

Socialist Republic of Viet Nam

FY2016 Ex-Post Evaluation of Japanese ODA Loan Project

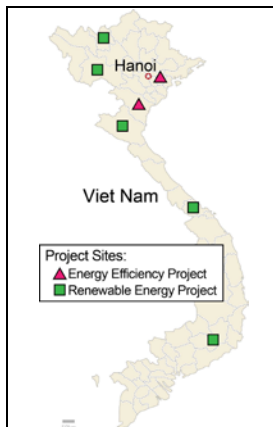
“Energy Efficiency and Renewable Energy Promoting Project”

External Evaluator: Tomoo MOCHIDA, OPMAC Corporation

0. Summary

The Project aimed to provide Vietnamese enterprises, sub-project owners, with medium- and long-term funds, through the Vietnam Development Bank (hereinafter referred to as “VDB”), for the promotion of energy efficiency activities and the utilization of renewable energy, and at the same time to promote awareness campaigns to encourage investment in these fields, thereby accelerating the efficient utilization of energy by enterprises, the pursuit of environmental conservation and sustainable economic development in the country. Furthermore, the Project was intended to assist VDB in strengthening its financing capacity for areas such as the energy efficiency of enterprises, by utilizing the experience of environmental financing in Japan. The Project is highly relevant to the development policy and needs of the Vietnamese government as well as to Japan’s ODA policy from the perspective that it supported efficiency of energy utilization and diversification of energy supplies through the management of the environmental burden. While the actual cost of the Project fell within the planned one, the Project period exceeded that planned. Therefore, the efficiency of the Project is fair. Under the Project, medium- and long-term loans required for the utilization and promotion of energy efficiency and renewable energy by enterprises were extended and awareness on the part of the sub-project owners who received sub-loans was raised. However, it has not been sufficiently confirmed either qualitatively or quantitatively as to whether or not awareness of Vietnamese enterprises was raised towards the utilization and promotion of energy efficiency and renewable energy to the extent that it was intended it should be achieved by the Project. At the level of sub-project owners who had received sub-loans, efficiency of energy utilization was promoted and contributions were observed towards environmental conservation and sustainable economic growth through the substitution of energy to control the environmental burden, and to the mitigation of global climate change through reduction of greenhouse gas, to a limited extent. Therefore, the effectiveness and impacts of the Project are fair. As for sustainability, some minor problems were observed in terms of the technical and current status of the Project although sustainability was foreseen on the institutional and financial aspects. Therefore, the sustainability of the Project effects is fair. In light of the above, this Project is evaluated to be partially satisfactory.

1. Project Description



Project Locations



Hydropower Plant in Nghe An Province

1.1 Background

At the time of the appraisal in 2009, Viet Nam had experienced an increase in energy demand due to rapid economic development, with an annual growth rate of about seven percent per year over the past several years. The structure of energy demand showed a large expansion of energy demand in the industrial sector, and future energy demand was also expected to increase, centering on the industrial sector. Therefore, it was an urgent issue to make efficient use of energy (on the side of demand) as well as to develop and diversify new supply sources of energy by controlling the environmental burden (on the supply side). On the demand side, energy utilization in Viet Nam had been inefficient and the introduction of renewable energy had not yet progressed. In order to cope with rapidly increasing energy consumption, the government strove to take measures for the efficient utilization of energy through the establishment of legal frameworks concerning energy efficiency. The government also took measures for the efficient utilization of energy through the introduction of equipment with high energy efficiency, and the diversification of the energy supply sources by accelerating investment in renewable energy.

On the other hand, in the industrial sector where the energy demand was relatively high, the level of understanding on the necessity for energy efficiency and renewable energy was generally low. It was deemed difficult to promote energy efficiency activities by leaving it simply to the initiatives of the private sector.

1.2 Project Outline

The Project aimed to provide medium- and long-term loans required for the utilization, promotion of energy efficiency and renewable energy by Vietnamese enterprises through the implementation of two-step loans and so on by VDB. At the same time, the aim was to raise

awareness on the part of these enterprises, thereby contributing to an increase in the efficiency of energy utilization at enterprise level, and an acceleration in environmental conservation and the sustainable economic growth of Viet Nam, further mitigating global climate change.

Loan Approved Amount/ Disbursed Amount	4,682 million yen / 3,418 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	October 2009 / November 2009
Terms and Conditions	<p>Interest Rate 0.25 % (0.01 % for consultant portion)</p> <p>Repayment Period 40 years (Grace) (10 years)</p> <p>Conditions for Procurement General Untied</p>
Borrower / Executing Agency	The Government of Socialist Republic of Viet Nam / The Vietnam Development Bank (VDB)
Project Completion	January 2015
Main Contractor (Over 1 billion yen)	NA
Main Consultant (Over 100 million yen)	NA
Feasibility Studies, etc.	The Special Assistance for Project Implementation for Energy Efficiency and Renewable Energy Promoting Project in Vietnam (2010)
Related Projects	<p>(Related Technical Cooperation)</p> <ul style="list-style-type: none"> • The Study on National Energy Master Plan in Vietnam (2006 - 2008) • The Study on Master Plan for Energy Conservation and Effective Use in the Socialist Republic of Viet Nam (2008 - 2009) • Project for Institutional Capacity Development for Infrastructure Finance in Vietnam (2008 - 2012) <p>(Multilateral Agencies)</p> <ul style="list-style-type: none"> • The World Bank (WB): Demand-Side Management and Energy Efficiency Project (2004 - 2007) • Asian Development Bank (ADB): Supporting Implementation of the National Energy Efficiency Program Project (2008 - 2010) • United Nations Development Programme: Promoting Energy Conservation in Small and Medium Scale Enterprises (2005 - 2010), etc.

2. Outline of the Evaluation Study

2.1 External Evaluator

Tomoo Mochida, OPMAC Corporation

2.2 Duration of Evaluation Study

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

Duration of the Study: December, 2016 - February, 2018

Duration of the Field Study: February 18, 2017 - March 22, 2017,

May 13, 2017 - May 26, 2017

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

3.1 Relevance (Rating: ③²)

3.1.1 Consistency with the Development Plan of Viet Nam

At the time of the appraisal in 2009, the Vietnamese government was striving to take measures for the efficient use and the diversification of energy supply sources in order to cope with rapidly increasing energy consumption. On the demand side, various measures were swiftly adopted in order to address issues concerning improvement of energy efficiency and the implementation of energy efficiency activities. Those measures included issuance of a government decree on thrifty and efficient use of energy in 2003 (102/2003/ND-CP), the establishment of energy conservation centers in the provinces, and enactment of a law on economical and efficient use of energy (50/2010/QH12). On the other hand, with regard to the diversification of supply sources, Viet Nam's national energy development strategy up to 2020, with a 2050 vision (1855/2007/QD-TTg), was approved in 2007. This set the target volume of electricity to be generated by renewable energy in 2010 and 2020 at three percent and five percent of the total amount of electricity to be generated, respectively. Furthermore, in order to take measures against climate change, including the utilization and acceleration of energy efficiency and renewable energy, the Ministry of Natural Resources and Environment, being the focal ministry among others, laid out "*the national target program to respond to climate change*" (Prime Minister Decision 158/2008/QD-TTg).

At the time of the ex-post evaluation, the national master plan for power development for the 2011 - 2020 period with a vision to 2030, (Prime Minister Decision 1208/2011/QD-TTg) had been issued in 2011 and revised in 2016 (Prime Minister Decision 428/2016/QD-TTg). More emphasis was placed on the development of renewable energy and the liberalization of electricity markets. According to the revised plan, although dependence on electricity to be generated by hydropower plants in the field of renewable energy would be decreased in terms of the ratio, it was planned that the generation capacity would be enhanced.

Furthermore, the decree on state investment credit and export credit implemented by VDB shows a list of investment projects eligible for investment credit where preferential interest rates will be applied. In Government Decree (32/2017/ND-CP) issued on March 31, 2017,

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

² ③: High, ②: Fair, ①: Low

investment projects relating to energy efficiency, a new category, were listed as eligible projects for financing based on experience gained under the Project.

Furthermore, at the time of the ex-post evaluation, it was understood that measures had been taken against issues caused by global warming. For example, these include policies such as the National Climate Change Strategy (approved by Prime Minister Decision 2139/2011/QD-TTg), which set goals including the reduction of greenhouse gas emissions.

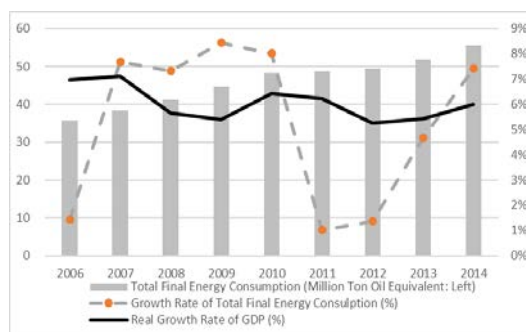
The Project is deemed to have been relevant to the direction of the development policies in Viet Nam because it has provided medium- and long-term funds required for the utilization and promotion, etc. of energy efficiency and renewable energy in order to improve the efficient use of energy and raise awareness on the part of enterprises.

3.1.2 Consistency with the Development Needs of Viet Nam

At the time of appraisal, the demand for energy continued to increase due to the rapid growth of the Vietnamese economy (final consumption of energy increased about 2.8 times over a period of 19 years from 16.06 million Tons of Oil Equivalent in 1990 to 44.67 million Tons of Oil Equivalent in 2009.³)

On the demand side, energy utilization in Viet Nam was not efficient and it was deemed that there was a high potential for energy savings, especially when compared with the conditions in Japan.

For example, the total primary energy supply⁴ in 2005 in Viet Nam was 0.48 Tons of Oil Equivalent per thousand US dollars in 2010 prices. In terms of the amount, Viet Nam was ranked as the second largest country among major Asian countries after the People’s Republic of China (0.50 in the same measurement unit). A large difference was observed compared with that of Japan (0.09 in the same measurement unit). The growth of final energy consumption slowed down over the period from 2011 to 2012, but energy demand exhibited an increasing trend after 2012 (as seen from Figure 1, the total final consumption of energy in 2014 was 55.53 million Tons of Oil Equivalent, increasing 1.24 times over a period of five years from 2009). The total primary energy supply in 2014 in Viet Nam was 0.46 Tons of Oil Equivalent per thousand US dollars in 2010 prices. In terms of the amount,



Source: Energy balance flows of IEA for total final consumption and IMF for the real growth rate of GDP

Figure 1: Historical Trend of Total Final Consumption and the Real Growth Rate of GDP

³ Information from the website of the International Energy Agency (hereinafter referred to as “IEA”).

⁴ An overall measure to evaluate the energy efficiency of a nation’s economy. Statistical data is quoted from the IEA website.

Viet Nam had the largest among major Asian countries, exceeding the amount of the People's Republic of China (0.35 in the same measurement unit) and followed by Indonesia (0.24 in the same measurement unit). A large difference was observed if compared with that of Japan (0.07 in the same measurement unit).

As seen above, room for potential improvement of energy efficiency is found both at the time of appraisal and ex-post evaluation. Therefore, the Project is consistent to development needs.

3.1.3 Consistency with Japan's ODA Policy

In the "Country Assistance Program for the Social Republic of Viet Nam" prepared in July 2009, the "promotion of economic growth and strengthening of international competitiveness" was regarded as one of the priority areas for assistance, under which cooperation in terms of the stable supply of resources and energy was proposed in order to continue assistance for the promotion of energy efficiency in response to an increasing trend in electricity demand. Furthermore, in the Country Assistance Implementation Report prepared by the Japan International Cooperation Agency (hereinafter referred to as "JICA") in April 2009, "promotion of economic growth and strengthening of international competitiveness" was considered as one of four priority areas for assistance and measures were to be taken for the promotion of energy efficiency. Thus, it was confirmed that the Project would be consistent with these assistance policies.

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

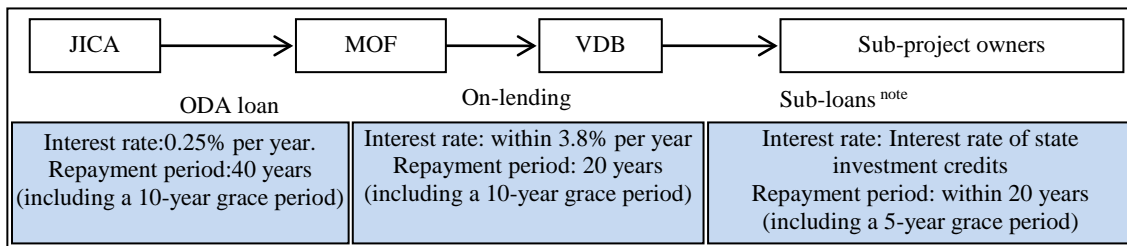
3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

The scheme of the Project was that the borrower, the Ministry of Finance (hereinafter referred to as "MOF") of the Vietnamese government, transferred an ODA loan to VDB, the executing agency, which, in turn, on-lent sub-loans to sub-project owners (end-users).⁵ Interest rates of state investment credits would be applied to sub-loans from VDB to

⁵ The repayment period of the ODA loan is different from the one from VDB to MOF. The reason behind this difference is considered to be that Article 14.2 of Prime Minister Decision 181/2007/QĐ-TTg, which regulates on-lending terms and conditions of ODA loans to financial institutions, set a maximum repayment period of 20 years, including the grace period. Later, Government Decree 78/2010/ND-CP was promulgated to replace the Prime Minister Decision. Article 11.1c of the Government Decree stipulates that the on-lending term and grace period should be equal to the term and period specified in the relevant foreign loan agreement, in the case of on-lending of ODA loans to financial institutions for the implementation of credit programs. According to MOF, it would be possible to review the on-lending terms and conditions if VDB so requests. VDB plans to start discussions with MOF at an appropriate time. However, MOF was of the opinion that the current terms and conditions of the on-lending loan to VDB were preferential ones and that a review would be made in the light of the worsening fiscal conditions of the government.

sub-project owners.⁶



Source: Information provided by JICA and VDB

Note: According to information provided by JICA, the prevailing interest rate of state investment credits at the time of concluding a sub-loan agreement was to be applied as a fixed rate to the interest rate of the sub-loan. However, variable interest rates, which change in accordance with changes in the interest rate of state investment credits, were applied to all the sub-project except one.

Figure 2: Financing Scheme under the Project

Figure 3 below shows the amount of sub-loans from VDB to sub-project owners together with the real growth rate of the Gross Domestic Product (GDP) in order to illustrate the economic conditions at the time. More than 50% of the Japanese ODA loan had been on-lent from VDB to sub-project owners as of the end of FY 2012. However, on-lending stagnated in 2013 and 2014. The initial allocation of the two-step loan portion of the ODA loan was made in such a way that three billion Japanese yen was distributed to energy efficiency sub-projects while the remaining one billion Japanese yen was given to renewable energy sub-projects. However, in 2013, VDB and JICA agreed to adjust the fund allocation based on the actual demand for financing in the respective fields due to the following reasons: (1) because the Project was promoted in a period of recession in the Vietnamese economy, steel and cement companies suspended their investment in energy efficiency, resulting in very small demands on funding investments in energy efficiency (the introduction of technology for energy efficiency and saving does not necessarily lead to a noticeable improvement in the financial condition of sub-project owners⁷); (2) in contrast, the funding demand for renewable energy sub-projects was still high; (3) it was found necessary to accelerate the Project while the deadline of the final disbursement was approaching; (4) a list of standard technology and equipment for energy efficiency was not sufficient when it was applied to the Vietnamese contexts⁸; and (5) seven out of eight candidate sub-projects identified through

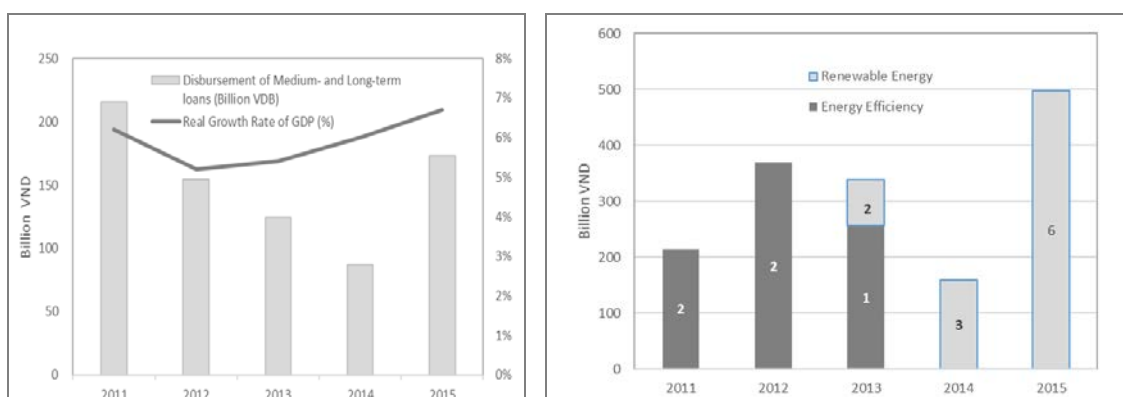
⁶ Government Decree 106/2008/ND-CP set the interest rate of the state investment credit at a level equal to the interest rate of the government bonds of a five year-term plus one percent per year. Later, Government Decree 75/2011/ND-CP stipulated that it must not be lower than the average interest rate for capital sources plus the operating expenses of VDB. Documents provided by JICA at the time of appraisal stated that the interest rate of state investment credit would be determined by MOF in accordance with changes in the market rates. In fact, it was the interest rate announced through the MOF Circular that was actually applied during the Project period.

⁷ Although VDB concerns over insufficient financial capacity on the part of potential sub-project owners, VDB's concern does not necessarily indicate that VDB considered that energy efficiency sub-projects would not be profitable.

⁸ It was pointed out that sub-project owners could not change or add a single unit of equipment but needed to change the entire operation system when technology for energy efficiency was to be newly introduced.

the Special Assistance for Project Implementation (hereinafter referred to as the “SAPI Study”) did not have real demands for sub-loans or did not meet requirements of sub-loans, which made VDB waste a lot of time for accessing and persuading these sub-projects. Removal of the fund allocation between energy efficiency and renewable energy portions helped improve efficiency of the Project, which showed the flexibility of JICA and VDB during implementation of the Project.

As a result of removing the allocation of two-step loan portions by type, the sub-loan amount of 1.98 billion Japanese yen was extended to cover energy efficiency sub-projects while the sub-loan amount of 1.393 billion Japanese Yen was to cover renewable energy sub-projects, exceeding the planned amount of 1.0 billion Japanese Yen. As shown in the outstanding amount of sub-loans by type in Figure 4 below, no sub-loans were extended in the field of energy efficiency after 2013, clearly demonstrating a trend after 2013 when the allocation by type was adjusted.⁹



Source: Information provided by VDB. IMF Staff Report for the 2014 and 2016 Article 4 Consultation for real growth rate of GDP.

Note 1: Figure 3 shows the yearly trend of medium- and long-term loans extended to sub-project owners by VDB. VDB received the funds from MOF and managed them in the project operating account, which administered sub-loans to sub-project owners. Because this account also handled interest revenues, the transfer of VDB funds, etc., the total amount of medium- and long-term loans provided to sub-project owners slightly exceeded the amount on-lent from MOF. The real growth rates of GDP in 2014 and 2015 are estimates.

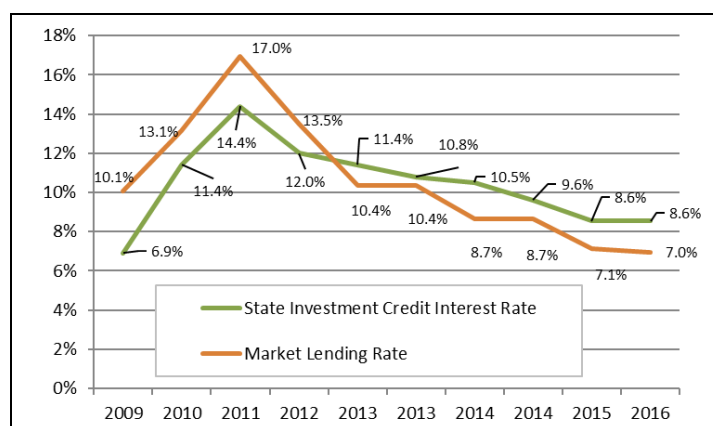
Note 2: Figures inside the bars of Figure 4 indicate the number of sub-projects. The loan amount per sub-loan for renewable energy sub-projects is smaller than that for energy efficiency sub-projects. The ceiling of a sub-loan amount per one small hydropower sub-project, for which VDB was able to extend sub-loans without the concurrence from JICA, was set at five million US dollars.

Figure 3: Amount of Disbursements from VDB to Sub-project Owners and the Real Growth Rate of GDP (Left)

Figure 4: Outstanding Amount of Sub-loans (Right)

⁹ At the time of appraisal, the amount of sub-projects in the first year of the Project, which fell into the category of highly feasible A-ranked sub-projects, was estimated to be 5.2 billion Japanese yen in total, consisting of about 3.8 billion Japanese yen for energy efficiency sub-projects with a remainder of about 1.4 billion Japanese yen for renewable energy sub-projects. Furthermore, as VDB pipeline sub-projects, 15 sub-projects were listed in the field of small-scale hydropower plants, with a total amount of 10.2 billion Japanese yen and 19 sub-projects in the field of cement, with a total amount of 6.5 billion Japanese yen.

Figure 5 below compares sub-loan interest rates (interest rates of the state investment credits) with the lending rates¹⁰ of short-term loans in the market. During the time when the interest rate was exhibiting an increasing trend,¹¹ in the initial period of the Project, the interest rates of the state investment credits applied by VDB to its sub-loans tended to be lower than the market interest rates. However, during the time when the market interest rate was on a decreasing trend, the interest rates of the state investment credits gradually slowed down its declining speed. Three out of the sub-project owners visited by the ex-post evaluation team had made prepayments. One of the reasons behind these prepayments was the decrease in the competitiveness of the interest rates of the state investment credits.¹²



Note 1: Comparison is made with the trends of the lending interest rates of VDB. MOF Circulars were referred to for the state investment credit interest rates. For the market lending rates, “Lending Rate” (line p60: average of rates at the end of the period on short-term (less than 12 months) working capital loans of four large state-owned commercial banks) were quoted from the International Financial Statistics, International Monetary Fund of 2016.

Note 2: The above figure indicates that the interest rate of the state investment credit was revised two times in 2013 and 2014, respectively.

Figure 5: Trends of Lending Rates of VDB to Sub-Project Owners (State Investment Credit Interest Rates) and Lending Rates in the Markets

¹⁰ In general, interest rates of medium- and long-term loans are determined based on the expected interest rate of short-term loans (working capital with a repayment period of less than 12 months), plus a certain premium, by fixing the loans over medium- and long-terms. Therefore, it is considered that the interest rates of medium- and long-term loans were somehow higher than those of short-term loans, as described in Figure 5. Figure 5 is intended not to compare the interest rates in the absolute values but to illustrate overall trends of movements of the interest rates of the state investment credits and the market interest rates.

¹¹ In 2011, both deposit and lending rates increased sharply due to tight monetary control, a measure taken against an increase in the inflation rate.

¹² One of the three sub-project owners, an owner of the renewable energy sub-project, was requested to make pre-payment due to violation of regulations under the Procurement Law. An interview with one of the sub-project owners (an energy efficient sub-project owner), who made prepayment of the sub-loan, revealed that the annual interest rate of the sub-loan was 11.4 % at the time when the company borrowed the sub-loan from VDB. With the application of the interest rate of the state investment credit, the sub-loan by VDB was attractive, considering that the market interest rate ranged from 14% to 16% at that time. However, according to the company, the interest rate of the state investment credit was 8.55% at the time of the ex-post evaluation, while the company had been able to borrow loans from commercial banks with a repayment period of three to seven years at a yearly interest rate of seven to seven point half percent. Thus, the competitiveness of the state investment credit interest rate decreased. On the other hand, some sub-project owners (renewable energy sub-project owners) also commented that the interest rate of the state investment credit fluctuated less compared to the market interest rate and that the state investment credit was advantageous in terms of the collateral requirements.

Under the Project, it was planned that consulting services would be provided targeting VDB and sub-project owners. The services were expected to include implementation assistance, such as assistance for the preparation of a project implementation manual (operation manual), assistance for technical aspects such as support for the technical appraisal process, and implementation of awareness-raising activities for sub-project owners.

It was planned that part of the consulting services would be carried out through the SAPI Study right after the commencement of the Project while the remainder was scheduled to be implemented through loan consultants to be employed under the ODA loan. In reality, the preparation of a project implementation manual (draft), assistance for the screening of candidate sub-projects, and two seminars to raise awareness of energy efficiency and renewable energy, were conducted under the SAPI Study.

However, loan consultants were not employed to assist in capacity improvement in terms of financing energy efficiency sub-projects, etc.¹³

3.2.2 Project Inputs

3.2.2.1 Project Cost

The planned total project cost was 5,520 million Japanese yen (out of which, the Japanese ODA loan amounted to 4,682 million Japanese yen). Out of the total amount, the two-step loan portion was 4,706 million Japanese yen in total (out of which, the Japanese ODA loan amounted to 4,000 million Japanese yen). The total project cost (actual) was 12,153 million Japanese yen, out of which the Japanese ODA loan portion was 3,418 million Japanese yen and the two-step loan portion of the Japanese ODA loan was 3,373 million Japanese yen. Although the actual disbursed amount of the Japanese ODA loan fell within the planned amount, it was far lower than the amount of the ODA loan (the ratios of the actual disbursed amounts against the planned total amounts of the ODA loan and the two-step loan are 73% and 84%, respectively).¹⁴ As explained in the previous section,

¹³ Results of interviews at the head office and branches of VDB can be summed up as having demonstrated that a sub-project was appraised at VDB branches and then at the head office after having been approved by a provincial government, such as the Provincial People's Committee (hereinafter referred to as "PPC"), the Department of Industry and Trade (hereinafter referred to as "DOIT"), the Department of Natural Resources and Environment (hereinafter referred to as "DONRE"), the Department of Science and Technology, or the Department of Construction. VDB focused on examination of the location of a sub-project site, compliance with government policy, and on economic and financial analysis. In terms of the energy efficiency sub-projects, the Energy Conservation Center (hereinafter referred to as "ECC") in Ho Chi Minh city checked the technical aspects of energy efficiency sub-projects. In cases where the relocation of local residents was required, local governments such as the District People's Committee and the Commune People's Committee monitored the relocation process under the instructions of PPC. Thus, reviews of the technical aspects of a sub-project were conducted by other organizations in this appraisal process. While the demand for sub-loans in the area of energy efficiency stagnated, no major problems were encountered in so far as financing activities were carried as they were, despite the fact that the financing system was not strengthened as a result of Project implementation. In addition, awareness-raising campaigns were considered to be basically separate to VDB activities as a financial institution.

¹⁴ At the planning stage during the appraisal, the total cost of sub-projects (i.e., "Total" of the two-step loan in Table 1 in the main text) was calculated simply by applying the financing ratio for sub-projects (85% as an upper limit) and adding the portion to be borne by sub-project owners (15 % of sub-project costs). Sub-project owners, among others,

Project Outputs, the major reason behind the utilization of the ODA loan being lower than the initial estimate is thought to be the sluggish demand for loans, especially for energy efficiency sub-projects.

Furthermore, loan consultants were not employed, as described before. In addition, support for the fees required for feasibility studies (hereinafter referred to as “F/S”) was not utilized. VDB is of the opinion that F/S should be carried out by sub-project owners with their own funds before they apply for sub-loans. It was initially found that it was difficult to utilize such funds to support the implementation of F/S.

Table 1: Project Cost (Plan/Actual)

Item	Planned		Actual	
	Total (million JPY)	Out of which: ODA loan (million JPY)	Total (million JPY)	Out of which: ODA loan (million JPY)
Two Step Loan	4,706	4,000 Out of which: Energy efficiency: 3,000 Renewable energy: 1,000	12,108 ^{note2}	3,373 Out of which: Energy efficiency: 1,980 Renewable energy: 1,393
Consulting Services	163	163	0	0
Consulting Services (support for F/S preparation fees)	30	30	10	10 ^{note3}
Price contingencies	322	230	0	0
Physical contingencies	251	211	0	0
Interest on construction	24	24	22	22
Commitment charges	23	23	13	13
Total	5,520	4,682	12,153	3,418

Source: Information provided by JICA and VDB

Note1: The exchange rate at the time of the appraisal was 0.0059 Japanese yen/Viet Nam Dong (hereinafter referred to as “VND”). The weighted average foreign exchange rate of the on-lending ODA loan from MOF to VDB was 0.0047 Japanese yen/VND.

Note 2: The estimated amount based on the results of interviews for seven sub-projects (Sub-project No. 1 to 7 as described later). In estimating the amount, the average foreign exchange rate (0.0046 Japanese yen/VND) during the Project period was applied by quoting from International Financial Statistics (2016), International Monetary Fund.

Note 3: After the completion of disbursements, the amount was refunded to JICA as an unused remaining balance.

3.2.2.2 Project Period

It was planned that the Loan Agreement (hereinafter referred to as “L/A”) would be signed in November 2009 and the Project¹⁵ completed in December 2012 (total Project period: 38 months). The L/A was actually signed in November 2009 and the Project was completed in January 2015 (total project period: 63 months). [166% over the planned period (= 63 months against 38 months)]

VDB screened energy efficiency sub-projects based on requests from sub-project owners

carried out sub-projects by utilizing other financial sources in addition to the ODA loan. Therefore, it was not appropriate to make a simple comparison between the plan and the actual based on the Project cost estimated at the planning stage. Accordingly, the plan- and actual- comparison was made only for the ODA loan portion.¹⁵ Project completion was defined as “completion of disbursements of sub-loans”.

¹⁵ Project completion was defined as “completion of disbursements of sub-loans”.

as well as on the results of the SAPI Study. However, the only one of the sub-project owners who submitted applications for sub-loans was actually selected. Due to the economic downturn during the period from 2011 to 2013, energy efficiency sub-projects were not considered as a major area for investments. Accordingly, the formulation of sub-projects using the Japanese ODA loan did not progress and the disbursement of the Japanese ODA loan was delayed compared to the original plan. Under such conditions, VDB shifted the focus of its sub-loan operations from energy efficiency to renewable energy (refer to Figure 4 above). Thus, as a result of adjustments made for the implementation of the Project in consideration of the status of the economy after commencement of the Project, the Project period was significantly longer than planned.

Although the Project cost fell within that planned, the Project period was significantly longer than planned. Therefore, its efficiency is fair.

3.3 Effectiveness¹⁶ (Rating: ②)

The Project objective was set as “provision of medium- and long-term loans required for the utilization and promotion of energy efficiency and renewable energy and the raising of awareness on the part of the enterprises involved”. The achievement level of the Project objective was examined with the following operation and effect indicators, and qualitative effects.

3.3.1 Quantitative Effects (Operation and Effect Indicators)

The operation and effect indicators of the Project are shown in the table below:

Table 2: Operation and Effect Indicators

Indicators	Base Number (2008)	Target Number (2014) 2 years after Project completion	Actual (2017) 2 years after Project completion
Number of People who attended seminars (seminars on the promotion of energy efficiency) (persons)	—	To be determined by the time the Project starts ^{note 1}	About 80 persons
The number of sub-projects implemented and the amount of medium- and long-term sub-loans extended to them ^{note 2}	—	—	8 sub-projects in the amount of 723 billion VND

Source: Information provided by JICA, VDB and others.

Note 1: The targets had not been determined at the time when the Project started.

Note 2: The indicator was added at the time of the ex-post evaluation as an indicator to examine the status of medium- and long-term loans being extended.

¹⁶ The sub-rating for Effectiveness is to be put with consideration of Impact.

- (1) Number of People who attended Seminars (seminars for the promotion of energy efficiency)¹⁷

As shown in Table 2 above, VDB held a total of two seminars in Hanoi and Ho Chi Minh City in January 2010 with the support of the SAPI Study. The seminars aimed to deepen understanding on energy efficiency systems and technology (introduction of technology and machinery eligible for sub-loans under the Project), and on the utilization of renewable energy. It was also intended that public relations activities would be carried out for promotion of the use of the two-step loan. Aside from staff members of VDB head office and branches, participants came from relevant governmental organizations, consulting firms engaged in fields relating to energy efficiency and renewable energy, and potential sub-project owners under the Project. According to VDB, the number of participants in the seminars was about 40 each and the introduction of the Japanese experience concerning energy efficiency was made in a limited way.

It was pointed out that Japanese technology and equipment in the field of energy efficiency had already reached such a high level that Vietnamese enterprises were unable to use them as useful references. Furthermore, energy efficiency would have to be promoted not simply by replacing a single unit of equipment but by changing the entire operation system (an entire chain of technology). No seminars other than the aforementioned ones supported by the SAPI Study were carried out under the Project. Promotion activities for energy efficiency were left to the initiative of the respective VDB branches.

- (2) Provision of Medium- and long-term Sub-loans required for the Utilization and Promotion of Energy Efficiency and Renewable Energy (the Number of Sub-projects implemented and the Amount of Medium- and long-term Sub-loans extended for the Sub-projects)

Medium- and long-term sub-loans required for the utilization and promotion of energy efficiency and renewable energy were provided to a total of eight sub-projects, two energy efficiency sub-projects and six renewable energy sub-projects. Out of these, the sub-projects that utilized a pool of funds (revolving funds) to be repaid by sub-project owners in addition to the initial ODA loan were the Suoi Tan 2 Hydropower Plant (Sub-project No. 5), the Nam Can 2 Hydropower Plant (Sub-project No.6), and the Suoi Chan 2 Hydropower Plant (Sub-project No.7). By making use of the ODA loan, VDB extended medium- and long-term sub-loans in a total amount of 723 billion VND (corresponding to the initial disbursements) for the utilization and promotion of energy efficiency and renewable energy. It is noted, however, that prepayments were made for three sub-projects out of these projects as already

¹⁷ As target values were not set, it was not possible to determine the achievement level at the time of the ex-post evaluation.

explained earlier.

Table 3: List of Energy Efficiency and Renewable Energy Sub-Projects to which Medium- and Long-term Sub-Loans were Extended

Sub-project No.	Sub-project	Type	Amount of ODA loan (Billion VND)	Fixed/Variable Interest Rate	Repayment period (Grace) months	Remarks ^{Note1}
1	Hoa Phat Power Station	Energy Efficiency	240.9	Variable	180 (24)	Prepayment in 2014
2	Bagasse Thermal Power Plant	Energy Efficiency	139.5	Variable	120 (24)	Prepayment in 2013
3	Hang Dong A Hydropower Plant	Renewable Energy	77.0	Variable	96 (12)	
4	Ta Trach Hydropower Plant	Renewable Energy	85.0	Variable	132 (12)	
5	Suoi Tan 2 Hydropower Plant	Renewable Energy	31.9	Variable	144 (14)	RF
6	Nam Can 2 Hydropower Plant	Renewable Energy	97.0	Fixed	120 (11)	RF ^{note2}
7	Suoi Chan 2 Hydropower Plant	Renewable Energy	43.7	Variable	144 (24)	RF
8	Dar Cao Hydropower Plant	Renewable Energy	8.0	Variable	120 (24)	Prepayment ^{note3}
Total			723.0			

Source: Information provided by VDB

Note 1: "RF" indicates sub-projects implemented with revolving funds in addition to sub-loans sourced from the original ODA loan.

Note 2: With regard to small hydropower sub-projects in the field of renewable energy, it was agreed at the time of appraisal that concurrence would be required from JICA when the sub-loan amount per sub-project exceeded five million US dollars. In October 2014, when the expiry date of the disbursement approached, VDB submitted a request to JICA for a change in the terms and conditions of a sub-loan. As the total sub-loan amount (sourced from the ODA loan) to the Nam Can 2 Hydropower Plant exceeded five million US dollars per sub-project, the credit ceiling applied for a hydropower project, VDB requested that JICA concur in the removal of the credit ceiling and in the reimbursement of the VDB funds with the ODA loan, which had already been used to finance the Nam Cam 2 Hydropower Plant. JICA concurred the request from VDB and as a result, the total disbursed amount of the ODA loan reached 297 billion VND.

Note 3: VDB requested that the sub-project owner make prepayments of the sub-loan as it had observed some problems with the sub-project owner regarding compliance with the procurement law.

3.3.2 Qualitative Effects (Other Effects)

(1) Raising of Awareness on the part of Vietnamese Enterprises regarding the Promotion and Utilization of Energy Efficiency and Renewable Energy

As the two energy efficiency sub-projects aimed to expand existing facilities, it is considered that the sub-project owners made use of the existing technology and further introduced new technology. These energy efficiency sub-projects later expanded their capacity for the generation of electricity having received assistance through the ODA loan. They earned sales revenues from electricity through implementation of the sub-projects. The Project contributed to the raising of awareness on the part of sub-project owners in the sense that they recognized an improvement in profitability with the introduction of energy

efficiency equipment, which led to additional investment by them.

Five renewable energy sub-projects visited by the ex-post evaluation team (sub-projects except the Dar Cao Hydropower Plant (Sub-project No.8)) were projects with new investment while the sub-project owners operated similar hydropower plants in other areas. Therefore, it is considered that the investments were made with an anticipation of profitability, based on past experience of power generation projects.

As mentioned before, under the Project, medium- and long-term loans required for the utilization and promotion of energy efficiency and renewable energy were provided to a total of eight sub-projects. In addition, through implementation of the Project, the awareness of energy efficiency and renewable energy projects on the part of sub-project owners that had received financial assistance was raised as a result. However, awareness-raising seminars were not implemented except for seminars on the promotion of energy efficiency held under the SAPI Study. It is not certain whether or not raising of the awareness of enterprises towards investments in facilities, etc. which would contribute to the utilization and promotion of energy efficiency and renewable energy, was implemented at the level originally targeted.

3.4 Impacts

3.4.1 Intended Impacts

The impacts of the Project were set as “contribution to an increase in the efficiency of energy utilization at enterprise level, and the acceleration of environmental conservation and the sustainable economic growth of Viet Nam, and the further mitigation of global climate change”.




(1) Acceleration of the Utilization of Facilities for Energy Efficiency and Renewable Energy¹⁸




Table 4 below describe the outlines, commencement years of operations, and the operating statuses of the respective sub-projects. Except for the Dar Cao Hydropower Plant (Sub-project No. 8),¹⁹ which was not visited by the ex-post evaluation team, all the sub-projects were either operating without problems or were scheduled to commence operations shortly. It is evaluated that the utilization of facilities for energy efficiency and renewable energy was accelerated and that the efficiency of energy utilization was promoted at an enterprise level.


¹⁸ This indicator was added in consideration of the logical sequence from Outputs, Outcome and Impacts.

¹⁹ VDB requested that the sub-project owner make prepayments of the sub-loan as it had observed some problems with the procurement procedures.

Table 4: Outlines, Commencement Years of Operations and Operating Status of Sub-projects

Sub-project No.	Sub-project (Province)	Commencement Year of Operations	Generation Capacity (MW)	Outline and Operating Status of Sub-project
1	Hoa Phat Power Station (Hai Duong)	2013	22	 <p>The sub-project owner produced coke for steel manufacturing. They were able to recover waste heat liberated when processing coal into coke and to use it for power generation. Electricity was utilized for the production of coke and sold to steel factories. By doing so, the sub-project owner saved on electricity consumption from external sources and earned sales revenues. The sub-project owner introduced three units of power generation facilities and the total generation capacity of electricity was 52 MW. Out of this, 46 MW was actually utilized. The facilities financed by the VDB sub-loan were the second generating facilities (22 MW: Photo). Technology was transferred from China.</p>
2	Bagasse Thermal Power Plant (Thanh Hoa)	2012	12.5	 <p>The sub-project owner introduced power generation facilities making use of bagasse (residues left after sugarcane is processed) at sugar refineries. The owner installed a total of four power generation facilities: two units in 1998 (3MW each), one unit in 2011 (12.5MW: Photo) with the VDB sub-loan, and the fourth-generation facilities (15MW) in 2015. The total installed capacity was 33.5MW but not all the facilities were simultaneously put into operation. As operations were rotated among the generation facilities for efficiency, the actual generation capacity turned out to range from 22MW to 24MW. The turbine procured with the VDB sub-loan was made in India and the manufacturer in India received investment from Japan.</p>
3	Hang Dong A Hydropower Plant (Son La)	2016	16	 <p>The new hydropower plant sub-project includes two units of generating facilities, buildings for power generation, dams, reservoirs, tunnels and transmission lines. The facilities were procured from an Indian subsidiary of an Austrian manufacturing group. In order to make effective use of available water, the sub-project owner operated the plant for five hours per day during the dry season, targeting a time when the unit sales price of electricity was high. The sub-project owner was engaged in construction, operation and management of various hydropower plants. At the time of the site visit by the ex-post evaluation team, the owner operated and managed five hydropower plants and was undertaking construction of four power plants.</p>

Sub-project No.	Sub-project (Province)	Commencement Year of Operations	Generation Capacity (MW)	Outline and Operating Status of Sub-project
4	Ta Trach Hydropower Plant (Thua Thien-Hue)	2014	21	 <p>The sub-project was formulated by the Ministry of Agriculture and Rural Development (hereinafter referred to as “MARD”) for the purpose of irrigation and flood-control in 2007. The original MARD plan included hydropower plants. The sub-project owner group responded to the invitation for private investment in the hydropower plants and came to construct and operate the power facilities. Under the sub-project, two units of power generation facilities, sub-stations, transmission lines and so on were introduced. The equipment and facilities were made mainly in China.</p>
5	Suoi Tan 2 Hydropower Plant (Son La)	2016	4	 <p>The sub-project was a new hydropower plant consisting of generating facilities, buildings for power generation, tunnels, etc. Generators and turbines were manufactured in China. A Japanese private organization introduced a micro hydropower plant (10kV) at the project site. However, as the power supply capacity of the micro hydropower plant was limited, a new hydropower plant was constructed to replace it. In order to make effective use of available water, the sub-project owner operated the plant for five hours per day during the dry season, targeting a time when the unit sales price of electricity was high.</p>
6	Nam Can 2 Hydropower Plant (Nghe An)	2015	20	 <p>The sub-project was a new hydropower plant consisting of two units of generating facilities, substations, tunnels, reservoir facilities, etc. The facilities were procured from an Indian subsidiary of an Austrian manufacturing group. In order to make effective use of available water, the sub-project owner operated the plant for five hours per day during the dry season, targeting a time when the unit sales price of electricity was high. Furthermore, the sub-project owner constructed, operated and managed hydropower plants other than the sub-project concerned. At the time of the site visit by the ex-post evaluation team, the sub-project owner operated and managed a total of five hydropower plants.</p>

Sub-project No.	Sub-project (Province)	Commencement Year of Operations	Generation Capacity (MW)	Outline and Operating Status of Sub-project
7	Suoi Chan 2 Hydropower Plant (Lao Cai)	2017	14	 <p>The sub-project was a new hydropower plant consisting of two units of generating facilities, reservoir facilities, tunnels, transmission lines, etc. The main facilities were made in China. A test run was conducted in May 2017 (Photo). Operations were commenced in June 2017. The hydropower plant was scheduled to operate 24 hours a day throughout the year.</p>
8	Dar Cao Hydropower Plant (Lam Dong)			The existing conditions were unknown.

Source: Information provided by JICA and VDB. Results of interviews with the sub-project owners.

(2) Contribution to the Mitigation of Global Climate Change

Quantitative effect indicators were set as shown below at the time of the appraisal. However, except for the indicator “Reduction of Energy Consumption resulting from Investments in Energy Efficiency performed by Sub-projects (Tons of Oil Equivalent/year)”, neither base nor target numbers (values) were worked out.

Table 5: Operation and Effect Indicators (Quantitative Effects)

	Base Number (Value) (2008)	Target Number (Value) (2014) 2 years after Project Completion	Actual
Reduction of Green House Gas Emissions performed by sub-projects (Tons of CO ₂ Equivalent/year, electricity consumption/year, etc.)	—	Determined by the time of the commencement of the Project ^{note 1}	As shown below ①
Reduction of energy consumption resulting from investments in energy efficiency performed by sub-projects (Tons of Oil Equivalent/year)	—	Reduction of energy consumption by 20% compared to the situation prior to commencement of a sub-project	As shown below ②
Amount of renewable energy generated by sub-projects (Tons of Oil Equivalent/year)	—	Determined by the time of the commencement of the Project ^{note 2}	As shown below ③ and Table 6 below

Source: Information provided by JICA and VDB, etc.

Note 1 and 2: The target numbers/values determined by the time of the commencement of the Project were not confirmed at the time of the ex-post evaluation.

① Reduction of Green House Gas Emissions performed by sub-projects²⁰

According to interviews with the sub-project owner of the Bagasse Thermal Power Plant (Sub-project No.2), payments were received based on Certified Emission Reductions (hereinafter referred to as “CER”). According to the monitoring report,²¹ the amount of Green House Gas Emissions reduced was 85,278 CO₂ Equivalent Tons in total between September 2012 and the end of August 2016.

② Reduction of energy consumption resulting from investments in energy efficiency performed by sub-projects

The Hoa Phat Power Station (Sub-project No. 1) and the Bagasse Thermal Power Plant (Sub-project No. 2) are classified into energy efficient sub-projects. However, under these sub-projects, electricity was generated by making use of waste heat and bagasse. Some of this electricity was consumed internally at the factories, replacing consumption of grid-connected power. Therefore, it was considered not appropriate to examine the amount of energy consumption reduced resulting from investments in energy efficiency. Instead, the effects of replacing power consumption from grid-connected power were evaluated in the following item ③, Amount of renewable energy generated (Table 6 below).

③ Amount of renewable energy generated by sub-projects

The amount of renewable energy generated by the sub-projects financed is shown in the column, “Amount of Power generated or sold” in Table 6 below. The total generation or sales volumes of electricity of six sub-projects from the Hoa Phat Power Station (Sub-project No.1) to the Nam Can 2 Hydropower Plant (Sub-project No.6) in the table was 375 million kwh²² (=32,250 Tons of Oil Equivalent²³) in 2016. The volume of electricity can be evaluated as the volume substituted for fossil fuel-based energy. The power generation and sales activities of the respective sub-projects were carried out more or less smoothly, shoring up economic growth.

²⁰ With regard to this indicator, the conditions were described for one sub-project as they were confirmed.

²¹ The monitoring report is the “Monitoring report” uploaded at the web site (<http://cdm.unfccc.int/Projects/DB/RWTUV1345703360.84/view>) of the United Nations Framework Convention on Climate Change.

²² For the sub-projects that started in August 2016 (Sub-project No. 3: the Hang Dong A Hydropower Plant and Sub-project No.5: the Suoi Tan 2 Hydropower Plant), the amount of sales up to April or May 2017 when the ex-post evaluation team visited the sub-project sites was recorded. As for the Bagasse Thermal Power Plant (Sub-project No.2), it was not possible to estimate the amount of electricity generated by facilities purchased with the VDB loan only. Therefore, the amount includes the amount of electricity generated by the four generating facilities.

²³ 1 MWh = 0.086 Tons of Oil Equivalent (TOE)

Table 6: The Amount of Electricity Generated by Sub-projects

Sub-project No.	Sub-project	Amount of Power generated or sold ^{note1} (Million kwh)	Amount of Sales (Billion VND)	Remarks
1	Hoa Phat Power Station	<u>Amount of Power generated (total of 3 units)</u> Planned: NA Actual: 330 in 2016 (out of which: 149 estimated for the sub-project financed by VDB)	Actual: 504.9 in 2016 (out of which: 227.2 estimated for the sub-project financed by VDB)	The sub-project owner utilized the power generated for the production of coke at his own factories and also sold 77% of the generated power to steel factories. If there were no generating facilities, power would have to be purchased from external sources. Therefore, the amount of sales shown in the left column is the estimated amount, including the amount consumed internally at the own factories as an opportunity cost.
2	Bagasse Thermal Power Plant	<u>Amount of Power generated (total of 4 units)</u> Planned: 81.9 Actual: 29.8 in 2015 53.5 in 2016 (including the power generated by generation facilities not supported by the VDB loan)	Actual: 10.7 in 2015 33.2 in 2016	About 50 percent (%) of the electricity generated was utilized internally at the factories in 2016. The sub-project owner concluded an agreement on unit sales price with the Northern Power Corporation under Vietnam Electricity (hereinafter referred to as "EVN") during a period from 2013 to 2015 and with EVN during a period from 2015 to 2017.
3	Hang Dong A Hydropower Plant	<u>Amount of Power sold</u> Planned: 52 Actual: 31 from August 2016 to April 2017 (9 months)	Actual: 48.7 (excluding taxes) from August 2016 to April 2017 (9 months)	The electricity was sold to the Northern Power Corporation under EVN.
4	Ta Trach Hydropower Plant	<u>Amount of Power generated/sold</u> Planned: 84.2 Actual: 73 in 2015 83 in 2016	Actual: 85 in 2015 95 in 2016	The annual operating hours of the power plant ranged from 4,200 hours to 4,600 hours. During the period when the plant was not in operation, maintenance works were conducted. The electricity was sold to the Central Power Corporation under EVN.
5	Suoi Tan 2 Hydropower Plant	<u>Amount of Power generated/sold</u> Planned: 14 Actual: 8.7 to 9.2 from August 2016 to May 2017 (about 10 months)	Actual: 10.3 from August 2016 to May 2017 (about 10 months)	The electricity was sold to the Northern Power Corporation under EVN.
6	Nam Can 2 Hydropower Plant	<u>Amount of Power generated/sold</u> Planned: 64 Actual: 23.4 from September to December 2015 (4 months) 49.5 in 2016 4.3 from January to February 2017 (2 months)	Actual: 19.8 from September to December 2015 (4 months) 62.2 in 2016 10.7 from January to February 2017 (2 months)	During the dry season, the plant was operated for five hours a day. The generation volume in 2016 was 49.5 million kwh, which was less than 80% of the volume planned. According to the sub-project owner, this was due to bad weather conditions. The electricity was sold to the Northern Power Corporation under EVN.

Sub-project No.	Sub-project	Amount of Power generated or sold ^{note1} (Million kwh)	Amount of Sales (Billion VND)	Remarks
7	Suoi Chan 2 Hydropower Plant	<u>Amount of Power sold</u> Planned: 61 ^{note 2} <hr/> Actual The plant was yet to be in operation at the time of the site visit by the ex-post evaluation team.	Planned: 64	The electricity was scheduled to be sold to the Northern Power Corporation under EVN.

Source: Results of interviews with sub-project owners, information provided by them and information provided by VDB.

Note 1: Some sub-project owners replied with a sales volume of electricity for the generation volume. Others requested that the ex-post evaluation team calculate the generation volume by multiplying the sales volume with 1.015, and did not see major differences between these two records.

Note 2: According to the VDB Web-site in June 2017, it was planned that 56 million kwh would be generated in a year.

As described above, no major problems were observed in the use of equipment and facilities at the seven sub-projects visited and the generation and sales of electricity at the sub-projects continued. In addition, one of the sub-projects was emission reductions certified and received payments based on the CER. Therefore, impacts on the mitigation of Global Climate Change were also observed.

3.4.2 Other Positive and Negative Impacts

(1) Impacts on the Natural and Social Environment

DONRE is in charge of approval of the Environmental Impact Assessment and approval by DONRE is a pre-condition for VDB financing. In order to review environmental and social impacts of sub-projects, it had been agreed that an environmental screening form²⁴ be submitted to JICA. However, the form was not submitted.^{25 26} According to sub-project owners interviewed, they received regular reviews by the agency of local government in charge of the environment. There was a sub-project where measures were taken to mitigate negative environmental impacts. These included the planting of trees and the construction of embankments along roads in order to prevent soil erosion, landslides, etc.

All the renewable energy sub-projects are newly constructed hydropower plants. The sub-project owners made compensation to affected local residents according to their customary rights. In addition, the sub-projects made certain contributions such as generating

²⁴ JICA classifies projects into four categories according to the extent of environmental and social impacts. The submission of the environmental screening form was agreed at the time of the appraisal in order to avoid financing sub-projects in Category A (sub-projects that are likely to have significant adverse impacts on the environment and society).

²⁵ DONRE was in charge of environmental monitoring during the construction period of the sub-projects. However, at the sub-project sites visited, the ex-post evaluation team was not able to confirm collaboration between DONRE and VDB on the environmental aspect, such as information-sharing.

²⁶ VDB prepared reports for the Ministry of Planning and Investment on a quarterly basis, but no reports prepared for JICA. VDB commented that as preparation of such reports was initiated by sub-project owners, the reporting format for JICA should follow the regulations of Viet Nam.

employment opportunities for local residents in remote areas where the hydropower plants were located and improving access roads. Furthermore, there is a sub-project (the Suoi Tan 2 Hydropower Plant (Sub-project No.5)) where all the villages within the commune were connected to the grid through negotiation with EVN.²⁷ Thus, the Project made contributions to social improvements as well as improvements in the living environment.

As described above, medium- and long-term loans required for the utilization and promotion of energy efficiency and renewable energy by enterprises were extended and the awareness of the sub-project owners who received the sub-loans was raised. However, it was neither confirmed qualitatively nor quantitatively whether or not there was a raising of awareness regarding the utilization and promotion of energy efficiency and renewable energy to the extent that it was intended the Project would achieve for Vietnamese enterprises. At the sub-project owner level, the efficiency of energy utilization was promoted and contributions towards environmental conservation and sustainable economic growth through substitution of energy that controls the environmental burden were observed, as was the mitigation of global climate change through the reduction of Green House Gas Emissions, although this was to a limited extent.²⁸

The Project has to some extent achieved its objectives. Therefore, the effectiveness and impacts of the Project are fair.

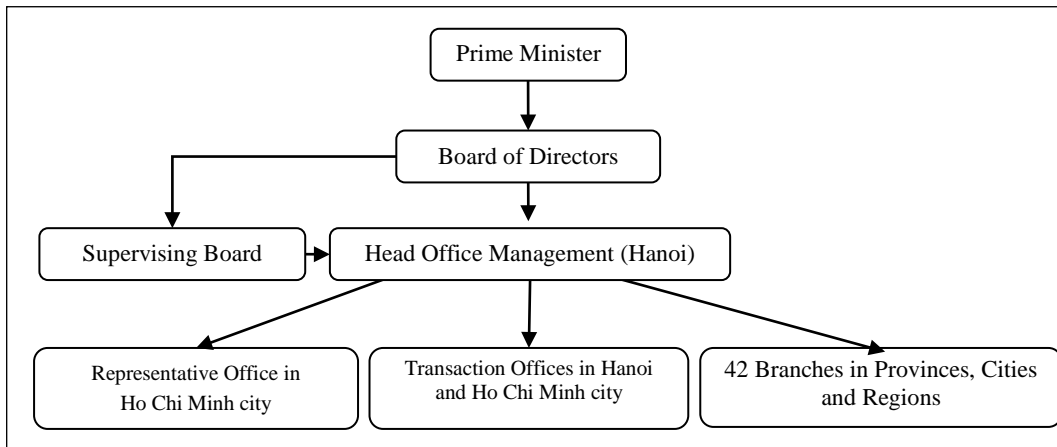
3.5 Sustainability (Rating: ②)

3.5.1 Institutional Aspects of Operation and Maintenance

VDB was established through Prime Minister Decision 108/2006/QD-TTg as an agency to implement policy on state investment credits and export credits. VDB has a nation-wide network including its head office, the Ho Chi Minh city representative office, two transaction offices (Hanoi and Ho Chi Minh city) and 42 branches with about 2,600 personnel as of 2016.

²⁷ Until that time, some of the residents in the commune received an unstable power supply from a micro hydropower plant in the commune.

²⁸ Since activities in the field of energy efficiency were new in Viet Nam, a Project Consultancy Committee of the Energy Efficiency and Renewable Energy Promoting Project, which is a committee across different ministries, was established (Decision of the General Director of VDB 163/QD-NHPT dated March 12, 2010) at the beginning of the Project. However, energy efficiency activities did not draw great attention and it is understood that the committee was not particularly active. However, as described in Section 3.1.1 under “Relevance”, the inclusion of energy efficiency as a new category on the “list of projects eligible to borrow investment loans” was considered to be a national level impact of the implementation of the Project.



Source: Information provided by VDB

Figure 6: Organization Structure of VDB

A Project Management Unit (hereinafter referred to as “PMU”) was established during the Project period. PMU played a coordinating role in implementing the Project and continued to exist and coordinate with other relevant departments after completion of the Project. PMU consisted of six members including the Vice General Director and staff members from departments such as the Foreign Capital Management Department, the Investment Credit Department and the Appraisal Department.

Funds repaid to VDB by sub-project owners were managed as revolving funds and utilized again to finance sub-project owners. The revolving funds were operated and maintained by the Foreign Capital Management Department and the Accounting Department at the head office of VDB. Appraisal of the sub-projects for which the revolving funds would be utilized was conducted by the Appraisal Department and the Foreign Capital Management Department and the collection of repayments was carried out by VDB branches. No problems were observed in the institutional aspects of operation and maintenance

The monitoring of sub-projects was carried out by the staff of VDB branches. In particular, they visited sub-project sites and examined implementing schedules, the condition of equipment and materials for which reimbursement was requested, accounting records prior to disbursements and so on. In addition, sub-project owners reported on the progress of sub-projects to VDB. No major concerns were observed in the monitoring aspect.

Other than the monitoring of VDB, sub-project owners were subject to monitoring by DOIT and DONRE. For the Suoi Chan 2 Hydropower Plant (Sub-project No. 7), which was under construction when the ex-post evaluation team visited, monitoring was conducted on the quality of the equipment, the conditions of waste treatment, the effects of digging activities and so on, every three months.

3.5.2 Technical Aspects of Operation and Maintenance

During the Project period, training was organized on specific topics such as the points to which VDB staff needed to pay attention when appraising sub-projects on energy efficiency and renewable energy. However, after completion of the Project, this training was no longer conducted. As for the technical appraisal of energy efficiency sub-projects, VDB planned to utilize external resources post-Project as they had with the support of experts from ECC in Ho Chi Minh City under the Project. However, the number of energy efficiency sub-projects actually supported under the Project was only two and the training was not continued. Therefore, there are some concerns over the way in which appraisal is to be conducted on new sub-projects, including the monitoring of improvements in energy efficiency and so on.

The SAPI Study supported the preparation of the Operation Manual (draft), which incorporated the selection criteria of sub-projects, data management methods, lending procedures, etc. However, it was considered that the manual was not effectively utilized at the time of the ex-post evaluation.

As lending making use of revolving funds had started and the monitoring of sub-projects was conducted at branches, no major problems were observed in the overall financing activities. However, as described above, some minor concerns can be raised, particularly, on the technical aspects of the financing activities for energy efficiency sub-projects.

3.5.3 Financial Aspects of Operation and Maintenance

According to the income statement from 2012 to 2014, funding costs exhibited an increasing trend while the total revenues tended to decrease. Subsequently, net losses increased in 2013 and 2014. As a policy-based financial institution of the government, VDB implemented government policies on a non-profit basis and received support from the government budget to fill the gaps. VDB continued to receive support for interest payments from the government to fill the gaps for losses incurred through the implementation of projects. Financial sustainability is foreseen, provided that VDB continues to receive support from the government.

Table 7: Financial Indicators of VDB

Unit: Million VND

Item	2012	2013	2014
Receipts from loan interest	8,930,837	10,645,521	9,619,148
Receipts from deposit interest	2,919,078	1,202,312	525,614
Non-interest revenue	6,299,908	5,547,143	6,200,837
Total Revenue (A)	18,149,823	17,394,976	16,345,599
Payments for loan interest	1,101,991	522,643	785,035
Payments for deposit interest	1,428,103	643,044	466,323
Payments for interest on valuable papers	12,742,560	14,215,333	14,245,619
Non-interest expenses	2,266,886	2,371,263	1,863,675
Total payment (B)	17,539,540	17,782,283	17,360,652
Net profits	610,283	-357,307	-1,015,053
Total assets	291,700,892	298,986,367	324,526,866
Out of which: Assets in operating activities	242,990,839	257,489,601	274,326,337
Liabilities	275,282,191	283,145,853	309,349,863
Net worth (Capital Funds) ^{note 2}	16,418,701	15,840,514	15,177,003
Capital-to-asset ratio	5.6%	5.3%	4.7%

Source: VDB homepage

Note 1: The total does not tally in some years.

Note 2: Sum of VDB equity and VDB funds.

3.5.4 Current Status of Operation and Maintenance

The revolving fund accounts were managed as shown in the table below. Repayment of sub-loans sourced from the original ODA loan commenced in 2013 and lending from the revolving funds started in 2016. The year-end balance of the revolving fund accounts averaged at 310 billion VND over the four years from 2013 to 2016. As the current status of the revolving fund accounts showed, it was considered that the utilization of the funds was not active at the time of the ex-post evaluation. However, the funds are expected to be utilized from now on.²⁹

²⁹ The prospect of a high demand for funds for energy efficiency projects was not confirmed at branches visited at the time of the ex-post evaluation. In terms of small hydropower sub-projects in the field of renewable energy, the prospect varied depending on the region and sub-project owner. In addition, according to the VDB head office, VDB received proposals for solar- and wind-power generation sub-projects. Although active financing and endorsement of such potential was yet to take place, the utilization of revolving funds could be expected for such renewable energy sub-projects.

Table 8: Revolving Fund Accounts

Unit: Million VND

	2013	2014	2015	2016
Beginning balance	0	178,029	394,146	436,053
Sub-loans repaid	155,150	265,640	20,062	42,570
Interest received	21,919	18,599	20,108	24,623
Others	960	1,833	4,476	2,326
Total receipts	178,029	286,073	44,646	69,518
2 nd sub-loan disbursement	0	0	0	230,200
Others	0	69,956	2,740	43,243
Total expenditures	0	69,956	2,740	273,444
Ending balance	178,029	394,146	436,053	232,127

Source: Information provided by VDB

Note 1: As for the revolving funds, there existed several records with different data. Therefore, data directly received from the head office of VDB at the time of the ex-post evaluation was used.

Note 2: Disbursement to the Nam Can 2 Hydropower Plant was included in the second sub-loan disbursement in 2016. It is not known why this was recorded in the revolving fund accounts after completion of the disbursement.

It was understood by both the JICA Viet Nam Office and VDB that the auditing of the revolving fund accounts by the independent auditor started after completion of the disbursement. Therefore, no audit report from an independent auditor was submitted to JICA at the time of the ex-post evaluation (the selection of an independent auditor was underway at that time). The collection of sub-loans was carried out without any problems.

Some minor problems were observed in terms of the technical aspects and the current status of operation and maintenance although sustainability was foreseen on the institutional and financial aspects provided that VDB would continue to receive support from the government. Therefore the sustainability of the Project effects is fair.

4. Conclusion, Lessons Learned and Recommendation

4.1 Conclusion

The Project aimed to provide Vietnamese enterprises, sub-project owners, with medium- and long-term funds, through VDB, for the promotion of energy efficiency activities and the utilization of renewable energy, and at the same time to promote awareness campaigns to encourage investment in these fields, thereby accelerating the efficient utilization of energy by enterprises, the pursuit of environmental conservation and sustainable economic development in the country. Furthermore, the Project was intended to assist VDB in strengthening its financing capacity for areas such as the energy efficiency of enterprises, by utilizing the experience of environmental financing in Japan. The Project is highly relevant to the development policy and needs of the Vietnamese government as well as to Japan's ODA policy from the perspective that it supported efficiency of energy utilization and diversification of energy supplies through the management of the environmental burden. While the actual cost of the Project fell within the planned one, the Project period exceeded that planned. Therefore, the efficiency of the Project is fair. Under the Project, medium- and long-term loans required for the utilization and promotion

of energy efficiency and renewable energy by enterprises were extended and awareness on the part of the sub-project owners who received sub-loans was raised. However, it has not been sufficiently confirmed either qualitatively or quantitatively as to whether or not awareness of Vietnamese enterprises was raised towards the utilization and promotion of energy efficiency and renewable energy to the extent that it was intended it should be achieved by the Project. At the level of sub-project owners who had received sub-loans, efficiency of energy utilization was promoted and contributions were observed towards environmental conservation and sustainable economic growth through the substitution of energy to control the environmental burden, and to the mitigation of global climate change through reduction of greenhouse gas, to a limited extent. Therefore, the effectiveness and impacts of the Project are fair. As for sustainability, some minor problems were observed in terms of the technical and current status of the Project although sustainability was foreseen on the institutional and financial aspects. Therefore, the sustainability of the Project effects is fair. In light of the above, this Project is evaluated to be partially satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Review of on-lending terms and conditions of the ODA loan from MOF to VDB

Under the Project, it was planned that the principal and interest portions repaid by sub-project owners would be managed in revolving fund accounts to be opened by VDB. Sub-loans from the revolving funds were to be extended to other sub-project owners under the same terms and conditions. With regard to the terms and conditions of the ODA loan from JICA to MOF, the repayment period was set at 40 years including a 10-year grace period. On the other hand, the repayment period of the on-lending ODA loan from MOF to VDB was set at 20 years, including a 10-year grace period. There will be a period when the ODA loan will not be utilized for sub-loans to sub-project owners, i.e., a period between the time after VDB makes repayments to MOF and the time before MOF makes repayment to JICA. According to the on-lending agreement between VDB and MOF, VDB will start making repayments to MOF from 2020. It is recommended that VDB hasten to start discussions on the repayment terms with MOF in order to make effective use of the ODA loan in the period before repayment is made to JICA

4.2.2 Recommendations to the Executing Agency and JICA

Review of the terms and conditions of sub-loans from VDB to sub-project owners

Under the Project, revolving funds were expected to be established utilizing surplus funds temporarily generated from the difference between the repayment period of sub-loans and the repayment period of the ODA loan. The revolving funds were to be utilized in extending

new sub-loans with the same terms and conditions. Accordingly, new sub-loans were extended with basically the same terms and conditions. However, the economic conditions of Viet Nam in 2009 when the appraisal of the Project was conducted were considerably different to those at the time of the ex-post evaluation. In addition, based on the visits to the sub-project owners by the ex-post evaluation team, as well as on the prepayment status of the sub-loans, it was considered that the competitiveness of the terms and conditions of the sub-loans had decreased in the environment where the interest rates exhibited a downward tendency. This was observed despite the fact that interest rates of sub-loans had been made vary in tandem with the interest rates of the state investment credits, which were expected to reflect changes in the market conditions, in order to offer preferential interest rates in harmony with the prevailing conditions in the Vietnamese financial markets. In order to meet the needs of sub-project owners in an appropriate manner, it is recommended that the Executing Agency and JICA continue to study and review the terms and conditions of sub-loans through regular discussions with potential sub-project owners and relevant agencies such as MOF.

4.3 Lessons Learned

(1) Review and revisions of the terms and conditions of sub-loans as required

Under the Project, interest rates of sub-loans were made vary in tandem with the interest rates of the state investment credits, which were expected to reflect changes in the market conditions, in order to offer preferential interest rates in harmony with the prevailing conditions in the Vietnamese financial markets. However, the financial institution, the executing agency, was not able to offer competitive terms and conditions for sub-loans in an environment where the market interest rates tended to decrease. It is considered that the executing agency being unable to offer competitive terms and conditions for sub-loans led to the prepayment of sub-loans and the slow progress of the disbursement of sub-loans. In similar types of projects, in order to respond to newly generated funding needs and changes in economic environment surrounding projects, the executing agency and JICA should review the terms and conditions of sub-loans and make necessary revisions throughout the different stages of a project, i.e., at the time when the project is formulated, during the time when the project is implemented and at the time after the project is completed, grasping the needs of potential sub-project owners as they proceed.

(2) Support for the implementation costs of feasibility studies

The Project planned to support part of the costs required for feasibility studies of sub-projects eligible for finance. However, there is the possibility that the feasibility of a sub-project cannot be confirmed as a result of the F/S. VDB was of the opinion that sub-project owners need to bear the costs required for conducting the F/S as sub-project owners were to carry out the F/S

when they applied for sub-loans. Under this Project, the funds set aside for supporting the preparation of F/S were not utilized and were finally refunded to JICA. In other similar types of projects, the executing agency and JICA should examine the appropriateness of supporting the costs of the preparation of the F/S, including the clarification of ideas and methods with regard to which party should bear the costs for formulation of sub-projects at the executing agency and how they should be borne.

(3) Reporting formats for monitoring the results of a project and of project completion from the executing agency

VDB submitted a report after completion of the Project but the description in the report was insufficient in many aspects of the agreed reporting format. Therefore, it was difficult to make a comparison between the plan and actual in terms of the Project costs, operation and effect indicators and so on at the time of the ex-post evaluation.

In other similar types of projects, JICA should guide the executing agencies so that all the important items in the reporting formats are thoroughly covered when reports are prepared during the project period and at the time of project completion. Furthermore, at the same time, in order to help executing agencies submit reports smoothly, it is important that the reporting formats already utilized at government agencies in recipient countries are taken into consideration.

End

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs		
(1) Provision of medium- and long-term loans required for taking measures to promote energy efficiency and to utilize renewable energy, etc.	<ul style="list-style-type: none"> • Provision of sub-loans to sub-project owners: 4,000 million Japanese yen <ul style="list-style-type: none"> - Out of which: 3,000 million Japanese yen for energy efficiency sub-projects - Out of which: 1,000 million Japanese yen for renewable energy sub-projects • Number of sub-projects for finance: Not stated but the number of potential sub-projects was listed up. • Terms and conditions of sub-loans: Interest rate (State investment credit interest rate), Repayment period (20 years including a 10-year grace period) 	<ul style="list-style-type: none"> • Provision of sub-loans to sub-project owners: 3,373 million Japanese yen <ul style="list-style-type: none"> - Out of which: 1,980 million Japanese yen for energy efficiency sub-projects - Out of which: 1,393 million Japanese yen for renewable energy sub-projects • Number of sub-projects for finance: eight sub-projects <ul style="list-style-type: none"> - Out of which: two sub-projects for energy efficiency sub-projects - Out of which: six sub-projects for renewable energy sub-projects • Terms and conditions of sub-loans: as planned
(2) Strengthening of the financing capacity of VDB for energy efficiency and renewable energy through technical assistance	<ul style="list-style-type: none"> • Technical assistance through the SAPI Study and loan consultants 	<ul style="list-style-type: none"> • Technical assistance through the SAPI Study was conducted for the drafting of manuals and the holding of seminars, etc. • Loan consultants were not employed.
2. Project Period	November 2009 – December 2012 (38 months)	November 2009 – January 2015 (63 months)
3. Project Cost		
Amount Paid in Foreign Currency	4,682 million yen	3,418 million yen
Amount Paid in Local Currency	838 million yen	8,735 million yen
Total	5,520 million yen	12,153 million yen
ODA Loan Portion	4,682 million yen	3,418 million yen
Exchange Rate	1 VND=0.0059 yen (as of April 2009)	1 VND=0.0046 yen (Average during the Project period)
4. Final Disbursement	February 2015	