awareness of the operational capacity and utilization of NBDS, thereby developing the second-generation NBDS. The relevancy of the project is high, as the development of NBDS was in line with Viet Nam's development plans and policies at the time of project planning, as well as the needs of the executing agency and other related organizations for the preparation of information data on biodiversity conservation; it was also consistent with Japan's development assistance policy at the time. The development of the first generation NBDS was achieved by the end of the project and contributed to the capacity building of the implementing agency and the target organizations. However, because of the delay in responding to the bugs and improvement to NBDS after project completion, almost no activity was undertaken on the second-generation NBDS. Nevertheless, using NBDS data information contributed to the preparation of reports and research papers related to environmental impact assessment, such as the biodiversity conservation strategic plans, national reports, and management plans for Xuan Thuy National Park. It was also significant in promoting as one of policy actions for support program responding to climate change. Therefore, the effectiveness and impacts of the project are fair. The efficiency of the project is fair because although the project implementation period was within the plan, the project costs exceeded the plan. While the project is sustainable in policy aspect, there are some issues, that need to be improved in the government organization systems and the institutions for biodiversity conservation, and financial aspect. Thus, the sustainability of the project is fair.

In light of the above, this project is evaluated to be partially satisfactory.

1. Project Description



Project Site



Equipment supplied by Japan



(Left: Server, Upper right: PC, Lower right: survey equipment)

1.1 Background

In response to the "2010 Target" adopted at the 6th Conference of the Parties of the Convention on Biological Diversity (hereinafter referred to as "CBD-COP6") held in 2002, the Socialist Republic of Viet Nam (hereinafter referred to as "Viet Nam") formulated the "National Biodiversity Action Plan 2010 and Vision to 2020 (Decision No.79/2007/QD-TTg)" in 2007. It also established the Biodiversity Law in 2008, aimed at conserving and developing biodiversity in land, sea, wetland, and farmland, realizing the sustainable use of biological resources, and strengthening the management of biosafety. Previous to this, Viet Nam had also ratified international biodiversity-related treaties such as the Ramsar Convention in 1989 and the Washington Convention in 1994, promoting biodiversity conservation.

The Ministry of Natural Resources and Environment (hereinafter referred to as "MONRE"), the implementing agency of the project, was stipulated to conduct the biodiversity management in an integrated manner, as provided by the *Act* (Article 6). MONRE plays a leading role in formulating a *national plan on conservation of biodiversity* (Article 10), conducting basic surveys for the monitoring of biodiversity (biodiversity basic surveys), building biodiversity databases, promoting their utilization, and reporting on biodiversity status.

For this reason, the Government of Viet Nam issued a request for technical assistance and cooperation from Japan for the development of a database system to consolidate and disclose data, based on systematic monitoring. The project then commenced with their counterpart (hereinafter referred to as "C/P"), the Biodiversity Conservation Agency (BCA) in the Viet Nam Environment Administration (VEA) of MONRE.

1.2 Project Outline

Super Goal	The second generation*of national biodiversity database system is developed.	
Overall Goal	The second generation of national biodiversity database system is developed and piloted in selected protected areas and provinces.	
Project Purpose	The first generation* of national biodiversity database system is developed.	
Output	Output 1	[Establishment of Basic Design: Preparation of Master Scheme* and Architecture*] Architecture of NBDS is developed in VEA with the cooperation of MARD, MOST, VAST and other relevant agencies, institutes, etc.
	Output 2	[Recommendation for Cooperation Mechanism] Mechanism for collaboration with other agencies in sharing, managing, exploiting, and utilizing data and information of NBDS is recommended
	Output 3	[Establishment of Database of Nam Dinh Province] A database for Nam Dinh Province is developed as a part of NBDS.
	Output 4	[Management Capacity Development] Capacity on management and awareness of utilization of NBDS are strengthened.
Total cost (Japanese Side)	346 million yen	
Period of Cooperation	November 2011 – March 2015	
Target Area	Nationwide (Target of Data) Hanoi, Nam Dinh Province, Xuan Thuy National Park, Nam Dinh Province (Pilot Project)	
Implementing Agency	Viet Nam Environment Administration (VEA) Ministry of Natural Resources and Environment (MONRE) * Under VEA, the Biodiversity Conservation Agency (BCA) is main organization for project implementation, with the involvement of Information Technology Center (ITC), Center for Environment Monitoring (CEM), Center for Environmental Information and Documentation (CEID)	
Other Relevant Agencies / Organizations	<ul style="list-style-type: none"> ● Institute of Ecology and Biological Resources (IEBR), Viet Nam Academy of Science and Technology (VAST), Ministry of Science and Technology (MOST) ● Ministry of Agriculture and Development (MARD) ● Department of Natural Resources and Environment (DONRE), Nam Dinh Province ● Xuan Thuy National Park (XTNP), Nam Dinh Province ● Department of Agriculture and Rural Development (DARD), Nam Dinh Province 	
Supporting Agency/Organizations in Japan	Ministry of Environment	
Related Projects	<p>[Technical Cooperation Projects] Project for Sustainable Natural Resource Management (SNRM) (Plan: August 2015 to August 2020)</p> <p>[ODA Loan Project] Support Program to Respond to Climate Change (SPRCC) (I)~(VII) (2010~2017)</p>	

*Glossary

The long-term vision of NBDS supported by the project, was to develop the first to third generation NBDS.

The first generation NBDS:

The function was to store and manage biodiversity information such as species information, survey/observation information, and metadata, etc. Data entry included the species data on the Red List, species data from Fauna and Flora Encyclopedia in Viet Nam, all survey data from Xuan Thuy National Park in the Nam Dinh Province, and the metadata of the existing database in Viet Nam. It was designed to be managed at the organizational/provincial level.

The second generation NBDS:

In addition to the functions and data of the first generation NBDS, this stores data on the biodiversity information in all provinces of Viet Nam. It has various data display functions (especially Web-GIS function) and shares the biodiversity information with related organizations.

The third generation NBDS:

In addition to the functions and data of the second-generation NBDS, this permits a data posting function by general individuals and a data linkage function with the biodiversity databases (according to GBIF standard) of every country in the world.

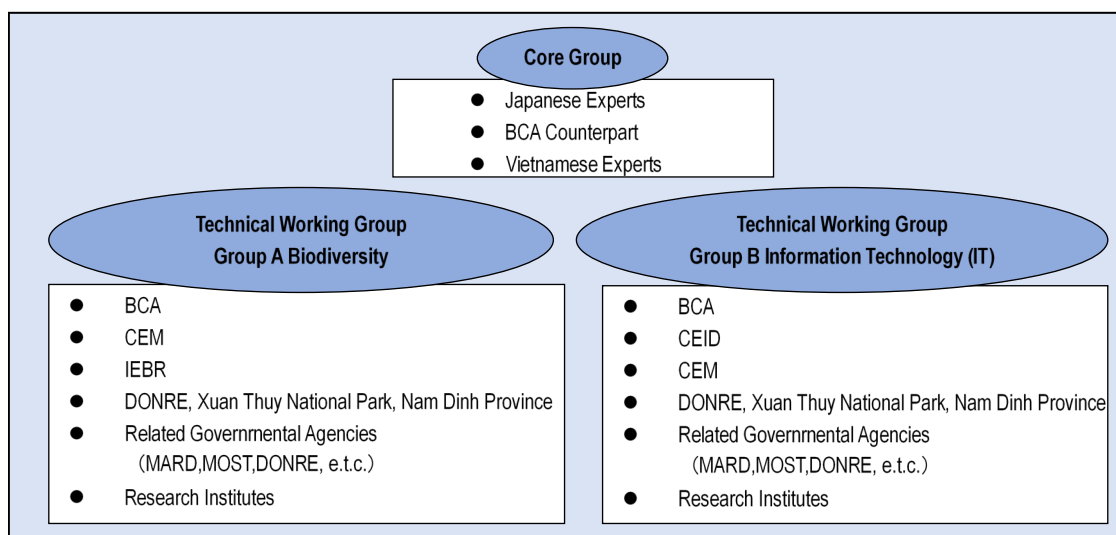
Master scheme:

A document submitted by the project implementing agency to a higher-ranking agency when conducting a large-scale project in a Vietnamese government agency. In this case, the contents include NBDS's basic policy, contents/structure, design, cooperation mechanism, operation and maintenance system, roadmap from the first generation to the third generation NBDS, required budget, staffing (man - month), etc.

Architecture:

A technical document that describes the logical and physical structure of NBDS as a computer system.

This project was implemented by forming a Core Group that prepared the five major output draft documents of project activities. Two technical working groups (Biodiversity and Information Technology) were also formed to review those draft documents (Figure 1 below).



Source: "Project for Development of the National Biodiversity Database System Project Completion Report (Summary)" June 2015, edited from Figure 1 in p.6

Figure 1: Working Groups for Project Implementation

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement Status of Project Purpose at the Terminal Evaluation

This project was in line with the policies of Viet Nam and the needs of the main implementing agency, MONRE. It is highly likely that the project purpose will be achieved. The first generation NBDS was developed by the end of the project, contributing to the capacity development of not only the main C/P, BCA of MONRE VEA, but also of MONRE VEA's Information Technology Centre (ITC) and other related agencies who participated in surveys and other project activities.

1.3.2 Achievement Status of Overall Goal at the Terminal Evaluation (Including other impacts)

The prospect of achieving the overall goal was dependent upon the implementation status of the Master Scheme on the Vietnamese side. Due to financial concerns, the possibility of achievement was evaluated to be fair. Despite this, the project activities had positive impacts in terms of effective cooperation with other projects and in the preparation of academic reports.

1.3.3 Recommendations from the Terminal Evaluation

[Recommendation to MONRE]

Recommendation	Situation at the time of ex-post evaluation
1. Secure budget for second-generation NBDS	Securing three-year budget for program implementation during 2019-2021 (partly)
2. Public relations activities to promote the use of NBDS	NBDS use promotion workshops and training courses were held in each region with protected areas as part of the subsequent technical cooperation "Sustainable Natural Resource Management Project" (planned period: August 2015 to August 2020).
3. Encourage the promotion of cooperation mechanisms in the central and provincial entities: involvement of central government-related organizations to mobilize the organizations of each local government (DARD and research institutes) and Provincial People's Committee (PPC), such as issuing cooperated circular on the establishment of a biodiversity agency in DONRE	Little has been done to build a mechanism for cooperation with organizations at the provincial level.
4. Effective collaboration with other related databases to avoid duplication: Collaboration with existing and other databases which are currently being created (e.g. FORMIS)	Collaboration with Global Biodiversity Information Facility (GBIF) has been realized. Collaboration with MARD's Development of Management Information System in Forestry Sector (hereinafter referred to as "FORMIS") has not been implemented.

[Recommendation to JICA]

Recommendation	Situation at the time of ex-post evaluation
As a pre-stage to disseminate the first generation NBDS to other provinces, in order to improve the quality of NBDS, support for MONRE to verify the effectiveness of the database for ecosystems different from the one targeted by this project.	It is implemented through technical cooperation "Sustainable Natural Resource Management Project" (August 2015 to August 2020).

2. Outline of the Evaluation Study

2.1 External Evaluator

Mitsue Mishima, OPMAC Corporation

2.2 Duration of Evaluation Study

The ex-post evaluation study was conducted with the following schedule:

Duration of the Study: October 2019 – August 2020

Duration of the Field Study: November 10 – December 6, 2019 and February 23 – March 6, 2020

2.3 Constraints during the Evaluation Study

During the implementation of this project, some IT staff who were responsible for the operation and maintenance of the data system and who had participated in the Technical Working Group in Information technology (IT), resigned or moved to other departments. This was also the case for most MARD and DONRE staff members who had participated in the Technical Working Group in Biodiversity. At the time of the ex-post evaluation, only a limited number of people could therefore be contacted and were interviewed.

3. Results of the Evaluation (Overall Rating: C¹)

3.1 Relevance (Rating: ③²)

3.1.1 Consistency with the Development Plan of Viet Nam

The project was consistent with the policies that were implemented since the time of the ex-ante evaluation until project implementation.

In response to the “2010 Target” adopted by CBD-COP6 in 2002, the *Biodiversity Law* was enacted in Viet Nam in 2008 (enforced in November 2009) and was aimed at conserving and developing biodiversity in land, sea, wetland and farmland, realizing the sustainable use of biological resources, and strengthening biosafety controls. Under the law, the BCA was to formulate a national plan for biodiversity conservation, conduct basic surveys for the monitoring of biodiversity, establish a biodiversity database, promote its utilization, and report on the status of biodiversity. In July 2013, the *National Biodiversity Strategy to 2020, Vision to 2030* was adopted as per the Prime Minister's decision, and four specific goals to 2020 were set. One of them was the creation of an inventory on biodiversity. The strategy also referred to "building a biodiversity database" as one of the seven programs of priority.

In addition, Viet Nam's *Five-Year Socio-Economic Development Plan 2006-2010* states that one of the main policies of the environmental conservation plan is “Ensure reasonable, effective,

¹ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

² ③: High, ②: Fair, ①: Low

and sustainable use of natural and environmental resources in watershed areas, ensure eco-balance and preserve biodiversity. Improve awareness of environment, paying attention to measures of pollution prevention and environmental improvement.”.

3.1.2 Consistency with the Development Needs of Viet Nam

This project met the development needs of Viet Nam for collecting data and information on biodiversity and for building a national database system.

In order for BCA to carry out the duties that were enacted under the Biodiversity Conservation Law, constructing a biodiversity database and enhancing its operation and maintenance capacity was necessary to provide information sources when preparing the biodiversity conservation strategy plan for Viet Nam. Thus, the contents of this project met the development needs of Viet Nam. There was also a need for other target group organizations involved in this project such as Xuan Thuy National Park, IEBR, etc. to enhance the capacity to collect and organize biodiversity data. In this context, it was also in line with staff needs of these target group organizations, to improve their survey and data collection capabilities.

3.1.3 Consistency with Japan's ODA Policy

This project was consistent with Japan's country assistance plan for Viet Nam, as evaluated when the detailed plan for this project was formulated.

At the time of ex-ante evaluation, Japan's Country Assistance Program for Viet Nam (July 2009) stipulated, as a priority, four main areas for assistance: 1) promotion of economic growth and strengthening of international competitiveness, 2) improvement of social and living aspects and rectifying disparities, 3) environmental conservation, and 4) strengthening governance. Under “ 3) environmental conservation”, the conservation of the natural environment included the conservation of biodiversity, and therefore the project was consistent with Japan's country assistance plan for Viet Nam.

This project was highly relevant to the country's development plan and development needs, as well as Japan's ODA policy. Therefore, its relevance is high.

3.2 Effectiveness and Impact³ (Rating: ②)

3.2.1 Effectiveness

3.2.1.1 Achievement of Project Purpose

All outputs of the project, namely "1. Development of Basic design of NBDS", "2. Recommendation for cooperation mechanism of related organizations", "3. Development of Nam Dinh Province database" and "4. Improvement of capacity on management and awareness

³ Sub-rating for Effectiveness is to be put with consideration of Impact.

of utilization of NBDS" were achieved based on the results of the terminal evaluation of the project, the project completion report (March 2015) and the field survey of the ex-post evaluation. Output 2, "2. Recommendation for cooperation mechanism of the related organizations", was prepared as a MONRE draft Circular in the project final report was submitted to VEA as a legal document and was planned to be officially promulgated in 2015. However, as a result of the overview conducted by the Government of Viet Nam, a part of the recommendation "Regulations on provision, exchange and management of biodiversity information" developed by the project was promulgated reflecting on *Circular No.32/2018/TT Regulations on collection of natural resources and environmental data and information for storage, management, provision, exchange, and utilization of biodiversity information*. As for the cooperation system for exchanging information among MONRE, MARD and other related organizations to improve the utilization and convenience of NBDS, it was necessary to continue to make efforts to strengthen taking up more specific issues such as reflecting the data related to biodiversity owned by MARD in NBDS.

At the time of the ex-post evaluation, almost all the achievement indicators of the project's purpose "Development of the first-generation national biodiversity database system" (see Table 1), were achieved. Japanese experts tested and confirmed that IT staff at that time could carry out the operation and maintenance of NBDS by the end of the project; despite this, there was no immediate action taken to make necessary improvements to NBDS with regards to malfunctions in its use and search methods that occurred after 2015, and the situation remained unchanged for some time. Since 2016, the update of data into NBDS from other protected areas, as part of the activities of the technical cooperation "Sustainable Natural Resource Management Project" (planned August 2015 to August 2020), was transferred to the server of the FIMO center under the jurisdiction of the National University of Viet Nam. From the end of 2018, CEID became responsible for the management of NBDS data, and most of the NBDS's problems were solved by the time of the field survey of the ex-post evaluation (February 2020) (Details about the malfunctions and issues to be improved are described in the "Impact" section below).

Table 1: Achievement of Project Purpose

Project Purpose	Target Indicator	Actual
The first generation of national biodiversity database system is developed.	1. NBDS Architecture is approved by VEA/MONRE.	Achieved at the time of terminal evaluation. The master scheme document and system architecture were developed and approved by the 4th JCC.
	2. Basic data on fauna and flora, at least all species on Viet Nam red list are input into NBDS.	Achieved at the time of terminal evaluation. As a result of the survey in Xuan Thuy National Park, all flora and fauna data on the Red List have been entered.

Project Purpose	Target Indicator	Actual
	3. 1st Generation of NBDS architecture is developed, operated and ,maintained in VEA/MONRE.	<p>It is considered to have been achieved by the end of the project. Based on the master scheme and the system architecture documents, the first generation NBDS was developed and published on the web site. In addition, according to the project completion report and interviews with Japanese experts, it was confirmed that the IT staff of VEA of MONRE could carry out the operation and maintenance of NBDS at the end of the project in March 2015.</p> <p>However, at the time of the ex-post evaluation, the IT staff who were in charge at that time had already resigned or were transferred. The update of data into NBDS, as part of the activities of the technical cooperation “Sustainable Natural Resource Management Project” that started in 2015, was transferred to the server of the FIMO center of the National University of Viet Nam. The university compiled issues and made improvements to NBDS problems. From the end of 2018, CEID of MONRE VEA became responsible for dealing with these issues.</p>

Source: “Socialist Republic of Viet Nam: Terminal evaluation report on Project for Development of the National Biodiversity Database System” (December, 2014), “Project for Development of the National Biodiversity Database System; Project Completion Report in Socialist Republic of Viet Nam (Summary)” (June 2015), and answer to the ex-post questionnaire and interview to stakeholders.

The terminal evaluation of the project analyzed that a contributing factor to achievement of project purpose and outputs is that Vietnamese experts, including university faculty members and research institutes, were assigned to the core group in the latter half of the project to carry out the work needed to produce the outputs. In addition, the assignment of an expert from those Vietnamese experts as a technical coordinator was analyzed to be a promoting factor to implementation of the project. Similar comments were made during interviews with Japanese experts at the time of the ex-post evaluation. Taking advantage of Vietnamese experts as this case was also considered to be very important to enhance the sustainability of the project effect after it was completed. Since there were many organizations involved in the project, including central and local government agencies, universities, and private organizations, it was necessary to have a technical coordinator who understand well the jurisdiction of those organizations and can promote communication and active involvement of each of these organizations. From the beginning of the project, it was indispensable to assign such Vietnamese experts in each target area and an expert who can have a role of facilitator among various organizations.

Based on the above, the indicators for development of the first generation NBDS were achieved by the end of the project, and it is considered that the project purpose was generally achieved.

3.2.1.2 Capacity Development of Implementing Agency and Related Organizations

In the project design, Output 4 called for the enhancement of the operation capacity and awareness of the utilization of NBDS by the implementing agency and related organizations. The achievement of indicators was based upon implementation results: namely, mainly IT survey and monitoring training related to IT and biodiversity, evaluation on participants by Japanese experts, and the preparation of manuals and the implementation of awareness workshops. The ex-post evaluation attempted to verify which points had improved the capacity of the implementing agency and related organizations, as a result of the training and workshops conducted as part of the project.

In interviews with Japanese experts, IT staff of the implementing agencies and related organizations (refer to “Column” in the below), for example, BCA and VEA, IT staff commented that they had learned how to build a database system through this project; Xuan Thuy National Park staff and VAST researchers also noted that they had acquired learning in data collection methods at the pilot site. Moreover, the data collection methods learned through this project are currently being used by Xuan Thuy National Park staff in formulating and monitoring the national park management plan. IEBR researchers also reported that they have applied this learning to their own research and others, utilizing learnings in their daily work.

(Column) Results of Interviews on Capacity Development to Implementing Agency and Related Organizations

Interviews were conducted with: 4 staff of BCA, 2 IT staff of VEA who participated in project activities (including one who was transferred to CEID as vice director), staff who participated in project activities, as well as those who knew about the work of those who participated in project activities of DONRE in the Nam Dinh Province, 2 staff members of Xuan Thuy National Park, and 4 researchers of IEBR. Opinions were collected from them throughout the project to determine (1) at which point they felt they had developed their capacity, (2) how they utilized learning and the knowledge obtained, and (3) whether they disseminated the knowledge to other staff. The main comments were as follows:

(BCA)

- Project participants have improved their capacity through workshops on biodiversity data collection and surveys, monitoring indicators, setting, and drafting of guidelines, and database construction and management. The database of the project was used as a reference for other project/programs of MONRE.
- The project enhanced the understanding on biodiversity data, investigation, monitoring and database system.
- Strengthen the linkage between Central government agency and local managers (sites/authorities, etc.).

(VEA IT personnel)

- Engaged in activities to plan NBDS architecture and learned a lot about data management knowledge, database development and construction. During implementation, the project supported learning for updating the data of Xuan Thuy National Park.
- During the training in Japan, I learned how to design a work plan (for system development).
- The knowledge learned through the project was passed on to other staff in the organization.
- After project completion, the operation and maintenance of NBDS was managed internally. When any problems emerged, countermeasures were taken for them. We improved the search function of NBDS by ourselves.

(Staff in charge of biodiversity Science and Technology Department, MARD)

- It was good in that the training in Japan deepened my understanding of the (information) system of biodiversity.
- I think communication between MARD and MONRE has improved after project implementation. The challenge is the lack of specific cooperation policies and mechanisms for data sharing. In addition to forest information of FORMIS, MARD owns fish data and genetic data, however there are no clear guidelines on how to share this information with MONRE.
- I have not seen the NBDS website after project completion.

(Xuan Thuy National Park)

- The data collected through the project provided an important database for national parks. After project implementation, the staff's capacity to conduct observations based on biodiversity conservation surveys and monitoring indicators improved. I learned about mangrove species, fruit trees, and bird species. Monitoring of mangrove conservation is also ongoing in cooperation with various external organizations. Also, we now consider the impact to climate change.
- After the training in Japan, the staff who mainly had knowledge of trees also learned about plant species. Before the project was implemented, there were only two technical staff who conducted biodiversity surveys, but after the project, the number of staff was increased to 10. As part of the training of new staff, knowledge on biodiversity and migratory birds was disseminated.
- Learning from the project was shared through meetings and workshops hosted by the government or NGOs. In particular, staff are now dispatched to the adjacent protected areas of Thai Binh Province to share the knowledge and experience gained through the project.
- NBDS data is used to prepare annual reports of national parks, reports of forest areas, and management plans.
- Data from Xuan Thuy National Park was also provided to researchers at universities inside the country. It was also provided to European and Australian researchers visiting the national park for field research, as well as Japanese university professors and students.

(DONRE)

- From the performance of staff who participated in the project at the time, I think they have gained more knowledge by participating in training, meetings, and surveys. Among the DONRE staff, no IT staff have been assigned to maintain the data system related to the project.

(IEBR)

- I participated in the project and exchanged knowledge and experience in cooperation with other Japanese and Vietnamese experts, and my capacity improved in terms of selecting databases, data structures, and monitoring indicators.
- In the study of biodiversity in Bach Long Vi, Thai Thuy district, Cham island biosphere reserve, etc., data collection was implemented by referring to the NBDS data structure and format. I would like to refer to other areas as well (eg. Bai Tu Long Bay).
- I instruct students who are currently registered in masters and doctorate courses and have introduced NBDS so that it can be applied to the research of these students.
- I drafted a research paper using NBDS and a report related to environmental impact assessment.
- I think the data of Xuan Thuy National Park related to the mangrove ecosystems can be applied to other wetland ecosystems, but further research is needed for that.

3.2.2 Impact

After project completion, malfunctions and improvements in the first-generation database system were pointed out. Thus, ex-post evaluation at first verified the situation of implementing countermeasures for them and examined the overall goal achievement prospects and other impacts. The target time for achieving the overall goal of the project was set at 5 years after the completion of the project, with the ex-post evaluation of the project to be implemented in 2020.

Therefore, the extent to which the overall goal was achieved was evaluated at the target time of the ex-post evaluation.

3.2.2.1 Status of the First Generation NBDS from project completion to Ex-post Evaluation

(1) Malfunction and Improvement of Data System

The operation and maintenance of the data system was to be managed by the person in charge of the IT center in VEA. However, after the project was completed, the transfer of project equipment (server, PC, survey equipment, etc.) to MONRE was not completed because there was some missing information⁴ at the time. As described in Table 1, NBDS data was therefore transferred to the server of FIMO Center of the National University of Viet Nam. Data was then updated/added between 2015 to 2018, as an activity of technical cooperation, in the “Sustainable Natural Resource Management Project”. During that time, the problems encountered using the first generation NBDS were reported by the professor in charge at FIMO Center in a paper in March 2017. From the end of 2018, CEID became responsible for the operation and maintenance of NBDS; they conducted a detailed problem analysis and worked on the following issues/improvements:

- ✓ Screen display interface: This was incompatible with the screen size of multiple devices (such as smartphones besides PC), and the screen display did not perform well.
- ✓ Software management: New user information for login could not be registered. The website could not be logged in and the user could not manage the account information themselves.
- ✓ Data search and display: There were some parts that could not be displayed well when conducting data searches.
- ✓ Online Map: There was no geographical information of national parks or protected areas.
- ✓ Detailed data display: It was difficult to search and display data by species, datasets, publishers, and protected areas.

These were the main bugs that were identified while using NBDS, and the points that needed to be improved in order to enhance its utilization and convenience after the project ended. The login problems identified above persisted, and the staff of Xuan Thuy National Park pointed out that they could not update the data nor download data/information in NBDS. At the end of 2018, following the analysis for issues to be improved, CEID contracted a private company and started to repair the database system. At the time of the ex-post evaluation survey, repair for malfunctions and improvements were completed, with the exception of the integration of

⁴ According to BCA, original invoices are necessary in order to arrange for transfer of equipment. In this case, only copies were obtained. Even at the time of the ex-post evaluation (April 2020), the procedure for transfer of equipment had not been initiated.

unification of classification guidelines. The new login system was being constructed and login information was being entered again. CEID managed the login information and became responsible for updating the data.

At the time of the ex-post evaluation, the NBDS website which was created at the time of the project (<http://nbds.vea.gov.vn/>) and the design improved version (<http://nbds.ceid.gov.vn/>) had both been published on the web, and were available to general users (see Figure 2). However, CEID has confirmed that only their website will be released in the future.



Figure 2: NBDS Web Site (As of March)

(2) Quality of data/information content

In the Project Completion Report (June 2015), there were concerns about how to guarantee the quality of the data stored in the NBDS as a national level database. Ideally, the BCA should be responsible for quality assurance; however, expert staff would need to be assigned for this, which was difficult to do. Thus, a more realistic solution was to have the quality assurance responsibility be pursued by the information provider. Therefore, it was stated that it was necessary to establish the NBDS usage rule guidelines for this purpose.

Even at the time of the ex-post evaluation, feedback received on the first generation NBDS published on the website included: IEBR "Classification codes are not unified", "collected data is old and there is information that is hard to say that it is a survey result according to an appropriate survey method" and "a draft stage data set is also included." This opinion was highlighted by the implementing agency (BCA), related organization (CEID, IEBR), and general users⁵.

The data and information from Xuan Thuy National Park was initially collected and updated from the primary data in the project. The data was then updated again by the subsequent technical cooperation "Natural Resource Management Project", when IEBR researchers reviewed the quality and then also conducted data input. At the end of this project, which is

⁵ Hearing was conducted to representative of Vietnamese NGO in Environment sector GIZ consultant, university professors, and so on.

scheduled to be completed in 2020, BCA must take the initiative and establish a policy for quality assurance of data and information.

(3) Promotion of NBDS to the Public

Due to insufficient awareness of NBDS during the implementation of this project, enhancement of NBDS's public relations activities were recommended to MONRE in the terminal evaluation. This was included as part of the technical cooperation activities conducted in the “Sustainable Natural Resource Management Project”, that has been implemented since August 2015. At the time of the ex-post evaluation (February 2020), more than 30 local provincial environment bureaus and protected area employees were involved in workshops to introduce, disseminate, and promote the use of NBDS. Thus, the awareness of NBDS among the participating DONRE staff and staff in charge of protected areas has improved and is spreading.

3.2.2.2 Achievement of Overall Goal

At the time of the ex-post evaluation, almost all the malfunctions and improvements of the first generation NBDS had just been completed; however, most of the activities of the overall goal "Development and trial of the second-generation NBDS in specific protected areas/provinces" had not yet been undertaken. In definition of the second-generation NBDS (refer to the explanation of terms on p.5), as mentioned before the addition of new data from other protected areas was being carried out as part of the activities of the technical cooperation “Sustainable Natural Resource Management Project”. However, the development work of the second-generation NBDS, which additionally had the function of Web-GIS and the sharing of biodiversity information of each related organization, had not yet been initiated.

Therefore, as indicated in Table 2, the overall goal indicators 1 and 2 were not achieved. With regards to Indicator 1, initially the staff of Xuan Thuy National Park could not update the data on NBDS due to a malfunction of the NBDS system; the data collected through the project was later updated and continued to be monitored, and was utilized for park management monitoring plans. In addition, according to the representative of DONRE in Nam Dinh Province, the Department referred to the information collected by the project from the Xuan Thuy National Park and formulated “Report on Planning for Biodiversity Conservation in Nam Dinh Province to 2020, with vision to 2030” (2018) and it was approved by the provincial government. Moreover, the Nam Dinh Province People's Committee announced the biodiversity zoning plan in early 2019, and this is scheduled to be implemented from 2020. NBDS data will provide key information to be used for zoning and DONRE will supervise the zoning.

As for Indicator 3, the NBDS was used by the BCA to prepare “The Sixth National Report to the United Nations Convention on Biological Diversity”. In addition, NBDS data was also

referenced in the Viet Nam National Biodiversity Strategy up to 2040, which was being revised at the time of the ex-post evaluation.

Table 2: Achievement of the Overall Goal

Overall Goal	Indicator	Actual
The second-generation of national biodiversity database system is developed and piloted in selected protected areas and provinces.	1. Utilization method of NBDS for management purpose is developed in Nam Dinh Province.	<u>Not Achieved</u> This indicator was not achieved because the second generation NBDS was not developed. Nevertheless, it should be noted that the indicator "the utilization of NBDS for management purposes is developed in Nam Dinh Province " is unclear about what is specifically meant by "development of utilization method of NBDS". In the sense that "use of NBDS is promoted for management purposes", the ex-post evaluation survey of Xuan Thuy National Park in Nam Dinh Province confirmed that updating and use of data and information input to NBDS is being promoted. Interviews with Xuan Thuy National Park and the Biodiversity Division of Nam Dinh DONRE indicated that the first generation NBDS was not accessible by them. It was necessary to login to NBDS to update the data and, initially, they were unable to log in, and this persisted for some time. However, as mentioned above, Xuan Thuy National Park staff updated data and information on flora and fauna collected for the project by themselves, and utilized them for management and monitoring plans, as well as the annual report of the national park. In addition, the Biodiversity Division of Nam Dinh DONRE also established a provincial biodiversity conservation strategic plan prior to other provinces, using NBDS information and data.
	2. The GIS-linked NBDS is used for selected protected areas and provinces in a province other than Nam Dinh.	<u>Not Achieved</u> The second-generation NBDS refers to collaboration with GIS, but since such a system had not yet been developed, it had not been utilized.
	3. NBDS is used for preparation of biodiversity-related national reports.	<u>Achieved</u> NBDS had been utilized to draft a national level report "The Sixth National Report to the United Nations Convention on Biological Diversity".

Source: Source: "Socialist Republic of Viet Nam: Terminal evaluation report on Project for Development of the National Biodiversity Database System" (December, 2014), "Viet Nam: Project for Development of the National Biodiversity Database System: Project Completion Report (Summary)" (June, 2015) and answer to the ex-post questionnaire and interview to stakeholders.

There were two reasons why the overall goal of the project had not been achieved at this point. The first was concerned with the function of sharing biodiversity information with related organizations towards the establishment of the second-generation NBDS: although a legal document was formulated for cooperation with related organizations, concrete efforts for sharing information had not progressed much after completion of the project. Forming a platform for securing data quality and exchange of opinions, which BCA took the initiative to do after the implementation of the project (for example, by establishing a discussion platform which consisted of MARD, biodiversity conservation researchers, and related institutions in the target area, etc.), had not been consciously established in the work group activities during

project implementation. In fact, insufficient active participation of MARD and other related organizations was stated in the project completion report (June 2015) as an issue and lesson for implementation. Considering the different jurisdiction of each organization (each organization's responsibilities and future issues is described in “3.4 Sustainability and 3.4.3 Institutional /Organizational Aspects for the Sustainability of Project Effects”), it was deemed that such efforts were important from a long-term perspective in order to achieve the overall goal and to ensure sustainability,

The second reason was the delay in responding to malfunctions and the improvements needed in the first-generation NBDS. It would have been better if the project aimed to build a more sustainable operation and maintenance system, including outsourcing of this work during project implementation. As mentioned earlier, support for updating the data was done as part of a subsequent project with MARD as the main counterpart, with CEID being assigned responsibility for operation and maintenance.

As mentioned above, the malfunctions of the first generation NBDS have only now been repaired and the display visuals improved; the activities toward the system development of the second-generation NBDS were almost not initiated, and therefore the overall goal has not been achieved.

3.2.2.3 Other Positive and Negative Impacts

Other impacts of the project were as follows:

- (1) Dissemination of knowledge on survey and data collection methods in Xuan Thuy National Park.

As a result of interviews with IEBR researchers and Xuan Thuy National Park staff at the time of the ex-post evaluation, the data collection methods and other knowledge learned through the project was disseminated to colleagues, younger staff, new staff, and masters and doctorate students taught by IEBR researchers (refer to "Column" above).



Xuan Thuy National Park

- (2) Contribution to the preparation of reports such as EIA that refer to the current status of biodiversity and protection policies.

At the terminal evaluation, it was reported that NBDS information was used for the EIA of the shellfish farming industry. At the time of the ex-post evaluation, IEBR researchers confirmed that there were a total of six reports related to environmental impact assessment that

were prepared using NBDS data, as shown in the table below. The NBDS also contributed to the preparation of a report on the current situation on biodiversity and conservation policy.

Table 3: Reports related to EIA using NBDS Data

Year	Title	Funded by
2011-2014	Assessment of threatened species of wild animals and plants for revision of the Red Data Book of Viet Nam.	Ministry of Science and Technology (MOST) of Viet Nam
2012-2014	Assessment of biodiversity of deciduous and broad-leaf evergreen forests in the Central Highlands and conservation measures (TN3/T07).	
2014-2015	Additional survey and develop a database system for biological resources of Bach Long Vi Island, Hai Phong city	Viet Nam Academy of Science and Technology (VAST) and Hai Phong DONRE
2015-2018	Research on the fish fauna of northwestern Viet Nam	The Government of Viet Nam
2016-2018	Scientific arguments to harmonize the relationship between biodiversity conservation with sustainable livelihoods and economic development - society in the biosphere reserve Cu Lao Cham - Hoi An	Ministry of Science and Technology of Viet Nam
2018-2020	The NEF Bio-ecological Nature Conservation Project in Mountainous Region of North Viet Nam	Nagao Natural Environment Foundation (NEF) of Japan

Source: Documents provided by IEBR

(3) Contribution in the Field of Biodiversity to Academic Survey and Research Activities, Information Sharing, International Cooperation

According to IEBR researchers, even after the completion of the project, research papers were being drafted by referring to data in the NBDS itself or the method of collecting data information as part of the project activities. IEBR reported that there were 13 papers (Table 4) that used the NBDS data from the time of project implementation to the ex-post evaluation. In addition, one doctoral research paper by a BCA staff member also used the data of Xuan Thuy National Park in NBDS. According to the staff of Xuan Thuy National Park, based on the data and information stored in NBDS, the “Current Status of Biodiversity of Xuan Thuy National Park” (2015) was compiled; this was funded by the United Nations Development Program (UNDP) and Global Environment Facility (GEF). The data on the results of the project was also shared, upon request, with overseas universities that visited for field research since the project completion, and this was referenced as part of their research papers.

Table 4: Research Papers Prepared using NBDS Data

Year	Title	Journal / Academic Society
2013	Study on main plant communities, taxonomy component and proposal of the potential biodiversity indicators in Xuan Thuy National park.	Proceeding of the 5th National scientific conference on ecology and biological resources, Agricultural Publishing House, Hanoi, Viet Nam.
	Species composition and distribution of macrobenthos in Xuan Thuy National Park, Nam Dinh province	
	Species diversity of fishes in Ba Lat estuary and Xuan Thuy National Park	
	Ecosystems mapping of Xuan Thuy National Park	

Year	Title	Journal / Academic Society
2014	New records of reptiles from northern Viet Nam	Abhandlungen des naturwissenschaftlichen Vereins zu Bremen
2014	Variation of soil, water quality and impacts on biodiversity in Xuan Thuy Ramsar site	ARPN Journal of Agricultural and Biological Science
2014	Constructing biodiversity indicators for monitoring wetland ecosystem in XTNP	National scientific conference on Ecology and biological resources, Agricultural Publishing House, Hanoi, Viet Nam
	Biodiversity at XTNP	
	Fish diversity in Ba Lat estuary and XTNP	
2014	PhD candidate educated by IEBR on topic of Biodiversity Indicator Development	Central Institute for Natural Resources and Environmental Studies (CRES) Viet Nam National University (VNU)
2014	Relationship of macroinvertebrate species and mangrove species in Xuan Thuy National Park, Viet Nam	Journal of Vietnamese Environment
2014	Composing biodiversity indicators for the conservation of mangrove ecosystem in Xuan Thuy National Park, Viet Nam	Journal of Vietnamese Environment
2019	Sample checklist of Gastropoda and Bivalvia in Cham Islands, Viet Nam	Biodiversity Data Journal

Source: Documents provided by BCA and IEBR

Interviews were also conducted with some university professors, namely Prof. Vo Thanh Son of the Central Research Institute for Natural Resources and Environment Studies (CRES) of Viet Nam National University, who participated in the Technical Working Group of Guidelines for Monitoring Biodiversity Indicators, and Professor Nguyen Lan Hung Son, Hanoi University of Education, who was involved in the activities of the pilot project in the Xuan Thuy National Park. Contrary to what was highlighted above, both professors commented that they had never seen nor used the NBDS after project completion. The reason given was that the data and information was old. Both professors were not aware that NBDS had updated data inputted from other protected areas, even after project completion. In the future, it will be necessary to improve the convenience by continuing to exchange information and opinions with such domestic university researchers, while updating and reviewing the NBDS data and information.

It is important to note that there was no support from other donors towards NBDS-related development and promotion from the time of the end of this project to the ex-post evaluation.

(4) Impact and Synergy Effects of Climate Change Program Loans

The direct financing effects cannot be confirmed as the program loan was not directly allocated to the BCA budget. However, according to the BCA, the Japanese ODA loan for the “Support Program to Respond to Climate Change” (herein after referred to as “SP-RCC”) became more active, which in turn led to the development of BCA activities. The BCA has constantly reported about project activities at SP-RCC meetings, and the BCA's activity plan was endorsed by SP-RCC, which created an opportunity to develop BCA's biodiversity conservation activities. Biodiversity conservation strategic plans were formulated based on the

biodiversity data prepared in the project; these were significant to promote policy actions for countermeasures for climate change.⁶

At the project completion, the project purpose was mostly achieved; however, since it took time to respond to the malfunctions of the first generation NBDS after that, the NBDS upgrading activities towards the overall goal of the second-generation NBDS were only described in master plans. These were just formulated as a plan, and the activities described in the master plan had mostly not yet started. On the other hand, the data of NBDS from Xuan Thuy National Park, which was the target of the pilot project, was used for national and provincial biodiversity conservation planning and policy making. The impact of the project was acknowledged as a part of data was utilized by researchers for their research papers and studies.

As described in the above, since this project has to some extent achieved the project purpose and overall goal, effectiveness and impact of the project are fair.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

The table below shows the actual results at the time of project completion compared to the detailed plans formulated during study of the project.

Table 5: Inputs for the Project

Inputs	Plan	Actual (at the time of project completion)
(1) Experts	4 Short term experts (Chief Advisors. Biodiversity monitoring, Database development, Coordinator) (No information about M/M)	13 Short term experts (Chief Advisors. Biodiversity: Fauna, Biodiversity: Flora, Data base development Database development assistant, Coordinator) (Total Approximately 72.69M/M)
(2) Trainees received	3 persons yearly	23 persons (Training in Japan: 17 persons and training in Malaysia 6 persons)
(3) Equipment	Server, database, software, workstation, PC, color laser printer, scanner, etc.	Server, database, software, PC, printer, and other office supply, survey equipment
(4) Japanese Side Total Project Cost	316 million JPY	347 million JPY
Vietnamese Side Total Project Cost	No figure at the time of plan	Total 57,000 USD (As of the time of terminal evaluation in December 2014)

Source: “Socialist Republic of Viet Nam, Detailed Planning Survey Project for Development of the National Biodiversity Database System” (February 2011), “Socialist Republic of Viet Nam: Terminal evaluation report on Project for Development of the National Biodiversity Database System” (December 2014)

⁶ The development of NBDS supported by the project was set as one of the policy actions of SP-RCC. The progress of policy actions is confirmed every year at the forums of policy dialogues with development partners and the results are reported to the National Climate Change Committee, which is chaired by the Prime Minister and is the final decision-making body for climate change countermeasures.

3.3.2 Elements of Inputs

Regarding the dispatch of experts, four persons were initially planned and assigned, namely a chief advisor, a staff member for biodiversity monitoring, database development, and a coordinator. However, the number of database specialists deployed increased due to the addition of database assistants in the first year, and the addition of individual specialists in the fields of flora and fauna for biodiversity monitoring. There was also a Vietnamese expert from the International Union for Conservation of Nature (IUCN) specializing in wetlands for biodiversity assigned as part of the group. In terms of the quality of these experts' inputs, when interviewed by the implementing agency and related organizations, they evaluated that they were generally satisfied with their performance.

As for the number of trainees received, the total number of trainees increased from the initial plan of about 3 persons per year to 23 persons in total. These included technical working group members from BCA and other related organizations. Participants rated the training as generally satisfactory.

3.3.3 Project Cost

The amount of funding from Japan for the project was stated as 316 million Yen in the initial plan; actual funding was 347 million Yen (109% of the plan), thus exceeding the plan. Project cost exceeded the plan due to the number of additional experts dispatched and the increase in the number of trainees.

3.3.4 Project period

The project period in the initial plan was meant to be from March 2011 to August 2014 (3 years and 6 months); the actual project started a bit later but remained within the plan, from November 2011 to March 2015 (3 years and 5 months - 95% of the plan).

From the above, although the project period was within the plan, the project cost exceeded the plan. Therefore, the efficiency of the project is fair.

3.4 Sustainability (Rating: ②)

3.4.1 Related Policy and Institutional Aspects for the Sustainability of Project Effects

After project completion, a number of Vietnamese policies were issued that emphasized biodiversity conservation, thereby enhancing the probability of continuing to improve, operate and properly maintain the NBDS, as this was necessary to understand and monitor the current situation.

First, the *Intended National Determined Contribution (INDC)* (September 2015) addressed the commitment of the international community towards the reduction of greenhouse gas emission.

It highlighted the need to make efforts in biodiversity conservation in relation to improving livelihoods of communities and generating income.

The Prime Minister's Decision on the National Natural Resources and Environmental Monitoring Plan was promulgated on January 12, 2016⁷, and national monitoring points were designated in areas such as meteorology, water resources, and environmental conservation. As part of this decision, 44 protected areas were designated for biodiversity monitoring. For this reason, it was critical to improve the database system and to carry out appropriate operation and maintenance. The ongoing technical cooperation *Sustainable Natural Resource Management Project* supported collection of biodiversity-related data for the 44 protected areas and data input for NBDS and, as of the end of 2019, data update from 32 of these protected areas had been completed.

BCA plans to develop the second-generation NBDS in the three years from 2019 to 2021 as part of the *Program for Monitoring & Evaluation to build Biodiversity Database 2019*. At the time of the ex-post evaluation, a master scheme for the program was being prepared, which will be approved by MONRE during 2020.

In addition, BCA participates in GBIF, which shares biodiversity information with the international community, and NBDS is required to provide GBIF with reliable data in line with international standards. Thus, BCA must ensure the quality of data will continue to be undertaken in a more deliberate and intentional way.

3.4.2 Technology required to sustain the effects

In reference to the technical aspects, continuous improvement and development of the database system was started at the time of the ex-post evaluation, and will be maintained to some extent in the future.

(1) Capacity to formulate biodiversity data collection and monitoring policies for NBDS (BCA)

Through the experience of working with researchers on the data of nearly 40 protected areas nationwide in the technical cooperation “Sustainable Natural Resource Management Project”, BCA became aware of which procedures should be implemented for reviewing data. Based on this work, data collection and monitoring policies for each region can be formulated in the future.

(2) Operation and maintenance of database system (CEID)

CEID, which was responsible for the maintenance of the database system, has a system in place to outsource to an external private company the malfunctions and improvements needed in the

⁷ Decision No. 90/QD-TTg, Approval for a master plan for national natural resources and environment monitoring networks for 2016-2026, with a vision to 2030

database system. As a result of this, since 2018, the database system has been improving gradually. In addition, at the time of the ex-post evaluation, CEID's Vice Director had participated in the technical working group of the project from the start as an IT person, and so was familiar with NBDS. Thus, he is able to supervise the quality of the work done by the private company when contracting them for correction of malfunctions of the data system.

(3) Xuan Thuy National Park, Nam Dinh Province

Regarding the update of databases in Nam Dinh Province, the staff of the Xuan Thuy National Park who had previously conducted mangrove monitoring, now disseminated to their knowledge to new staff, about leanings of the distinction of plant species that they had acquired through the project, as well as biodiversity data collection methods. The project produced "Guidelines for the development and use of biodiversity indicators" and "Technical guidelines for survey methods and monitoring of coastal wetlands" which was used for the pilot project. With reference to these guidelines, Xuan Thuy staff can conduct continuous monitoring and update of the data.

3.4.3 Institutional /Organizational Aspects for the Sustainability of Project Effects

There are institutional constraints on biodiversity conservation, including that it can take a long time to establish a cooperation system with each related organization. However, the organizational structure of BCA, CEID and Xuan Thuy National Park that was supported by the pilot projects is expected to be maintained to some extent for sustainability of NBDS

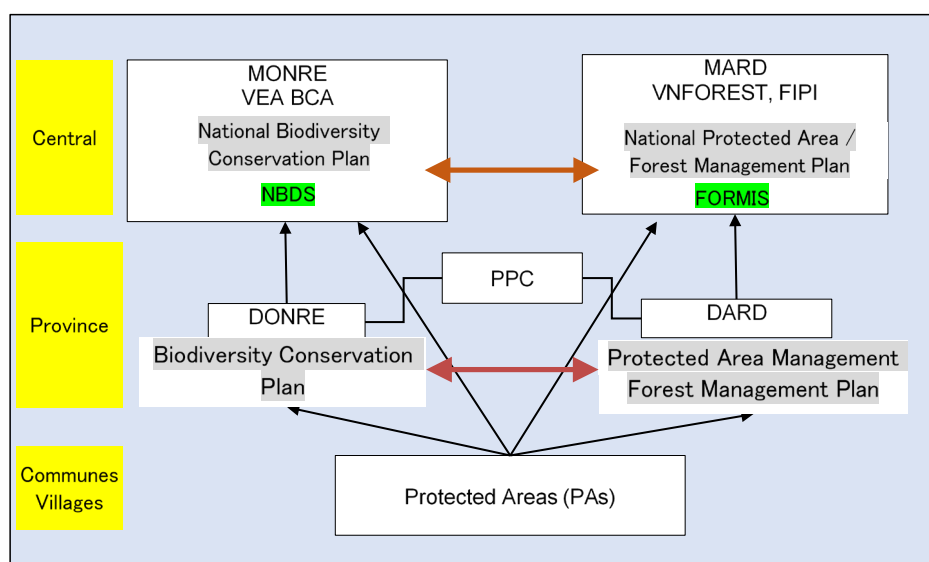
(1) Institutions on Biodiversity conservation and cooperation System with related organizations

Considering that the NBDS aimed to build a data/information system that contributed to biodiversity conservation, information on protected areas which are a living environment for fauna, flora, genetic information, etc. was also very important. Data and information on forests and genes fall under the jurisdiction of MARD, with forests specifically falling under FORMIS of MARD.

BCA formulates biodiversity conservation strategies at the national level, DONRE is responsible for conservation strategies and plans at the provincial level. Conservation of protected areas include biodiversity conservation. MARD directly supervises the protected areas if they extend over multiple provinces, but if the protected areas are located within one province, they are supervised by the Provincial People's Committee (PPC) of each province. Therefore, the protected area's conservation plan is formulated by each protected area, which is then submitted to MARD if it is under the direct control of MARD, or to DARD if it is under the responsibility of the province, with DARD conducting the monitoring and conservation of each

protected area of the Provincial People's Committee. Therefore, central, and local related organizations are complicatedly involved (see Figure 2). Furthermore, there are various types of protected areas, such as wetlands, forest type areas, limestone areas, etc. and each will answer to different related ministries and agencies.

In this way, jurisdiction over information related to biodiversity conservation and implementation of conservation are quite complicated in Viet Nam. Another complication is that MONRE conducts their work based on biodiversity law whereas MARD conducts their work based on forestry law. In some cases, the demarcation of authority is unclear and overlap, thus the conservation plans of each related organization need to be coordinated with each other so that they are consistent. This institutional complexity causes great difficulty in implementing data and information sharing in cooperation.



FIPI: Forest Inventory and Planning Institute, Ministry of Agriculture and Rural Development

Figure 3: Relationship between Central and Provincial-level Institutions on Biodiversity Conservation

Through the project, a framework for cooperation with related organizations was proposed. In 2016, a memorandum of understanding was signed between VEA of MONRE and Viet Nam Administration of Forestry (VNFOREST) of MARD (MOU), on sharing data and information on the conservation of nature and biodiversity, thereby taking a step towards cooperation. However, in the future, it will be necessary to seek more specific ways of efficient data and information sharing in NBDS, and to continue to work on this.

(2) BCA

At the time of the ex-post evaluation, the person responsible for the operation and management of the NBDS was the deputy director of BCA along with two staff members, for a total of three personnel. After project completion, with the cooperation of BCA and IEBR researchers and an IT professor at the National University of Viet Nam, BCA had conducted a quality review activity to collect and update data of about 40 protected areas, as part of the technical cooperation “Sustainable Natural Resource Management Project”. After the end of the project, it was necessary for BCA to take the initiative to review and update the database; in the future it will be necessary to mobilize personnel with the cooperation of the researchers, and to designate the time and budget required for this. Given the current status of the BCA system, it is predicted that it may be difficult to implement the project on the same scale after the completion of the project, but that it will gradually advance within the range of the budget that can be secured.

(3) CEID

There are four staff members in the CEID Technical Development and Application Department and one staff member in the Environmental Information Department who are responsible for the operation and maintenance of the NBDS. The staffing system seems to be sufficient, with no particular problems to note.

(4) Xuan Thuy National Park and DONRE in Nam Dinh Province

The number of staff in Xuan Thuy National Park was increased to 10 or more, and the personnel system was enhanced. At the time of the terminal evaluation, information circulars stated that a new division specialized in biodiversity was being set up within each province’s DONRE. However, at the time of the ex-post evaluation, such a specialized department had not yet been established in Nam Dinh Province. NBDS data information management/update work at the provincial level seems to be manageable if the staff in each protected area are able to access and update the data without relying on dedicated personnel in charge of data update in DONRE.

3.4.4 Finance required to sustain the effects

In regard to financial sustainability, the repair and improvement of NBDS malfunctions after the end of 2018 were implemented through the CEID budget and so is expected to be sustainable to some extent due to the data system operation and maintenance budget. On the other hand, the financial sustainability of the BCA-planned update of data collection seems to be constrained due to the following points:

(1) Collect biodiversity data and implement monitoring activities

BCA had formulated a budget plan of 14.65 billion VND (about 70 million yen) for three years towards the "Program for Monitoring & Evaluation to build a Biodiversity Database 2019". BCA was developing a master plan for biodiversity data collection (currently in draft stage, to be approved by the Ministry in 2020) to promote the second-generation NBDS, which held actual data from each protected area. BCA planned to review biodiversity indicators and collection methods, and to work towards the construction of the second-generation NBDS. While the budget for the first year was 500 million VND (Vietnamese Dong), 1 billion VND was actually executed, thus securing more than the planned budget for that year. However, as of February 2020, it was confirmed that while the budget for the second year was 10.5 billion VND, the actual budget allocated was only 1.5 billion VND (about 14% of the planned budget). At the time of the ex-post evaluation, only part of the planned activities could be implemented and financial sustainability was partial.

(2) NBDS operation and maintenance costs

Between 2014-2018, BCA has allocated an average budget of approximately 100 million VND (approximately 500,000 yen) towards NBDS operation and maintenance costs every year. This amount was not enough to secure the repair and improvement of database malfunctions. Since the end of 2018, NBDS has been operated and maintained by CEID and the database has been repaired by outsourcing it to an external private company; a budget of 500 million VND (about 2.3 million yen) was allocated for this. In the 2020 fiscal year, a budget of 300 million VND (about 1.4 million yen) will be secured to improve the database system equivalent to the second-generation NBDS.

(3) Xuan Thuy National Park, Nam Dinh Province

In Nam Dinh Province, an outside expert was never hired to monitor and update the database as it had been set in the original plan, and it was left to Xuan Thuy National Park staff to conduct mangrove monitoring to the extent possible. The monitoring and management budget of Xuan Thuy National Park is based on the budget of the provincial government, which is the decision of the Provincial People's Committee in the future. According to DONRE in Nam Dinh Province, the total budget for implementation of environmental policy including air pollution and water quality management, is about 1% of the total budget of the province, of which the budget for biodiversity conservation is very limited. At this point in time, there is no certainty regarding securing a budget in the future.

(4) Other protected areas

As for the protected areas within each province (not including those that fall under the direct control of MARD), it seems that the situation is similar to that of Nam Dinh Province, in that each province also has a limited budget for the environmental sector. There are insufficient funds to carry out data collection and monitoring activities based on indicators of biodiversity conservation, as funding comes from the provincial government budget, unless external financial support (donor support funds, research institute survey, etc.) is secured.

3.4.5 Operation and maintenance status of equipment provided

The current status of servers in MONRE's Information Technology Center (ITC) and PCs, software, printers, survey equipment, etc., in BCA was confirmed and it was found that there were no particular problems with the equipment. It was also confirmed that a series of manuals prepared by the project are also in the BCA and can be referred to when necessary.

As in the above, some problems have been observed in terms of the institutional/organizational and financial aspects. Therefore, sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The aim of the project was to develop the first generation NBDS by the end of the project, whose four outcome targets were: to establish a basic design of the database system; to propose a cooperation mechanism between related organizations; to construct a database in Nam Dinh Province; and to raise awareness of the operational capacity and utilization of NBDS, thereby developing the second-generation NBDS. The relevancy of the project is high, as the development of NBDS was in line with Viet Nam's development plans and policies at the time of project planning, as well as the needs of the executing agency and other related organizations for the preparation of information data on biodiversity conservation; it was also consistent with Japan's development assistance policy at the time. The development of the first generation NBDS was achieved by the end of the project and contributed to the capacity building of the implementing agency and the target organizations. However, because of the delay in responding to the bugs and improvement to NBDS after project completion, almost no activity was undertaken on the second-generation NBDS. Nevertheless, using NBDS data information contributed to the preparation of reports and research papers related to environmental impact assessment, such as the biodiversity conservation strategic plans, national reports, and management plans for Xuan Thuy National Park. It was also significant in promoting as one of policy actions for support program responding to climate change. Therefore, the effectiveness and impacts of the project are fair. The efficiency of the project is fair because although the project implementation period was within the plan, the

project costs exceeded the plan. While the project is sustainable in policy aspect, there are some issues, that need to be improved in the government organization systems and the institutions for biodiversity conservation, and financial aspect. Thus, the sustainability of the project is fair.

In light of the above, this project is evaluated to be partially satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

Responding to the issues to be improved for the first generation NBDS and developing the second-generation NBDS

In order to build the second-generation database system, it was recommended to steadily implement "Program for Monitoring & Evaluation to build Biodiversity Database 2019" in the three years from 2019 to 2021. At the time of the ex-post evaluation in 2020, the budget that was secured was severe against the planned budget, making it necessary to proceed individually with each of the priorities. This included the data quality issues indicated by the users of the first generation NBDS, such as the unification of classification items, the close examination of the data/content, and the biodiversity data collection currently being prepared by BCA. In line with the master plan, it is expected that BCA will take the initiative and implement it to the extent possible in the future, while continuing to mobilize experts from outside institutes and universities specializing in biodiversity conservation.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

Indispensable elements for coordination of a wide range of related organizations

Upon implementing the project which involves a wide range of related organizations, to assign a project coordinator who is familiar with the jurisdiction and needs of those organizations in the target country can contribute to improve the efficiency of project implementation. In this project, a Vietnamese coordinator was assigned during the implementation, which helped to smooth communication between the parties concerned and contributed to the efficiency of implementation. It can be said that it was better to allocate such personnel from the beginning of the project. Also, for the sustainability of the project, one idea was to support the activities to form the platform that BCA leads multiple organizations and regularly exchange information and opinions, with facilitation by such coordinator in order to continue the project. For example, taking the pilot project area as one case, forming a discussion forum for data quality scrutiny and exchange of opinions applicable to other protected areas, including MARD and biodiversity conservation researchers, related organizations in target area, etc., aiming to continuing after the

project. During the project implementation, a priority could have been given to project activity of the sustainable platform formation which can effectively involve all stakeholders.

Input of data and information that further contributes to policy implementation

The ultimate goal of building a national biodiversity database system is to use that data to monitor biodiversity conservation and implement countermeasures. With this objective in mind, for example if the purpose of NBDS is most critically stressed on contributing to EIA implementation or use of biodiversity conservation plan, it is therefore essential to scrutinize the content of data and information inputted at the early stages of the project. At the time of project implementation, the NBDS included data that was old or had problems with the data collection method, without any indication of the constraints at the time of data input. It might have been better to have activities to discuss such constraints and input such information in NBDS or as alternative way, separately from NBDS, it should have been noted the indication that how such data should be updated and revised in the future as result of quality review of such data

As there was no dedicated expert staff in BCA to conduct quality assurance of uploaded data, as part of the activity planning at the project planning stage, a suggestion was made to form a committee which mobilized the experts in Viet Nam to conduct quality scrutiny of the NBDS, and then BCA staff could be assigned to be in charge of this activity. Even if the data provider (individual or organization) was to undertake the quality assurance, the screening by BCA was deemed necessary as a government agency. During the implementation of the project, Japanese experts responsible for biodiversity who have experience in implementing EIA and formulating biodiversity conservation plans, were to provide support; however, local experts, would also be appointed and assigned as team members from the beginning of the project if such suitable personnel can be found in target country, which would be the key to ensure sustainable activities after the project.

End

Socialist Republic of Viet Nam Viet Nam

FY2019 Ex-Post Evaluation of Technical Cooperation Project

“Project on Strengthening the System and Operation on Standards and Conformance
for Energy Efficiency and Labeling”

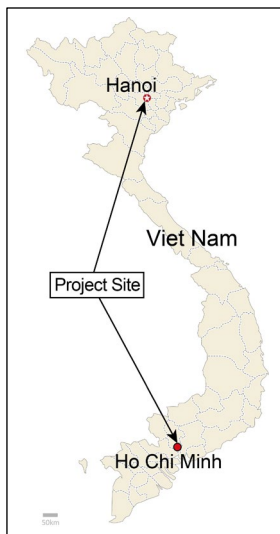
External Evaluator: Mitsue Mishima, OPMAC Corporation

0. Summary

The purpose of this project was to strengthen the operation system of energy efficiency (hereinafter referred to as “EE”) testing laboratories for air conditioners and refrigerators, thereby aiming at disseminating energy efficient products (air conditioners and refrigerators) based on EE policy of the Socialist Republic of Viet Nam (hereinafter referred to as “Viet Nam”). The project is highly relevant since it is consistent with Viet Nam's development plans and policies at the time of the ex-ante evaluation, the needs for setting energy-saving standards and strengthening the test capacity of implementing agencies and related organizations, and is consistent with Japan's development assistance policy at that time. The project improved the capacity of the government agencies that set energy-saving standards and established laws and regulations for home electric appliances in Viet Nam, and of the agencies that certify EE testing laboratories, and also strengthened the test system and staff capacity of the laboratories that conduct EE tests and certify energy efficient labels. As a result, the diffusion of air conditioners and refrigerators with EE labels based on qualified test results was promoted in the Vietnamese domestic market. At the same time, the project benefited the Japanese home electric appliances manufacturers of air conditioners and refrigerators and enhanced awareness of energy saving among consumers, and contributed to climate change countermeasure programs. Therefore, the effectiveness and impacts of the project are high. The efficiency of the project is fair because the project period was within the plan, whereas project cost slightly exceeded the plan. The sustainability of the effects produced by this project is high as the project has no problems in policy/political support, and from an institution/system, technical, and financial aspect.

In light of the above, this project is evaluated to be highly satisfactory.

1. Project Description



Project Site



Testing equipment of the air conditioner provided by the project

1.1 Background

In recent years, the Socialist Republic of Viet Nam (hereinafter referred to as “Viet Nam”) has suffered a chronic energy shortage due to an increased energy demand accompanying economic growth, and the Vietnamese Government has put forth various energy saving policies. As one of these policies, the energy saving label system for home appliances, compulsory standardization (the products cannot be sold in the market unless the energy saving label is attached) has been enforced for air conditioners since July 2013 and for refrigerators since January 2014.

Regarding the test standards for certification of energy-saving labels for air conditioners and refrigerators, although some of the international standards proposed by Japan had been adopted, there were many challenging issues in the standard system, such as correlating with the international standard, the appropriate revisions of EE testing standards, the need to revise the energy saving standard, and others. Prior to the beginning of the project, as a testing institute to evaluate the energy-saving performance of household air conditioners and refrigerators, the Testing and Verification Center for Industry (TVCI) was only a registered laboratory under the control of Viet Nam National Coal-Mineral Industries Holding Corporation Limited (VINACOMIN) in the Ministry of Industry and Trade (MOIT) in Viet Nam. TVCI had, however, insufficient testing capacity and reliability.

Meanwhile, JICA had carried out the “Project on Strengthening the System and Operation on Standards and Conformance” from 2009 to 2013. This project targeted the Directorate of Standards, Metrology, and Quality (STAMEQ) under the Ministry of Science and Technology (MOST) and cooperated in strengthening the overall capacity for the standards and operation of

the safe home electric appliances. As a result, STAMEQ's basic conditions on the testing ability of home electric appliances was established. However, it did not have the ability to conduct the energy-saving performance evaluation test of air conditioners and refrigerators. In order to ensure the effectiveness of the energy-saving labeling system, it was urgently necessary to enhance the testing capacity in accordance with the standards and improve the capacity of the testing organizations that contributes to the certification of the standards.

Against the above background, STAMEQ of MOST requested Japan to implement the “Project on Strengthening the System and Operation on Standards and Conformance for Energy Efficiency and Labeling” (hereinafter referred to as “the project”).

1.2 Project Outline

Overall Goal	Energy-efficient products are prevailed in accordance with the energy efficiency policies.	
Project Purpose	Operation of the energy efficiency testing laboratories for air conditioners and refrigerators is strengthened.	
Outputs	Output 1	Capability of revising energy efficiency standards and other energy related standards is improved according to the practical use of air conditioners and refrigerators.
	Output 2	Capability of the energy efficiency testing laboratories for air conditioners and refrigerators is improved.
	Output 3	Capability of accreditation and designation of the energy efficiency testing laboratories for air conditioners and refrigerators is improved.
Total cost (Japanese Side)	464 million yen	
Period of Cooperation	November 2013-November 2016 (3 years)	
Target Atea	Hanoi, Ho Chi Minh	
Implementing Agency	Directorate for Standards, Metrology and Quality (STAMEQ) and Bureau of Accreditation (BOA), Ministry of Science and Technology (MOST)	
Other Relevant Agencies / Organizations	<p>Following target agencies for capacity development besides above implementing agency</p> <ul style="list-style-type: none"> • Viet Nam Standards and Quality Institute (VSQI), Quality Assurance and Testing Center 1, 3 (QUATEST 1,3) under MOST STAMEQ • General Directorate of Energy (GDE), Ministry of Industry and Trade (MOIT) * Due to reorganization, Energy Efficiency and Sustainable Development Department (EESDD) at the time of ex-post evaluation • Viet Nam National Coal-Mineral Industries Holding Corporation Limited (VINACOM), Testing and Verification Center for Industry (TVCI) under MOIT 	
Supporting Agency/Organizations in Japan	Ministry of Economy, Trade and Industry (METI), The Japan Electrical Manufacturers' Association (JEMA) Japan Refrigeration and Air Conditioning Industry Association (JRAIA), International Standard Innovation Technology Research Association (IS-INOTEK), Japan Air Conditioning and Refrigeration Testing Laboratory (JATL), and others	

Related Projects	<p>[Technical Cooperation Projects]</p> <ul style="list-style-type: none"> • The Study on Master Plan for Energy Conservation and Effective Use (Technical Cooperation for Development Plan) (2009) • Project on Strengthening the System and Operation on Standards and Conformance (2009 - 2013) • The project for the Establishment of Energy Management Training Center (Stage 1) (2011 - 2012) • The project implementation for the establishment of energy management training Center in Vietnam (Stage 2) (2013 - 2015) <p>[ODA Loan Project]</p> <ul style="list-style-type: none"> • Support Program to Respond to Climate Change (SPRCC) (I)~(VII) (L/A Signing (I) June 2010, (II) November 2011, (III) March 2013, (IV) March 2014 (V) March 2015, (VI) March 2016, (VII) January 2017 <p>[Other Donors]</p> <ul style="list-style-type: none"> • AusAID “Vietnam Energy Efficiency Standards and Labelling Program: Australian Government support project” (2012 - 2015) • UNDP/GEF “Barrier Removal to the cost-effective development and implementation of Energy efficiency Standards and Labeling project (BRESIL)” (2009 - 2013)
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1.3 Outline of the Terminal Evaluation

1.3.1 Achievement Status of Project Purpose at the Terminal Evaluation

The project purpose was expected to be achieved within the project period. In this project, although there are still some monitoring activities to check its progress such as revision of EE test standard for refrigerators, the operational capacity of EE test centers for air conditioners and refrigerators in Viet Nam was strengthened by activities such as installing new laboratory equipment, training in equipment operation, and ensuring the reliability of measurement accuracy, and others. The project has enhanced the capacity to revise test standards and to certify/designate laboratories, which has then strengthened the EE test operation system in Viet Nam. The existing one-laboratory system with only TVCI before the project was changed to a three-laboratory system, adding QUATEST 1 and QUATES 3.

1.3.2 Achievement Status of Overall Goal at the Terminal Evaluation (Including other impacts)

The prospect of achieving the overall goal was evaluated to be a positive, from a result of a visit to a home electronics mass retailers in Ho Chi Minh City where almost all air conditioners and refrigerators in the market were with energy-saving labels were already. Regarding air conditioners, products with high EE performance, including those made in Japan, are expected to occupy the market share owing to the same performance evaluation method between non-inverter and inverter units and the energy saving label system, based on the increase in EE value. In addition, for refrigerators, it was predicted that products with high EE performance will be popular because the testing method will correlate with international standards and the EE standard will be raised.

1.3.3 Recommendations from the Terminal Evaluation

[Recommendation to MOST]

Recommendation	Situation at the time of ex-post evaluation
<p>1. Mutual evaluation testing of air conditioner (QUATEST 3, TVCI) To maintain and improve the accuracy of testing facility for air conditioner installed in QUATEST 3 and TVCI, mutual evaluation testing in Viet Nam should be conducted every two to four years. In addition, QUATEST 3 and TVCI should establish an agreement to collaborate with JATL to conduct mutual evaluation testing every two to four years among the three laboratories.</p>	<p>For mutual evaluation testing, three institutions participated in the international workshop to implement mutual evaluation testing.</p>
<p>2. Appropriate testing fees (QUATEST 1, QUATEST 3, TVCI) In order to maintain the financial sustainability of testing laboratories, the following factors should be taken into consideration in setting testing fees: calibration cost of measuring equipment, cost of mutual evaluation (comparative calibration fee, comparison participation fee between laboratories) maintenance cost by suppliers, depreciation cost of testing facilities and equipment.</p>	<p>Testing fee has not been revised; however, this does not affect the sustainability.</p>
<p>3. PR activities on QUATEST 1 and QUATEST 3 QUATEST 1 and QUATEST 3 should continue PR activities such as promotion seminars and laboratory tours in order to advertise new laboratories to potential clients.</p>	<p>QUATEST 3 is located in Ho Chi Minh where there are many import and export products. They conduct EE testing air conditioners, refrigerators, and other home electric appliances and assign PR expert for PR activities for promoting the use of laboratories.</p>

[Recommendation to JICA]

None

2. Outline of the Evaluation Study

2.1 External Evaluator

Mitsue Mishima, OPMAC Corporation

2.2 Duration of Evaluation Study

The ex-post evaluation study was conducted with the following schedule:

Duration of the Study: October 2019 – August 2020

Duration of the Field Study: November 25 – December 6, 2020, March 2 – 3, 2020

3. Results of the Evaluation (Overall Rating: A¹)

3.1 Relevance (Rating: ③²)

3.1.1 Consistency with the Development Plan of Viet Nam

This project is consistent with the development plan from the time of ex-ante evaluation to the completion of the project. In 2006, a ten-year plan for the *National Energy Efficiency Program (VNEEP)* was formulated, and comprehensive energy-saving measures has been promoted. The

¹ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

² ③: High, ②: Fair, ①: Low

Vietnamese government decided to implement the following various policies, laws and regulations, and others on energy saving and energy efficiency measures that were mentioned at the time of project completion, after *the Prime Minister's decision No. 79/2006/QĐ-TTg “Approval of national goals for energy conservation”* (April 14, 2006).

- *Energy Saving Label System Procedure/Procedure: Ministry of Commerce and Industry Notification No. 08/2006/TT-BCN* (November 16, 2006)
- *Energy Conservation Law Enforcement : Detailed Regulations Cabinet Order No. 21: Decree No.21/2011/ND-CP* (March 29, 2011)
- *Energy-saving labeling, list of devices subject to MEPS³, and roadmap for implementation: Prime Minister's Decision No.51/2011/QĐ-TTg* (September 12, 2011)
- *Guidelines for energy-saving labeling Circular No. 07: No.07/2012/TT-BCT* (April 4, 2012)

The purpose of this project, “strengthening the test operation system of the EE laboratories for air conditioners and refrigerators,” is to promote energy saving in conjunction with the national goal of energy saving by establishing EE tests and standards and strengthening test capacity in accordance with the above laws and regulations. It is consistent with the policy of the Vietnamese government to promote energy efficiency.

3.1.2 Consistency with the Development Needs of Viet Nam

This project met the needs of the target group for capacity building, and the companies that manufacture and sell air conditioners and refrigerators that are the final beneficiaries. For companies that import air conditioners and refrigerators in Ho Chi Minh City and sell them in Viet Nam, there was a great need for EE tests in Ho Chi Minh City.

Prior to the start of this project, only TVCI was designated as an EE testing institution for air conditioners and refrigerators, but there was a need to improve test processing capacity and reliability and a demand to improve the test system including QUATEST 1 and QUATEST 3.

Through this EE test and energy-saving label system, this project will provide the correct information on energy saving to suppliers, who deal with air conditioners and refrigerators, and consumers. Thus the project will meet the needs of the final beneficiaries.

3.1.3 Consistency with Japan’s ODA Policy

This project was consistent with Japan's ODA policy at the time of the ex-ante evaluation. In Japan's Country Assistance Policy for Socialist Republic of Viet Nam (December 2012), “Growth and strengthening competitiveness” was emphasized as a priority area for assistance to

³ Minimum Energy Performance Standards (MEPS). If the power consumption of the target home appliances exceeds MEPS, import and production of the products will be prohibited. MEPS regulations was enforced on January 1, 2015 for both air conditioners and refrigerators.

Viet Nam, The promotion of energy efficiency was described as a policy that supported the increasing demand for energy along with economic growth and infrastructure.

The project was sufficiently consistent with the development policies and the development needs of Viet Nam as well as with Japan’s ODA policy. Therefore, the relevance of this project is high.

3.2 Effectiveness and Impact⁴ (Rating: ③)

3.2.1 Effectiveness

3.2.1.1 Achievement of Project Purpose

Outputs 1 to 3 of the project were achieved, thereby achieving the project purpose. As a result of the training and guidance provided in project activities by Japanese experts in the project, the capacity of VSQI and GDE (currently EESDD) were improved to review the standard of the energy-saving test and for air-conditioner and refrigerator standards (Outcome 1). In addition, with the experience and knowledge gained through project activities, new models of air conditioners and refrigerators are continuously tested in compliance with the revised standards, and energy-saving label is affixed to all products. Capacity development through the activities of the project is being utilized (Outcome 2). Furthermore, through the project activity, GDE and BOA are judged to have acquired the capacity to certify according to the revised law (Outcome 3). These outcome results are linked to the achievement of the indicators shown in Table 1 on achievement of project purpose.

Table 1: Achievement of Project Purpose

Project Purpose	T Indicator	Actual
Operation of the energy efficiency testing laboratories for air-conditioners and refrigerators is strengthened.	1. Improvement of capability by designated energy efficiency testing laboratories*	Achieved. As a result of the training in Japan and the technology transfer through on-the-job training (OJT) of the staff of QUATEST 1 and 3, the new test equipment provided for both laboratories by the project were used properly. Together with these laboratories, TVCI of VINACOMIN participated in the training. The capacity on energy efficiency testing of all three designated EE laboratories was improved.
	2. Increase in the number of accredited and designated energy efficiency testing laboratories	Achieved. The number of accredited and designated institutions has increased by 2 and they are in operation (QUATEST 1, 3)

Source: Terminal evaluation report “Socialist Republic of Viet Nam: Project on Strengthening the System and Operation on Standards and Conformance for Energy Efficiency and Labeling” (June, 2016), and answer to the ex-post questionnaire and interview of stakeholders.

Note: The laboratory will be able to carry out energy-saving tests as an “energy-saving laboratory” if it is designated by GDE (currently EESDD). The Industrial Testing Laboratory (TVCI) is already operating as an energy conservation testing laboratory for air conditioners and refrigerators. This project supported QUATEST 1 and QUATEST 3 to be designated as EE testing laboratories for air-conditioners and refrigerator.

⁴ Sub-rating for Effectiveness is to be put with consideration of Impact.

With respect to the revision of laws and regulations, the air conditioner EE test standard was completed. It was issued as a national standard (national standard number TCVN 7828) during the project implementation period (Prime Minister's Decision 13550/QD-BCT December 2015), and the refrigerator EE test standard was approved. The revised national standard (TCVN 7830) was also issued after the project as the Prime Minister's decision (Prime Minister's Decision 1133/QD-BCT March 2017). According to an interview of Japanese experts once again at the time of the ex-post evaluation, the capacity of the target group (STAMEQ, BOA, VSQI, GDE) in charge of revising the law and regulations and test standard setting improved by the project activities. In self-evaluation of target group upon interviewing them, they assessed that their capacity was also enhanced through project activities in terms of their level of understanding of international standards for energy saving of air conditioners and refrigerators. VSQI officials said they enhanced their awareness, gained knowledge about international standards, and improved their understanding about air conditioner testing methods and energy efficiency calculation methods in accordance with international standards. GDE staff also commented that they learned about EE standards and certification through their participation in project training.

In light of the trend in the number of EE test reports of QUATEST 1, 3, and TVCI (Table 2), which was mentioned in the indicator of Output 2, as the basis for judging the improvement of test implementation capacity for QUATEST 1, 3, TVCI, there have been a certain number of tests reports from 2017 to 2019 after the project was completed at the end of 2016. The number of tests does not necessarily increase every year and fluctuates each year. This is because, while it is necessary to carry out an energy-saving test for each new model, the schedule for developing new models of air conditioners and refrigerators depends on the strategies and circumstances of respective manufacturers. In addition, once certification of the energy saving label is obtained, it is valid for three years. Thus it may not be necessary to obtain certification of the energy saving label every year.

Table 2: Number of EE Test Reports

Laboratory	Category	Year						
		2013	2014	2015	2016	2017	2018	2019 (As of Nov.)
TVCI	Refrigerator	153	164	182	148	152	125	147
	Air conditioner	294	179	248	264	257	261	233
QUATEST 1	Refrigerator				155	67	138	86
QUATEST 3	Refrigerator		20	46	306	240	242	203
	Air conditioner				127	73	61	38

Source: Answers to the questionnaire to each institution

In interviews with Japanese experts, QUATEST 1, 3, TVCI on the Vietnamese side, during the ex-post evaluation, they affirmed that the project improved the laboratories' capacity of conducting more appropriate and accurate energy-saving tests using the measuring equipment. All target group institutions highly valued the guidance of Japanese experts, and stated that the project has enabled more accurate test results. In the opinion of EESDD and BOA, they evaluated that the capacity of these laboratories was improved by the project.

At the time of the ex-post evaluation, in interviews with Japanese experts and BOA and EESDD on the Vietnamese side, as well as at the time of the terminal evaluation, it was found that through project activities such as the joint evaluation conducted with the experts, their capacity in the certification of EE laboratories for air conditioners and refrigerators had improved. In the opinion of the director of BOA, the teaching method of Japanese experts was impressive, it was good to teach theory first followed by practical training that actually showed how to measure and calculate using the equipment. The staff who participated in the training stated that they acquired practical knowledge after participating in the training. The Deputy Director of EESDD pointed out that it was good that they were able to discuss energy conservation policies and standard setting and energy saving incentives with the ministries and agencies during the training period in Japan.

As a result of the project, two laboratories, QUATEST 1 and 3 that were certified as refrigerator EE testing laboratories, as well as TVCI, which received guidance from Japanese experts in the project, have continued the testing work every year since the end of the project. According to an interview with a technical staff member of Panasonic Corporation in Viet Nam, they appreciated that good staff members at QUATEST 1, 3 and TVCI were trained by Japanese experts. The test results were accurate and always presented on time.

In the light of above-mentioned evidence, the project purpose has been achieved.

3.2.2 Impact

3.2.2.1 Achievement of Overall Goal

Although the actual performance indicator of the overall goal was not available⁵, by regulation (MOIT Circular No.36/2016/TT-BCT), products without energy saving labels cannot be sold in the market, as pointed out at the terminal evaluation. At the time of the ex-post evaluation, when home electronics mass retailers (2 locations in Ho Chi Minh, 2 locations in Hanoi) were interviewed, all air conditioning and refrigerator products had energy-saving labels attached. Moreover, as shown in Table 2, the number of energy-saving tests at each

⁵ When requesting EESDD to provide data on the share of EE labeled air conditioners and refrigerators to the total in the market and the number of applications and registrations, it was difficult to obtain the data on application and registration of only air-conditioners and refrigerators because one company usually applied for several products despite records on application and registration number by company.

laboratory has remained at a certain figure every year, thus the number of applications and registrations of energy-saving label products should be increased.

Based on enforcement of the circulation and the results of interviews with home electronics mass retailers, energy-saving products (air conditioners and refrigerators) are disseminated 100% in Viet Nam, and the overall goal is considered to have been achieved.

Table 3: Achievement of the Overall Goal

Overall Goal	Indicator	Actual
Energy efficient products are prevailed in accordance with the energy efficiency policies	1. Increase in the share of energy efficiency labeled products in the Viet Nam Market	Achieved. Due to unavailability, the data for this indicator could not be obtained. There are regulations requiring energy-saving labels to be attached to all products. In the interview with some home electronics mass retailers, all air-conditioners, and refrigerators have EE labels. Accordingly, the share of energy efficient products in the Vietnamese market has been increasing.
	2. The number of application and registration of energy efficiency labeled products by designated energy efficiency testing laboratories	Achieved. The number of applications/registrations of air conditioners and refrigerators has not been compiled and therefore could not be obtained. However, the number of applications and registrations are increasing based on the number of EE test reports at each laboratory.

Source: Terminal evaluation report “Socialist Republic of Viet Nam: Project on Strengthening the System and Operation on Standards and Conformance for Energy Efficiency and Labeling” (June 2016), and answer to the ex-post questionnaire and interview of stakeholders.

Note: Target energy efficient products in this project are air-conditioners and refrigerators.

3.2.2.2 Other Positive and Negative Impacts

The following points were recognized as other impacts of this project.

(1) Benefits to Japanese home appliance manufacturers

Against the background of economic growth in Viet Nam, the income of urban consumers has been increasing and there is a growing demand for home appliances with better performance and quality. Japanese home electric appliances tend to be favored by middle- and high-income consumers in urban areas as a highly reliable brand of equipment, which is the reason for purchasing Japanese products. Although this tendency has been noted, in interviews with a few home electronics mass retailers and Vietnamese counterparts, their comment was that energy-saving labels was a criteria when purchasing air conditioners and refrigerators. With this project, the threshold of energy saving level was reviewed and energy saving labeling based on more accurate measurement became possible, which seems to have been a driving force in the increase of sales for Japanese home electric appliance manufacturers that produce high energy saving equipment.



Figure 1: Energy Saving Label



Photo: Energy saving labeled Daikin Air-conditioners and Panasonic Refrigerators

As examples of Japanese companies that have a relatively high market share of air conditioners and refrigerators in Viet Nam, during the ex-post evaluation survey, an interview of Daikin sales representatives and technical staff and Panasonic technical staff was conducted in order to hear the opinion of the manufacturer. As a result, Daikin's inverter air-conditioners (almost all products have a 5-star energy-saving level) have been increasing in sales for the past five years, and Panasonic's air conditioners and refrigerators are also increasing in sales. Although the high energy efficiency indicated in the energy-saving label is not always the first criteria in consumer selection of air conditioners, Daikin commented that the introduction of the energy-saving label system has contributed to an increase in their product sales and Panasonic technical staff also commented that the introduction of the energy-saving label system could be pointed out as one of the reasons why the company's market share in Viet Nam increased.

In addition, according to an interview with Daikin, the new model air conditioners were imported from a factory in Thailand; and it was the first pilot case to sign a memorandum of understanding with MOIT in August 2019, which approves the overseas energy saving test results. QUATEST 3 in Viet Nam was about to check the results of the energy saving test in Thailand (refer to “3.4 Sustainability” for details). In addition, for some of the conventional models, a factory for air conditioners was built in the suburbs of Hanoi and production has begun with the aim of further increasing sales.

The increase in the number of laboratories also had the impact of reducing costs for manufacturers. According to interviews with EESDD, QUATEST 3 and Daikin, the fact that this project enabled an energy-saving test for air conditioners in QUATEST 3 in Ho Chi Minh had a significant impact on cost and time saving for companies importing air-conditioners via Ho Chi Minh, since they used to transport their products to the laboratory in Hanoi for EE tests before the project.

(2) Increase in consumer interest in energy-saving products

As a result of the increased number of laboratories and improved testing capacity of laboratories through this project and having promoted the dissemination of energy-saving labels on air conditioners and refrigerators, more consumers saw the energy-saving labels at the shops, thereby contributing to enhanced consumer awareness of energy conservation. In an interview with QUATEST 1, an opinion was expressed that not only air conditioners, but also refrigerators tended to be favored in the market as high energy-saving products. In interviews with consumer electronics retailers, it was found that although energy saving levels were not always the first criteria because brands and prices tended to be considered first when purchasing air conditioners and refrigerators, the level of energy saving was one of the reasons consumers purchased a product.

Viet Nam began VNEEP in 2006 before the implementation of this project, and it has been conducting awareness raising activities for consumers to enhance their awareness about energy conservation. The program has been continuously implemented even at the time of the ex-post evaluation, making the effort to raise consumer interest in energy-saving products. Simultaneously with this policy, consumers are becoming increasingly aware of energy conservation labels.

(3) Contribution to climate change programs

In the terminal evaluation report of this project, revisions of the EE test standard for refrigerators and air-conditioners in this project were incorporated into the policy action plan of SP-RCC under the cooperation of the Japanese ODA loan “Support Program to Respond to Climate Change (SP-RCC).” The reports mentioned that this inclusion led to a strong commitment by the Vietnamese government and had derived a great effect. This project directly contributes to the reduction of CO₂ that contributes to climate change by reducing the energy consumption volume with the diffusion of products with high energy-saving levels. It can be said that this fact became a concrete measure for the mitigation of climate change, the Green House Gas (GHG) emission regulations targeted by SP-RCC.

Through project implementation, the project purpose of “strengthening the test operation system of the EE laboratory for air conditioners and refrigerators” was achieved by improving the capacity and increasing the number of laboratories. “Dissemination of products (air conditioners and refrigerators)” was confirmed, and there were impacts on the benefits of Japanese home electric appliances manufacturers, enhanced consumer awareness of energy conservation, and contributions to Viet Nam's climate change countermeasures. As seen in the above, its effectiveness and impact are high.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

Table 4 below shows the actual results at the time of project completion against the plans at the time of the detailed plan formulation study of the project. Regarding the dispatch of experts, in addition to the chief advisor, other than the scheduled expert dispatch, the experts were dispatched timely according to the project progress and the situation of counterpart organizations. In the interviews during the ex-post evaluation, Japanese experts were generally evaluated to be highly satisfactory by Vietnamese counterpart personnel.

Table 4: Inputs for the Project

Inputs	Plan	Actual
(1) Experts	Long-term and Short-term experts Total: Approximately 150 MM (Chief Advisors, Energy Efficiency Performance Test of Air Conditioners, Energy Efficiency Performance Test of Refrigerator, Project coordinator and human resource planning, other)	Total 15experts Total Approximately 146.12MM 4 Long term experts (Chief Advisor, Energy Efficiency Performance Test of Air Conditioners, Energy Efficiency Performance Test of Refrigerator, Project coordinator) 11 Short-term experts (Revision on the Air Conditioners EE standard, Accreditation on Laboratories of EE test of Refrigerator, Accreditation on Laboratories of EE test of Air-Conditioners, and other)
(2) Trainees received	Counterpart Training in Japan and in the Third Country	35 persons (Training in Japan, 5 times)
(3) Equipment	Refrigerator EE testing equipment (planned to be installed at QUATEST 1), Air-conditioner EE testing equipment (planned to be installed at QUATEST 3), office equipment, etc.	Air-conditioner EE testing equipment, Refrigerator EE testing equipment, office equipment, vehicle, etc. (total Approximately 230 million Yen)
(4) Project activity cost (Local Cost)	Local cost for seminars, workshops, OJT	Approximately 26.6 million yen (Employment of part-time worker, domestic travel expense, telecommunication fee, etc.)
Japanese Side Total Project Cost	454 million JPY	464 million JPY
Vietnamese Side Total Project Cost	Cost for supply or replacement of equipment, machinery, instrument, tools, spare parts, installation fee for equipment, utilities, etc.	2,968 million VND (Approx. 452 thousand yen)* office interior, tools, utilities, etc.

Source: Record of Discussion of the Project (September 2013), "Terminal Evaluation report, Socialist Republic of Viet Nam: Project on Strengthening the System and Operation on Standards and Conformance for Energy Efficiency and Labeling" (June 2016), "Project Final Report on Strengthening the System and Operation on Standards and Conformance for Energy Efficiency and Labeling, Socialist Republic of Viet Nam" (November 2016)

Note: * Total amount at the time of Terminal Evaluation, April. 2016. Based on JICA exchange rate 1 VND=0.005027 Yen as of May 2016

3.3.2 Elements of Inputs

3.3.2.1 Project Cost

The amount of cooperation for this project slightly exceeded the original plan (102% of the plan). The reason for slightly exceeding the plan seems to be due to the difference in the number of training received and the actual price of the equipment procured. These changes are evaluated to be appropriate as they are the result of a response to what was required.

3.3.2.2 Project Period

At the time of planning, the project period was from October 2013 to September 2016 (three years), however, the actual cooperation period was three years from November 2013 to November 2016, which was within the planned three years.

From the above, although the project period was within the plan, the project cost exceeded the plan. Therefore, the efficiency of the project is fair.

3.4 Sustainability (Rating: ③)

3.4.1 Related Policy and Political Commitment Aspects for the Sustainability of Project Effects

Regulations related to energy-saving labels have been promulgated even after the project was completed as follows, and the obligations of energy-saving labels have become even more consolidated. Moreover, the national program related to energy efficiency are ongoing. Therefore, the sustainability of policy and political involvement is high.

[Regulations concerning energy-saving labels issued after the project]

- *Circular No.36/2016/TT-BCT* (December 2016) promulgated immediately after the completion of the project describes the type of energy saving label testing and certification, which standard of what organizations should be adopted. According to this circular, the EE test results of overseas laboratories in addition to the target laboratories of the project can be admitted in Viet Nam if they meets international standards. As a result of the survey conducted in this ex-post evaluation however, each manufacturer of air conditioners and refrigerators basically obtain the energy efficiency figures and energy saving labels certified by QUATEST 1, 3 or TVCI in Viet Nam. In August 2019, the application of certification based on the test results of the Daikin air conditioner in Thailand began as the first time pilot case.
- According to *the Prime Minister's decision No. 04/2017/QĐ-TTg* (March 2017), a list of the equipment that require energy-saving labels was published including air conditioners and refrigerators.

- According to *the Prime Minister's decision No. 24/2018/QĐ-TTg* (May 2018), products that do not meet the national minimum energy efficiency standard (MEPS) of air conditioners and refrigerators are prohibited from being imported, manufactured or traded in Viet Nam.

[National programs related to energy conservation]

MOIT formulated the *National Energy Efficiency Program 2019-2030 (VNEEP 2019-2030)* in March 2019 as an extension of the national energy efficiency program that has been implemented since 2006, promoting further energy conservation policies. In addition, the government formulated a policy on “Cleaner Production and Sustainable Consumption” as a goal to be achieved by 2030, and if this policy is approved, the energy-saving products certified by the energy-saving label will be further promoted.

3.4.2 Organizational Aspects for the Sustainability of Project Effects

From the following points, it was evaluated that there were no problems affecting the sustainability at the time of the ex-post evaluation in the organizational structure and staff assignment of the target group of the project.

- As a result of interviews with QUATEST 1 and QUATEST 3, each organization has an independent accounting system. However, there was an opinion that the number of staff in charge of EE testing was not particularly in shortage given the number of products to be tested. It was confirmed that the staff who participated in the training session of the project and received guidance from the Japanese experts continued to be in charge of the same work at each institution. Thus there was no problem in that regard.
- In an interview with VSQI under STAMEQ, which is in charge of setting national standards, drafting and promulgating legislation, it was also stated that there were no institutional issues.
- The department in charge of energy conservation of GDE of MOIT became EESDD due to reorganization after the project was completed. At the time of GDE, there were eight full-time staff; however, the newly organized EESDD has a total of 20 staff. There was no particular problem with the system.

3.4.3 Technology required to sustain the effects

It has been evaluated that there are no problems with the technical aspects of the test capabilities of QUATEST 1, 3 and TVCI based on the following points.

- Regarding air conditioner EE tests, Japanese experts said that once every three years, it was necessary to carry out a mutual evaluation test of the same products with other test laboratories and compare them to confirm test capability. In recent years, an international

workshop⁶ has been held every year to do a round robin test (a method of collaborative work to measure the same product in order to verify the reliability of the measuring method and measuring equipment including the skill of the measurer by multiple test laboratories). QUATEST 3 and TVCI participated in this workshop and they did the mutual evaluation. According to the mutual evaluation results of air conditioners in November 2019, the workshop organizer did not point out that the test results of both QUATEST 1 and TVCI institutions showed any problems with the test method.

- Regarding the refrigerator EE test, according to QUATEST 1, they sometimes confirmed the results by comparing it with the test results of QUATEST 3 or TVCI.

3.4.4 Finance required to sustain the effects

At the time of the ex-post evaluation, no financial problems were found to sustain the effects of this project. According to the results of interviews with QUATEST 1 and 3, TVCI, it was found that there was no financial problem because each organization covered necessary expenses such as personnel expenses and O&M expenses for equipment with the income from the test fee.

3.4.5 Operation and maintenance status of equipment provided

When a field survey was conducted to confirm the set of test equipment such as air conditioners and refrigerators provided to QUATEST 1 and 3 by this project, it was confirmed that they were operated and maintained properly without any problems such as breakdowns.

As in the above, no major problems have been observed in the policy background and the institutional/organizational, technical, financial aspects. Therefore, sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The purpose of this project was to strengthen the test operation system of the EE laboratories for air conditioners and refrigerators, thereby aiming to spread energy-saving products (air conditioners and refrigerators) based on Viet Nam's EE policy. The project is highly relevant since it is consistent with Viet Nam's development plans and policies at the time of the ex-ante evaluation, the needs for setting energy-saving standards and strengthening the test capacity of implementing agencies and related organizations, and is consistent with Japan's development assistance policy at that time. The project improved the capacity of the government agencies that

⁶ Collaborative Labelling and Appliance Standards Program (CLASP), a private organization for strengthening energy efficiency regulations and consistency, hosted this workshop. Policy makers, regulators, and technical staff of laboratories from 8 ASEAN countries such as Viet Nam, Thailand, Laos, Cambodia, Myanmar, the Philippines, Indonesia, Malaysia, participated in the workshop held in Ho Chi Minh City on November 2019.

set energy-saving standards and established laws and regulations for home electric appliances in Viet Nam, and of the agencies that certify EE testing laboratories, and also strengthened the test system and staff capacity of the laboratories that conduct EE tests and certify energy efficient labels. As a result, the diffusion of air conditioners and refrigerators with EE labels based on qualified test results was promoted in the Vietnamese domestic market. At the same time, the project benefited the Japanese home electric appliances manufacturers of air conditioners and refrigerators and enhanced awareness of energy saving among consumers, and contributed to climate change countermeasure programs. Therefore, the effectiveness and impacts of the project are high. The efficiency of the project is fair because the project period was within the plan, whereas project cost slightly exceeded the plan. The sustainability of the effects produced by this project is high as the project has no problems in policy/political support, and from an institution/system, technical, and financial aspect.

In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

None.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

Conditions for penetrating the energy-saving label system and disseminating energy-saving equipment in the target country

Under the energy efficiency policy at the national level with a high commitment by the Vietnamese government since 2006, the project was implemented to support the revisions of the national energy efficiency standards for air conditioners and refrigerators in Viet Nam and to improve the capacity of test methods at laboratories. On the consumer side, it coincided with a rising urban consumer income due to the recent economic growth of Viet Nam; and consumers were able to afford energy efficient equipment and had a better understanding about the benefits of energy efficiency.

One of the reasons why capacity improvement was achieved in Viet Nam is because Vietnamese engineers had the basic foundation to learn the test methods taught by Japanese experts, and they were highly motivated to learn. Moreover, since 2008, JICA started technical cooperation in Viet Nam to prepare an energy efficiency master plan, and through support to establish an energy efficiency training center, JICA became familiar with the situation and needs of the counterpart country, and also worked with counterpart organizations such as MOIT. In addition, when

implementing the project focused on the labeling of energy-saving equipment such as air conditioners and refrigerators and strengthening the operational system, the accuracy in grasping the energy-saving needs of home appliances was enhanced, which was one of the underlying reasons that increased the effectiveness of the project.

To save energy as a countermeasure against the climate change was described in the “Intended Nationally Determined Contribution: INDC” as a Viet Nam’s policy for continuous efforts. Under this international commitment, in order to ensure the spread of energy-saving equipment through the establishment of an energy-saving label system, it is necessary to confirm the environmental conditions under which the energy-saving equipment will be used during the project preparation survey. In other words, the following points are critical: analyzing the policy/legal system of the counterpart country; the economic/social situation and the capacity of the stakeholders; whether there is a high level of commitment from the counterpart organizations; whether counterpart staff have a basis for understanding the content of the guidance; whether there is a political power that permeates the system from the top down; whether electricity cost reductions affect households or companies' finances and whether consumers understand it, and also whether purchasing power has reached a certain level. It can be said that an analysis of the abovementioned issues was the key to enhancing effectiveness and impact. In this project, the aforementioned conditions existed and became the factors that led to the success.

End