

付 属 資 料

Minutes of Meeting

MINUTES OF MEETING
BETWEEN
THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF
THE SOCIALIST REPUBLIC OF VIETNAM
AND
MID-TERM REVIEW TEAM OF
THE JAPAN INTERNATIONAL COOPERATION AGENCY
ON
TECHNICAL COOPERATION PROJECT ON
ELECTRIC POWER TECHNICAL STANDARDS PROMOTION PROJECT IN VIETNAM

The Mid-Term Review Team (hereinafter referred to as “the Team”) organized by the Japan International Cooperation Agency (hereinafter referred to as “JICA”) and headed by Mr. Teruyuki ITO visited the Socialist Republic of Vietnam (hereinafter referred to as “Vietnam”) from February 5 to 18, 2012 for the purpose of conducting a mid-term review study on Electric Power Technical Standard Promotion Project in Vietnam.

During its stay in Vietnam, the Team had a series of discussions, exchanged views, and compiled a mid-term review report (hereinafter referred to as “the Report”) with the authorities concerned of the Government of Vietnam over the matters for the successful implementation of the Project.

As a result of the discussions, both sides agreed upon the matters referred to in the document attached hereto.

Hanoi, February 17, 2012



Mr. Teruyuki ITO
Leader, Mid-Term Review Team,
Japan International Cooperation Agency



Mr. Phan Cong HOP
Deputy Director General
Department of Science and Technology
Ministry of Industry and Trade



Dr. Tran Huu HA
Deputy Director General
Department of Science, Technology and
Environment
Ministry of Construction

ATTACHMENT

1. Recognition of the Mid-Term Review Report

Both sides recognized that the Report was proper, and accepted the recommendations mentioned in the report.

2. Modification of Project Design Matrix (PDM)

Based on the results of mid-term review, it is recommended to modify PDM for successful implementation of the Project in the remaining period. The proposed PDM Version 2 is attached to the Report as Appendix 2. The proposed PDM shall be finalized and agreed by both Japanese and Vietnamese sides at a Joint Coordination Committee (JCC) scheduled in April, 2012.

3. Extension of the Project Period

Based on the results of mid-term review, extension of the project period is recommended in order to finalize the Technical Standards and Guidelines in a successful manner. Taking into account the work volume and the time frame for drafting the Guidelines, extension of the project period in approximately 3 months from "March, 2010 to March 2013" to "March, 2010 to June, 2013" may be reasonable. Details will be discussed in the above JCC in April, 2012, in which the revision of work flow of the remaining project period shall also be discussed. After the JCC, both JICA and the Vietnamese authorities shall proceed to revise the Record of Discussion signed on November 26, 2009.

Appendix : Mid-Term Review Report

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JOINT MID-TERM REVIEW REPORT
ON THE TECHNICAL COOPERATION PROJECT
ON
ELECTRIC POWER TECHNICAL STANDARDS PROMOTION
PROJECT IN VIETNAM

Ministry of Industry and Trade,
Ministry of Construction
And
Japan International Cooperation Agency (JICA)

Hanoi
The Socialist Republic of Vietnam
February 17th, 2012

Table of Contents

1. Framework of Mid-Term Review Study	1
1-1. Background and Objective of the Mid-Term Review.....	1
1-2. Members of the Mid-Term Review Study Mission	1
1-3. Schedule of the Mid-Term Review Study	2
1-4. Outline of the Project	3
1-5. Methodology of Mid-Term Review.....	3
2. Project Performance and Implementation Process	5
2-1. Inputs.....	5
2-2. Progress of Activities.....	6
2-3. Achievement of Outputs.....	7
2-4. Achievement of Project Purpose	8
2-5. Prospects for Achievement of Overall Goal.....	9
2-6. Implementation Process	9
3. Evaluation by Five Evaluation Criteria	12
3-1. Relevance	12
3-2. Effectiveness	12
3-3. Efficiency	13
3-4. Impact.....	13
3-5. Sustainability.....	13
3-6. Conclusion.....	14
4. Recommendations and Lessons Learned.....	16
4-1. Recommendations	16
4-2. Lessons Learned.....	18

Appendix

- I. Project Design Matrix (Original)
- II. The Proposed Project Design Matrix Version 2
- III. List of Experts
- IV. List of Trainees in Japan
- V. List of Equipment Provided
- VI. Local Cost
- VII. List of Counterparts

1. Framework of Mid-Term Review Study

1-1. Background and Objective of the Mid-Term Review

JICA has conducted “the Study on Technical Standards for Electric Power Industry in Vietnam” from May 2006 to July 2007 in order to prepare for technical and safety standards of electric power sector. Following this study, Technical Cooperation Project titled “Electric Power Technical Standards Promotion Project in Vietnam” was launched on March, 2010 for the period of three years in order to further develop technical standards and their guidelines.

The Mid-Term Review Study Team (hereinafter referred to as “the Team”) dispatched by Japan International Cooperation Agency (JICA) visited Vietnam from February 5 to 18, 2012 for the purpose of examining achievements and process of the Project by the “Five Evaluation Criteria.” Based upon its results, the original project plan may be revised and the operation structure also may be strengthened, if necessary. The Mid-Term Review Study (hereinafter referred to as “the Study”) has been jointly undertaken by the JICA mid-term study team and the Vietnamese authorities concerned.

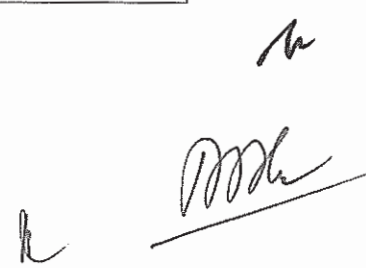
The objectives of the mid-term evaluation study are as follows:

- (1) To review and assess the inputs, activities and achievements of the Project;
- (2) To identify problems and issues to be addressed for successful implementation of the Project for the remaining period; and
- (3) To propose suggestions for better implementation of the Project in the remaining period and a future plan after the project period.

1-2. Members of the Mid-Term Review Study Mission

The Team is composed of the members as below.

Team Leader	Mr. Teruyuki ITO	Director Electric Power Division, Natural Resources and Energy Group, Industrial Development and Public Policy Department, Japan International Cooperation Agency (JICA)
Cooperation Planning	Mr. Takeshi TOMITANI	Officer Electric Power Division, Natural Resources and Energy Group, Industrial Development and Public Policy Department, Japan International Cooperation Agency (JICA)



Evaluation Analysis	Ms. Hisami NAKAMURA	Deputy General Manager Business Promotion Department, OPMAC Corporation
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1-3. Schedule of the Mid-Term Review Study

The Study in Vietnam was conducted from 5th to 18th February, 2012. The detailed schedule is as follows.

The Study in Vietnam was conducted from 5th to 18th February, 2012. The detailed schedule is as follows.

Date		Mr. Ito	Mr. Tomitani	Ms. Nakamura
Feb	5	sun		<i>Depart from Narita (10:00) to Hanoi (14:40) (VN311)</i>
	6	mon		• Discussion with JICA Office
	7	tue		• Interview with Vietnamese counterparts
	8	wed		• Interview with the project expert (Mr. Nakamura)
	9	thu		• Data collection
	10	fri		• Preparation for the review report
	11	sat		
	12	sun		<i>Depart from Narita (10:00) to Hanoi (14:40) (VN311)</i>
	13	mon		• 9:30: Interview with Vietnamese counterparts • 13:30: Workshop on the Mid-Term Review Survey
	14	tue	<i>Depart from Narita (10:00) to Hanoi (14:40) (VN311)</i>	• Preparation of Minutes of Meeting (M/M), Mid-Term Review Report and PDM
	15	wed		• AM: Preparation of Mid-Term Review Report (the Report) • PM: Courtesy call on MOIT and MOC Discussion on the M/M, the Report and PDM with Vietnamese counterparts with Vietnamese counterparts
	16	thu		• AM: Discussion on the M/M, the Report and PDM with Vietnamese counterparts • PM: Revision and Confirmation of M/M, the Report and PDM

17	fri	<ul style="list-style-type: none"> • 9:00: Reporting the Evaluation Results and Signing of M/M • 16:00: Reporting to the Embassy of Japan
18	sat	<i>Depart from Hanoi (0:10) to Narita (7:00) VN310</i>

1-4. Outline of the Project

The outline of the project is shown as follows. The original Project Design Matrix (hereinafter referred to as “PDM”) is shown in the Appendix I.

Overall Goal

Improve reliability and safety of power supply by means of decreasing electric power disorders caused by failures in design, construction, operation and maintenance through disseminating Technical Standards to electric power industry in Vietnam.

Project Purpose

Electric power Technical Standards will be enacted and operated effectively and efficiently through disseminating Technical Standards and Guidelines to electric power industry in Vietnam.

Outputs

1. Report of review on existing Technical Standards will be developed.
2. Technical Standards will be revised and developed.
3. Guidelines for Technical Standards will be developed.

Activities

- 1.1 Collect existing Technical Standards, related documents and information
- 1.2 Review existing Technical Standards and related documents
- 1.3 Develop the report of review on inconsistency of existing Technical Standards and the resultant problems, and the necessities for improvement

- 2.1 Develop new Technical Standards by Working Groups (“WGs”)
 - WG: Hydro 2 (Under MOC): Design, Construction, Completion Inspection
 - WG: Thermal (Under MOIT): Design for Large-scaled Coal-fired Plant & Gas-combined Cycle
- 2.2 Make revision and addition into the existing Technical Standards by WGs
 - WG: Hydro 1 (Under MOIT): Vol. 5 & 6
 - WG: Thermal (Under MOIT): Vol. 5 & 6
 - WG: Network (Under MOIT): Vol. 1-7 (including Grounding & Lightning Protection)

- 3.1 Prepare framework of Guidelines based on revised and developed Technical Standards by WGs
- 3.2 Develop Guidelines by WGs
 - WG: Hydro 1 (Under MOIT)
 - WG: Hydro 2 (Under MOC)
 - WG: Thermal (Under MOIT)
 - WG: Network (Under MOIT)

1-5. Methodology of Mid-Term Review

The Study is carried out in accordance with the JICA Guideline for Project Evaluation, along with the

following process:

- (1) Assessing progress of the Project based on the plan shown in the Project Design Matrix (PDM) and the Plan of Operation (PO),
- (2) Analyzing the Project by the five evaluation criteria
- (3) Recommending improvements of the Project
- (4) Drawing lessons learned for other similar types of projects

Both quantitative and qualitative data and information were collected for the Study by the following methods.

- Review of the project reports and other relevant documents;
- Questionnaire and/or interview to Japanese experts, Counterparts, and other stakeholders

The five evaluation criteria used for the analysis of the Project are as follows:

- (1) **Relevance:**
Relevance of the Project is consistency of the Project Purpose and the Overall Goal with development policies and needs of Vietnam as well as the ODA policy of Japan towards Vietnam.
- (2) **Effectiveness:**
Effectiveness of the Project is likelihood of achievement of the Project Purpose by the end of the project period as a result of attaining outputs at the time of the Mid-Term Review Study.
- (3) **Efficiency:**
Efficiency of the Project is extent of conversion from the inputs to the outputs assessed from the aspects of achievement of the planned outputs as well as quantity, quality and timing of the inputs by the Japanese and Vietnamese sides.
- (4) **Impact:**
Impacts of the Project are assessed by likelihood of achievement of the Overall Goal, which is the intended impact of the Project and positive and negative, direct and indirect effects resulted or to be resulted by the Project.
- (5) **Sustainability:**
Sustainability of project is continuity of positive effects and benefits resulted by project after completion of project. It is assessed by the institutional, organizational, technical and financial aspects.

2. Project Performance and Implementation Process

2-1. Inputs

The inputs for the Project are shown in the Table 1.

Table 1: Inputs for the Project

Japanese Side	Vietnamese Side
■Experts: 12 experts in 10 areas (49.40MM) Long-term: 1 expert (15.73MM) Short-term: 11 experts in 9 areas (33.77MM)	■Counterpart Personnel: 63 persons
■Training in Japan: 21 trainees received	■Equipment: 2 PCs
■Equipment: Foreign Currency: 0.373 million JPY Local Currency: 42.439 million VND	■Land and Facilities: Project office space in MOIT
■Local Cost: 61.485 million JPY	■Local Cost: Administrative costs for WG activities, site surveys, workshops by EVN, and so forth, and cost for reviewing the drafts

Japanese Side

Inputs by the Japanese side were as planned.

One (1) long-term expert has been dispatched as a team leader and hydropower expert. Other eleven (11) experts were dispatched in short-term basis for the areas of hydropower (civil works, hydromechanical equipment, electrical works, and mechanical equipment), thermal power plant (mechanical equipment and electrical works), and network (transmission system, substation system, distribution system, grounding system, and inspection). The list of experts is attached as Appendix III.

Three (3) training courses of hydropower, thermal power and network were implemented during the period from March to November, 2011. The list of trainees received in Japan is attached as Appendix IV.

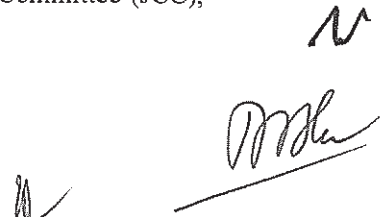
The equipment provided by the Japanese sides are office appliances, including projectors and a personal computer. The list of equipment is attached as Appendix V.

The local cost borne by the Japanese side of 61.485 million JPY spend for contracts for local consultants and general activities. The details of local cost are attached as Appendix VI.

Vietnamese Side

Inputs by the Vietnamese side were as planned.

The Vietnamese Side assigned counterpart personnel for the Joint Coordination Committee (JCC),



the Joint Management Committee (JMC) and the three Working Groups (WG) of Hydropower I, Hydropower II, Thermal Power and Network. The counter personnel are personnel belonging to key stakeholders of the Project, including, the Ministry of Industry and Trade (MOIT), the Ministry of Construction (MOC), the Ministry of Agriculture and Rural Development (MARD), Electricity of Vietnam (EVN), Northern Electrical Testing Company (ETC 1), and the Center for Water Research and Engineering Application (CRA). While MOIT supervises technical issues on the power industry in general, MOC and MARD are responsible for technical issues on civil works of water facilities, including hydropower plants. The list of counterpart personnel is attached as Appendix VII.

The project office space has been provided by MOIT. MOIT, MOC and EVN covered necessary administrative cost to held meetings for JMC, JCC, and WGs, site surveys, workshops by EVN and so forth and cost for reviewing the drafts

2-2. Progress of Activities

For the period from March, 2010 to February, 2012, the JICA expert team worked on drafting the technical regulations in Japan and each WGs, including JICA expert team and the key stakeholders of the Vietnamese side, discussed about drafts prepared by the JICA expert team and reflected comments from stakeholders in the electric power sector. During that period, two (2) JCCs and four (4) JMCs were held while details of drafted Technical Regulations were discussed at WGs.

Review of the final draft of the Technical Regulations has been on-going and will be completed by the end of March, 2012. The draft will be finalized in April, 2012.

Table 2: Major Activities Carried Out by the Project (as of February, 2012)

Period	JICA Team	WGs
March, 2010	<ul style="list-style-type: none"> ● Reviewing existing documents ● Drafting a work report 	<ul style="list-style-type: none"> ● 1st JMC ● 1st WGs ● Finalization of the work report
May, 2010	<ul style="list-style-type: none"> ● Reviewing existing documents ● Drafting review reports 	
June – July, 2010		<ul style="list-style-type: none"> ● 2nd WGs ● 3rd WGs ● 2nd JMC ● Finalization of review reports ● Drafting a framework of technical standards
September, 2010	<ul style="list-style-type: none"> ● Reviewing existing documents ● Preparing 1st draft of technical regulations 	
October, 2010		<ul style="list-style-type: none"> ● 4th WGs ● Reviewing additional documents and information ● Reviewing results of baseline survey on accidents and failures of electric power facilities ● 5th WGs to review the 1st draft

Period	JICA Team	WGs
November, 2010 – January, 2011	<ul style="list-style-type: none"> ● Reviewing existing documents ● Preparing 2nd draft of technical regulations 	
February – March, 2011		<ul style="list-style-type: none"> ● 6th WGs to discuss the 2nd draft ● 3rd JMC ● 7th WG (hydro) to confirm revisions of the 2nd draft ● 1st Workshop to consult with stakeholders before finalization of the draft of technical regulations ● 7th WG (thermal) ● 8th WG (hydro)
April-June, 2011	<ul style="list-style-type: none"> ● Preparing final draft of technical regulations 	<ul style="list-style-type: none"> ● 7th and 8th WG (network)
June-July, 2011		<ul style="list-style-type: none"> ● 2nd Workshop ● 8th WG (thermal) ● 9th WG (network) ● 10th WG (hydro) ● 4th JMC and 1st JCC
August – November, 2011	<ul style="list-style-type: none"> ● Submission of final draft of technical regulations 	<ul style="list-style-type: none"> ● 2nd JCC and 4th JMC
December, 2011 –	<ul style="list-style-type: none"> ● Reviewing the final draft 	<ul style="list-style-type: none"> ● Reviewing the final draft

2-3. Achievement of Outputs

By the time of the Mid-Term Review Study in February, 2012, the Project achieved the Output 1 and mostly achieved the Output 2. Since Technical Guidelines should be developed in the light with an approved Technical Regulations, the activities to produce the Output 3 is planned to start at the second stage of the Project.

The Output 1 to develop a review report on the existing Technical Standards was achieved in July, 2010 as planned.

In terms of the Output 2 to revise and develop the Technical Standards, finalization of the final draft of the Technical Regulations has been on-going. The time schedule for the Output 2 has been slightly delayed due to the larger volume of work load than expected and the quality of the drafted Technical Regulations. These two issues have been induced by interface of language and time constraints. While the JICA expert team prepared the draft in English, the Vietnamese side needed the ones in Vietnamese because their limited English ability. It required more time for translation work and discussions to finalize the drafts. In addition, there is still a room to improve the final draft due to inconsistencies and conflicts among stipulations in the draft of the Technical Standards and with the other related laws and regulations as well as inappropriate stipulations because of insufficient comprehensive reviews of the drafts within the limited time frame.

The current achievement of the Output 2 indicates that the Output 3 may not be likely to be achieved by the end of the Project because development of Technical Guidelines must require more work volume and time frame even though work volume, time frame and resource allocations for each WG

can be different.

Table 3: Achievement of Outputs (as of February, 2012)

Outputs	Verifiable Indicators	Achievement
1. Report of review on existing Technical Standards will be developed.	The report is approved by JMC	Achieved as planned.
2. Technical Standards will be revised and developed.	2.1. Technical Standards are timely approved by JMCs. 2.2. Technical Standards include contents required by the Vietnamese side	Mostly achieved and likely to be achieved by the end of the Project despite that finalization process has been going on.
3. Guidelines for Technical Standards will be developed.	3.1 Guidelines for Technical Standards are approved by JMC. 3.2 Guidelines for Technical Standards include contents required by the Vietnamese side.	Not achieved and unlikely to be achieved within the project period and needs to more work volume and time frame..

2-4. Achievement of Project Purpose

The Project aims at enactment and enforcement of the Technical Standards and Guidelines which are revised and developed by the Project. There are two sets of the Technical Standards and the Guidelines which should be promulgated and enforced by MOIT and MOC, respectively. However, promulgation of the Technical Regulations in the scope of MOC is only one achievable target within the current project plan. Hence, it is unlikely to be achieved completely by the end of the Project due to the unrealistic time frame for promulgation of the Technical Regulations and Guidelines and the excluded dissemination activities in the Project.

As mentioned above, in terms of the scope of MOC, the Technical Standards is planned to be promulgated by June of 2012. However, it is difficult to promulgate the Technical Guidelines to be developed by the Project due to a delay in developing the draft of technical regulation and an anticipated larger work volume..

Regarding the scope of MOIT, it is necessary to promulgate the Technical Standards and Guidelines simultaneously. Since the existing technical regulations covers both contents of the revised Technical Standards and Guidelines, promulgation of the Technical Standards without the Guidelines can induce confusions and disruptions in construction and operation of electric power facilities. Therefore, the policy of MOIT to promulgate of the Technical Standards and Guidelines simultaneously is rational. On the other hand, promulgation of the Technical Standards and Guidelines within the project period will hardly be achieved. .

Table 4: Achievement of the Project Purpose

Project Purpose	Verifiable Indicators	Achievement
Electric Power Technical Standards will be enacted and operated effectively and efficiently through disseminating Technical Standards and Guidelines to electric power industry in Vietnam.	<ol style="list-style-type: none"> 1. Numbers of Technical Standards and Guidelines approved as ministerial circulars or codes. 2. Number of participants/participating companies to workshop for dissemination. 3. Degree of satisfaction to Technical Standards and Guidelines by technical staff in electric power industry. 	Unlikely to be achieved completely by the end of the Project due to the necessity of simultaneous promulgations of the Technical Standards and Guidelines for the MOIT scope after the completion of the Project.

2-5. Prospects for Achievement of Overall Goal

The Overall Goal is an intended outcome resulted by the Project. It should be likely to be achieved within three to five years after completion of project.

It is expected that enforcement of the Technical Standards and Guidelines will bring about improvement of reliability and safety of power supply through decrease in electric power disorders caused by failures in design, construction, operation and maintenance. However, since the Project Purpose is unlikely to be achieved by the end of the Project, the Overall Goal is unlikely to be achieved within the expected period.

Also, the contribution of the Project to achievement of the Overall Goal is hardly verified since it is difficult to clarify casual relationship between compliance of the Technical Regulations and Guidelines and failures of power supply.

Table 5: Prospects for Achievement of the Overall Goal

Overall Goal	Verifiable Indicators	Achievement
Improve reliability and safety of power supply by means of decreasing electric power disorders caused by failures in design, construction, operation and maintenance through disseminating Technical Standards to electric power industry in Vietnam.	The number of occurrence in failure and power outage of electric power supply will be decreased.	Unlikely to be achieved within three to five years after the completion of the Project due to the anticipated delay of promulgation of the Technical Standards for the scope of MOIT.

2-6. Implementation Process

The Project has been implemented by the structure shown in the Figure 1.

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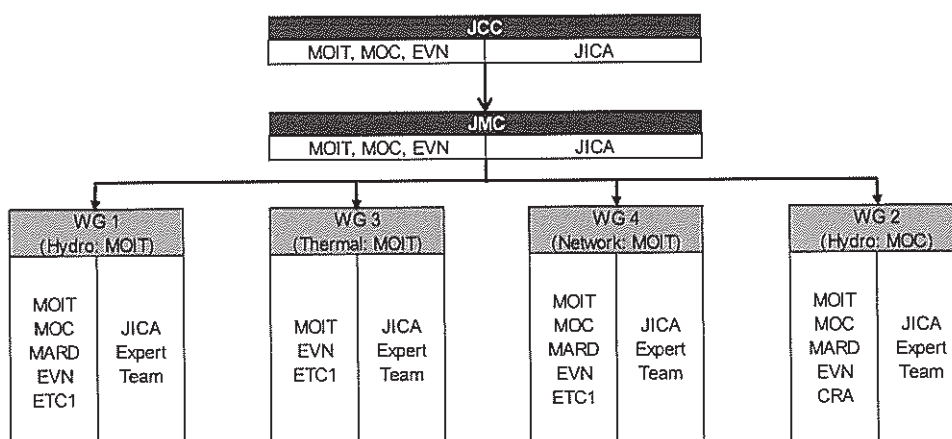


Figure 1: Implementation Structure

The Project set up four WGs: the Hydro Power 1, the Hydro Power 2, the Thermal Power and the Network. While the Hydro Power 2 is responsible for the scope of MOC, the other WGs are responsible for the scope of MOIT. The WGs are composed of the JICA expert team and the counterparts of the Vietnamese side. The main task of the WGs is reviewing for compiling the Technical Standards and Guidelines and reporting about their outputs to the JMC.

For implementation of the Project, the JMC and the JCC were also established. Whereas the JCC is responsible for process of promulgation of the Technical Standards and Guidelines drafted by the Project and provision of overall supports for the Project, the JMC is responsible to manage the project activities and to approve the outputs by the Project.

In order to efficiently draft the Technical Standards, it was planned that the JICA expert teams was going to work on drafting the Technical Standards and Guidelines in Japan and the WGs were going to review and finalize the drafts prepared by the JICA expert teams. While the JICA expert teams prepared drafts of the Technical Standards in English as planned, productivity of the WGs was lower than expected in order to revise and finalize the drafts in Vietnamese. There is a factors to constrain the productivity of the WGs: the insufficient comprehensive review process by the both sides of Japan and Vietnam for quality control of the drafts including the limited interface between languages and technical contents.

Since the most WG members of the Vietnamese side have limited English ability, the drafts in English prepared by the JICA expert team needed to be translated into Vietnamese in order to review and discuss on details of the drafts through the WGs. The inadequate translations in Vietnamese required more time for the Vietnamese counterparts to look through the drafts before the meetings of

the WGs or the JMC.

Due to the lack of comprehensive reviews of all the drafted Technical Standards by the JICA expert teams, there are still inconsistency and conflictions among the stipulations as well as against other related laws and regulations. It is mostly due to the tight schedule of the project implementation. In addition, the local consultants could not review the contents of the drafts effectively in order to avoid such inconsistency and conflictions and to reflect the situations of the Vietnamese power industry since they spent their time for the translation work.

On the other hand, the WG members could not organize enough internal meetings by the initiative of the Vietnamese side before the WG or JMC meetings under the participation of the JICA expert teams and the Vietnamese counterparts. The Vietnamese side felt difficulty to compile constructive and organized comments and counteroffers on the drafts from the Vietnamese side because of limited lead time to review the drafts prepared by the JICA expert team as mentioned above and deliveries of the drafts part by part to the Vietnamese side.

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3. Evaluation by Five Evaluation Criteria

3-1. Relevance

Relevance of the Project is high and it is expected to keep the relevance until the end of the Project.

(1) Consistency with the development needs of Vietnam

According to the latest forecast, in Vietnam, the total power demand will reach to 329,400GWh by 2020. In order to meet the growing power demand, construction of electric power facilities, including power plants, transmission lines and substations, has been promoted under the 7th Power Development Master Plan (PDP). In addition, the government of Vietnam has been implementing the power sector reform, including liberalization of the power market.

Under such situation, reliable and safe supply of electric power is a key issue in the power sector of Vietnam. Therefore, revision and development of the Electric Power Technical Standards and Guidelines is consistent with the development needs of Vietnam for improvement of reliability and safety of power supply through compliance of adequate technical regulations.

(2) Adequacy of Project Approach and Design

JICA supported to revise the volume 5 to 7 of the existing technical regulations through the Development Study conducted from May, 2005 to June, 2007. The revised volumes of the technical regulations and the safety regulations were promulgated in December, 2009. However, it has been still necessary to revise the rest of parts of the technical regulations and to develop additional technical standards and guidelines in order to ensure reliability and safety of power supply. Thus, the project approach and design to revise and develop adequate technical standards and guidelines for the power industry in Vietnam is adequate to meet the needs of Vietnam.

(3) Consistency with the Japanese ODA policy

The Country Assistance Program for Vietnam, which was developed by the government of Japan, sets forth the priority areas for the Official Development Assistance (ODA) by Japan. “Stable supplies for resource of energy” is one of the priority areas. It is expected that the Project will contribute to stable power supply through compliance of appropriate technical standards and guidelines for the power industry in Vietnam. Therefore, the Project is consistent with the Japanese ODA policy.

3-2. Effectiveness

At the time of the Mid-Term Review, effectiveness of the Project is limited. It is necessary to revise the PDM in order to ensure effectiveness of the Project.

Within the current PDM, it is expected that effectiveness of the Project is likely to be limited since the Project Purpose is unlikely to be achieved by the end of the Project as mentioned above. That is because that MOIT needs to promulgate the technical standards and guidelines at the same time in

order to avoid confusions and disruptions in the power industries. Therefore, it is inevitable to revise the Project Purpose and its verifiable indicators, which should be achievable by the end of the project period.

3-3. Efficiency

Efficiency of the Project is fair.

By the time of the Mid-Term Review, the inputs by the both sides of Japan and Vietnam were as planned. Technical level and knowledge of the Japanese experts and the Vietnamese counterparts is sufficient to produce the outputs as planned.

However, there is a concern that the planned outputs may not be produced within the project period because of the larger work volumes than expected. The expansion of work volume was caused by the difficulty in translation work, the limited quality control of drafts as mentioned in the section 0.

In addition, after the JICA expert team submitted the final drafts of the Technical Standards in August, 2011, the finalization process by the both sides of Japan and Vietnam has been going on in order to comprehensively review whole contents of the drafts and to remove any inconsistencies, confictions, misuses of technical terms and other problems and to refine the drafts in Vietnamese to be approved by the JMC. Also revisions of the drafted Technical Standards may be needed during the compiling process of the Guidelines. It requires a longer time frame than the plan.

Therefore, it is necessary to extend the project period and to improve implementation arrangement in order to ensure the planned outputs. Also efficient utilization of human resources is a key issue to improve efficiency of the Project.

3-4. Impact

(1) Achievement of Overall Goal

As mentioned in 2-5, the Overall Goal is unlikely to be achieved as an intended outcome of the Project since the Project Purpose is unlikely to be achieved by the end of the Project. Therefore, it is necessary to reset the Overall Goal according to the revised Project Purpose.

(2) Other impact

At the time of the Mid-Term Review, any positive or negative impacts were not observed.

3-5. Sustainability

In the case of the Project, sustainability can be verified by dissemination and compliance of the

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Technical Standards and Guidelines after promulgation. Also timely updating and revision of these documents by MOIT and MOC is a key to ensure sustainability. It is expected that sustainability of the Project will be high from the following aspects.

(1) Policy /institutional aspect

Once the Technical Standards and Guidelines are promulgated, the stakeholders in the electric power industry are required to comply with them. Also the Law on Technical Regulations and Standards stipulates criteria to update and inspect the Technical Standards and Guidelines. Therefore, the legislative system in Vietnam endorses dissemination and compliance of the Technical Standards and Guidelines as well as necessary updates.

(2) Organization aspect

After promulgation of the Technical Standards and Guidelines, MOIT and MOC are responsible to disseminate them to the public through the three channels: ministerial official documents, website of ministry, and workshops or trainings. Although it is unclear whether workshops and trainings are carried out or not, the minimum requirement to disseminate the Technical Standards and Guidelines shall be fulfilled by MOIT and MOC.

In terms of updates of the Technical Standards and Guidelines, MOIT and MOC can mobilize necessary human resources for expert team from the stakeholders, such as EVN, ETC1, CRA, and other institutions despite that the ministries do not have enough technical experts.

Thus, it seems that there is no serious constraint against the sustainability of the expected effects resulted by the Project from the organizational aspects.

(3) Technical aspect

MOIT and MOC have capable officers with enough experience in compiling revisions and developments of technical regulations. Also, experts of EVN, ETC and CRA have sufficient level of technical knowledge and experiences to review technical regulations despite of limited knowledge about the new technologies which are newly introduced in Vietnam.

(4) Financial aspect

It is expected that MOIT and MOC can allocate enough budget to disseminate and to update technical regulations because they have carried out revision and promulgations of other technical regulations. In particular, MOIT revised the Volume 1-4 of the existing technical regulations before the Project. Therefore, financial issues may not harm sustainability of the Project though it is unclear whether MOC can allocate budget for workshops and trainings for dissemination.

3-6. Conclusion

Since the Project has been consistent with the development needs of Vietnam and the Japanese ODA

policy, the Project keeps high relevance. However, the revision of PDM is indispensable for the Project in order to ensure its effectiveness and efficiency and to enhance positive impacts of the Project. Due to the policy and legislative endorsement and organizational and technical capacity of MOIT, MOC and other stakeholders, the intended effects and benefits of the Project can be sustainable. Therefore, it is expected that the Project may be satisfactory at the end of the Project.

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4. Recommendations and Lessons Learned

4-1. Recommendations

1) Reconciliation Efforts for Finalizing the Drafts of the Technical Standards of the MOIT Scope

Since the finalization process for the draft of the Technical Standards has not been completed, through the Mid-Term Review process, MOIT and the JICA expert team mutually agreed that the both sides will conduct comprehensive reviews on the drafted Technical Standards of the MOIT scope and compile comments and counteroffers how to improve and refine the draft by the end of March, 2012.

Based on the results of the reviews, the both sides of MOIT and the JICA expert team need to discuss and reconcile how to refine and finalize the draft in order to ensure promulgate practical and effective technical regulations for the power industry in Vietnam. Whereas the JICA expert team should be responsible for the quality of the draft in English and practical advices for the Vietnamese side from the technical aspect, MOIT should be responsible for refining and finalizing the draft in Vietnamese for promulgation. In particular, MOIT needs to reconcile and compile constructive and rational comments and counteroffers in English from the stakeholders. Joint efforts by the both sides of Japan and Vietnam are crucial to finalize the draft with sufficient quality.

2) Rearrangement of Implementation Process for Drafting the Guidelines of Technical Standards

The result of the Study indicates that the implementation arrangement for drafting the Technical Standards has not been very effective and efficient to produce the draft with sufficient quality due to the limited interface of language and the limited time frame. In order to improve productivity of the JICA expert team and the WGs, it is essential to rearrange the implementation process for drafting the Guidelines.

For the JICA expert team, it is recommended to utilize expertise of the local consultants, such as ETC 1 and CRA, in order to reflect the Vietnamese situations and to avoid inconsistency and conflicts against the other existing laws and regulations. Also, it is better to spend enough time to review drafts within the team to improve quality of drafts in English. In addition, it is recommended that the JICA expert team provide practical and useful technical advices for the Vietnamese side in order to finalize the Technical Guidelines for promulgation.

For the Vietnamese side, it is recommended to utilize their expert team in order to compile constructive comments and counteroffers for drafting Vietnamese version of the Guidelines. In particular, it is critical for the Vietnamese side to have subgroup discussions before the joint meetings with the JICA expert team at the WGs or the JMC. In addition, the WG and JMC members should be rational to compile constructive comments and counteroffers in order to revise

and refine the drafts.

For the both sides of Japan and Vietnam, it is strongly recommended to make productive and constructive joint efforts for maximization of effects and impacts of the Project through effective drafting of the Guidelines.

3) Revision of Workflow for the 2nd Stage of the Project

The detailed workflow of the Project is necessary to be revised in order to reflect recommendations as mentioned above. The revision of the workflow, including the both MOIT and MOC scopes, can be finalized and agreed by the both sides of Japan and Vietnam at JMC to be scheduled in April, 2012. The Table 6 shows the proposed key revisions of schedule concerning the MOIT scope.

Table 6: The Proposed Revision of Schedule

Period	JICA Expert team	Vietnamese Side
By the end of March, 2012	<ul style="list-style-type: none"> ● Comprehensive review of the drafts of the Technical Standards ● Compiling comments to finalize the drafts 	<ul style="list-style-type: none"> ● Comprehensive review of the drafts of the Technical Standards by an expert team organized by MOIT ● Compiling comments to finalize the drafts in English
April, 2012	<ul style="list-style-type: none"> ● Discussion and reconciliation to refine and finalize the drafts for promulgation at JMC 	
April – June 2012	<ul style="list-style-type: none"> ● Drafting the Guidelines 	<ul style="list-style-type: none"> ● Finalizing the drafts of the Technical Standards for promulgation
July-September, 2012	<ul style="list-style-type: none"> ● Discussions on the 1st drafts of the Guidelines at WGs/JMC and Workshop 	
January, 2013	<ul style="list-style-type: none"> ● Discussions on the final drafts of the Guidelines at WGs/JMC and Workshop 	
April, 2013	<ul style="list-style-type: none"> ● Wrap-up meeting for approving the drafts of the Guidelines in English at JMC 	
June, 2013	<ul style="list-style-type: none"> ● JCC for completion of the Project 	

4) Extension of Project Period

In the course of the Study, it has been recognized that, in order to finalize the Technical Standards and Guidelines in a successful manner, the project period should be extended. Taking into account the work volume and the time frame for drafting the Guidelines, extension of 3 months may be reasonable despite that discussions at the JMC in April, 2012 are required for conclusion. In other words, the project period may change from “March 2010 to March 2013” to “March 2010 to June, 2013.” Since the extension of the project period requires a revision of the Record of Discussion signed on November 26, 2009, final decision can be done after internal processes of the both sides of JICA and the Vietnamese authorities.

5) Revision of PDM

Based on the above results of the Study, it is recommended to revise PDM. The proposed PDM

Version 2 is as appendix 2. The PDM Version 2 can be finalized and agreed by the both sides of Japan and Vietnam at JCC to be scheduled in April, 2012.

4-2. Lessons Learned

More Flexible Approach of Technical Cooperation for Development of Technical Standards

It is difficult for the both sides of Japan and counterparts to precisely estimate work volumes and time frame to draft electric power technical standards and guidelines due to the time consuming process to grasp the existing situations, including the existing issues and the relevant laws and regulations, and to reflect the needs from different stakeholders which are often inconsistent and conflicting. Therefore, the project approach and design, including project purpose, outputs, inputs and implementation arrangement and structure, should be modified flexibly and timely in the course of project implementation.

Also, in the case that the target country has sufficient human resources with appropriate technical level, it is essential to mobilize and utilize capable local human resources in order to implement a project effectively. The mobilization of local human resources enables more effective use of technical knowledge and experiences of Japanese experts. Thereby, Japanese experts are able to focus more on project management and quality control for more effective technical transfer and capacity building of counterparts.

(END)

Project Design Matrix (PDM) Version 1

PDM: Electric Power Technical Standards Promotion Project in Vietnam

Duration: 3 Years (March in 2010 to January in 2013)

Implementation Institutions: Ministry of Industry and Trade, Ministry of Construction, Vietnam Electricity (and other concerned institutions)

Target Area: The Whole Vietnam

Direct Target Group: Working Groups

In-direct Target Group: Electric Power Industry in Vietnam

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>Overall Goal: Improve reliability and safety of power supply by means of decreasing electric power disorders caused by failures in design, construction, operation and maintenance through disseminating Technical Standards to electric power industry in Vietnam.</p> <p>Project Purpose: Electric power Technical Standards will be enacted and operated effectively and efficiently through disseminating Technical Standards and Guidelines to electric power industry in Vietnam.</p>	<ol style="list-style-type: none"> 1. Numbers of occurrence in failure and power outage of electric power supply are decreased. 1. Numbers of Technical Standards and Guidelines approved as ministerial circulars or codes 2. Numbers of participants/participating companies to workshop for dissemination 3. Degree of satisfaction to Technical Standards and Guidelines by technical staff in electric power industry 	<ol style="list-style-type: none"> 1. MOIT/EVN/MOC failure report 1. Ministerial circular notice/Gazette 2. Project record 3. Questionnaire survey 	<ul style="list-style-type: none"> • Government policy on the electric power Technical Standards will not be changed drastically.
<p>Outputs:</p> <ol style="list-style-type: none"> 1. Report of review on existing Technical Standards will be developed. 2. Technical Standards will be revised and developed. 3. Guidelines for Technical Standards will be developed. 	<ol style="list-style-type: none"> 1. The report is approved by JMCs 2.1 Technical Standards are timely approved by JMCs 2.2 Technical Standards include contents required by the Vietnamese side. 3.1 Guidelines for Technical Standards are approved by JMCs 3.2 Guidelines for Technical Standards include contents required by the Vietnamese side. 	<ol style="list-style-type: none"> 1. Project record 2.1 Project record 2.2 Project record 3.1 Project record 3.2 Project record 	<ul style="list-style-type: none"> • Technical Standards are enacted as ministerial circulars or codes as planned. • Appropriate budget of the Vietnamese side for disseminating Technical Standards is secured.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>Activities:</p> <p>1.1 Collect existing Technical Standards, related documents and information</p> <p>1.2 Review existing Technical Standards and related documents</p> <p>1.3 Develop the report of review on inconsistency of existing Technical Standards and the resultant problems, and the necessities for improvement</p> <p>2.1 Develop new Technical Standards by Working Groups ("WGs")</p> <ul style="list-style-type: none"> • WG: Hydro_2 (Under MOC): Design, Construction, Completion Inspection • WG: Thermal (Under MOIT): Design for Large-scaled Coal-fired Plant & Gas-combined Cycle <p>2.2 Make revision and addition into the existing Technical Standards by WGs</p> <ul style="list-style-type: none"> • WG: Hydro_1 (Under MOIT): Vol. 5 & 6 • WG: Thermal (Under MOIT): Vol. 5 & 6 • WG: Network (Under MOIT): Vol. 1-7 (including Grounding & Lightning Protection) <p>3.1 Prepare framework of Guidelines based on revised and developed Technical Standards by WGs</p> <p>3.2 Develop Guidelines by WGs</p> <ul style="list-style-type: none"> • WG: Hydro_1 (Under MOIT) • WG: Hydro_2 (Under MOC) • WG: Thermal (Under MOIT) • WG: Network (Under MOIT) 	<p>Inputs: Vietnamese Side</p> <p><Personnel Inputs ></p> <ul style="list-style-type: none"> • Joint Management Committee • Technical Working Groups • WG: Hydro_1 (Under MOIT) <ol style="list-style-type: none"> 1) MOIT Expert X 1-2 persons 2) MOC Expert X 1 person 3) MOST Expert X 1 person 4) EVN Science, Technology & Environment X 1 person 5) EVN Productive Technical Engineer X 1 person • WG: Hydro_2 (Under MOC) <ol style="list-style-type: none"> 1) MOC Expert X 1-2 persons 2) MOIT Expert X 1 person 3) MOST Expert X 1 Person 4) EVN Science, Technology & Environment X 1 person 5) EVN Design Engineer X 1 person 6) MARD (HQ) X 1 person • WG: Thermal (Under MOIT) <ol style="list-style-type: none"> 1) MOIT Expert X 1-2 persons 2) MOST Expert X 1 Person 3) EVN Productive Technical Engineer X 1-2 persons 4) Power Plant Productive Technical Engineer (in principle from Plant) X 1 person • WG: Network (Under MOIT): <ol style="list-style-type: none"> 1) MOIT Expert X 3 persons 2) MOST Expert X 1 Person 3) EVN Science, Technology & Environment X 1 person 4) EVN Productive Technical Engineer X 1 person <p><Building & Facilities></p> <ul style="list-style-type: none"> • Project Office Space for Japanese Experts <p><Administration Cost ></p> <ul style="list-style-type: none"> • Necessary cost for hiring consultants supporting JICA Experts • Necessary cost for activities of WG Members (from MOIT & MOC respectively) 	<p>Inputs: Japanese Side</p> <p><Dispatch of Experts></p> <ul style="list-style-type: none"> <Long-term Expert> • Chief Advisor <p><Short-term Expert></p> <ul style="list-style-type: none"> • Hydro (civil engineering, electrical) • Thermal (mechanical, electrical) • Network (transmission, substation, distribution) <p><Technical Training in Japan></p> <p>< Workshops></p> <p><Cost></p> <ul style="list-style-type: none"> • Necessary cost for hiring consultants supporting JICA experts <p>< Machinery and Equipment></p> <ul style="list-style-type: none"> • Other machinery such as vehicles and equipment to be agreed mutually upon as necessary for the implementation of the Project 	<p>WGs and JMCs smoothly function as expected.</p> <p>Pre-conditions:</p> <ul style="list-style-type: none"> • Project Purpose and necessary commitment for the Inputs are understood and secured.

Abbreviation:

WG: Working Groups, JMC: Joint Management Committee

Proposed Project Design Matrix (PDM) Version 2

Project Title: Electric Power Technical Standards Promotion Project in Vietnam
Executing Agencies: Ministry of Industry and Trade (MOIT), Ministry of Construction (MOC), Vietnam Electricity (EVN), (and other organizations concerned)
Target Area: Vietnam
Target Group: Electric power industries in Vietnam
Project Period: Three Years from March, 2010 to June 2013
Version Number: PDM Ver. 2
Date: February 17, 2012

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>Overall Goal: The Electric Power Technical Standards and Guidelines shall be enforced to ensure improvement of reliability and safety of power supply in Vietnam.</p>	<p>(Details will be specified in the terminal evaluation.)</p> <ol style="list-style-type: none"> 1. The Electric Power Technical Standards and Guidelines are promulgated by MOIT by the end of 2014. 2. The Technical Guidelines concerning civil works of hydropower plants is promulgated by MOC by the end of 20XX. 3. Designs of newly constructed electric power facilities are permitted according to the Electric Power Technical Standards and Guidelines. 4. Completion inspections of newly constructed electric power facilities are conducted according to the Electric Power Technical Standards and Guidelines. 5. Regular inspections on operation and maintenance of electric power facilities are conducted and reported by operators to MOIT according to the Electric Power Technical Standards and Guidelines. 	<p>(Details will be specified in the terminal evaluation.)</p> <ol style="list-style-type: none"> 1. Documents of MOIT 2. Documents of MOC 	
<p>Project Purpose: The Electric Power Technical Standards and Guideline are authorized by the Vietnamese authorities.</p>	<ol style="list-style-type: none"> 1. The final draft of the Electric Power Technical Standards in the scope of MOIT is approved by JMC by June 2013. 2. The final draft of the Electric Power Technical Guidelines in the scope of MOIT is approved by JMC by June 2013. 3. The Technical Standards concerning civil works of hydropower plants in the scope of MOC is promulgated by June 2012. 4. The final draft of Technical Guidelines concerning civil works of hydropower plants in the scope of MOC is approved by JMC by June 2013. 	<ol style="list-style-type: none"> 1. Minutes of Meeting on JMC 2. Minutes of Meeting on JMC 3. Official documents of MOC 4. Minutes of Meeting on JMC 	<ul style="list-style-type: none"> • Government policy concerning the Electric Power Technical Regulations will be remained.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>Outputs:</p> <ol style="list-style-type: none"> Report of review on existing Technical Standards is developed. Drafts of the Technical Standards are developed. Drafts of the Guidelines for Technical Standards are developed. 	<p>The report is approved by JMCs by July, 2010.</p> <ol style="list-style-type: none"> The final drafts of the Electric Power Technical Standards in English are submitted to JMC by August, 2011. The final draft of the Technical Standards of the MOIT scope in Vietnamese is refined by the MOIT expert team by April, 2013. The final draft of the Technical Standards of the MOC scope in Vietnamese is refined by the MOC expert team by April, 2012. The final drafts of the Electric Power Technical Guidelines are submitted to JMC by April, 2013. The final draft of the Technical Guidelines of the MOIT scope is refined by the MOIT expert team by the end of May, 2013. The final draft of the Technical Guidelines of the MOC scope is refined by the MOC expert team by the end of May, 2013. 	<ol style="list-style-type: none"> Minutes of meeting on JMC Project record Project record Project record Project record 	
<p>Activities:</p> <ol style="list-style-type: none"> Collect existing Technical Standards, related documents and information Review existing Technical Standards and related documents Develop the report of review on inconsistency of existing Technical Standards and the resultant problems, and the necessities for improvement Develop new Technical Standards by Working Groups ("WGs") <ul style="list-style-type: none"> WG: Hydro_2 (Under MOC): Design, Construction, Completion Inspection WG: Thermal (Under MOIT): Design for Large-scaled Coal-fired Plant & Gas-combined Cycle Make revision and addition into the existing Technical Standards by WGs <ul style="list-style-type: none"> WG: Hydro_1 (Under MOIT): Vol. 5 & 6 WG: Thermal (Under MOIT): Vol. 5 & 6 WG: Network (Under MOIT): Vol. 1-7 (including Grounding & Lightning Protection) Review the final drafts of Technical Standards in English and Vietnamese comprehensively Prepare framework of Guidelines based on revised and developed Technical Standards by WGs Develop Guidelines by WGs <ul style="list-style-type: none"> WG: Hydro_1 (Under MOIT) WG: Hydro_2 (Under MOC) 	<p>Inputs: Vietnamese Side</p> <p><Personnel Inputs ></p> <ul style="list-style-type: none"> Joint Management Committee Technical Working Groups <ul style="list-style-type: none"> WG: Hydro_1 (Under MOIT) <ol style="list-style-type: none"> MOIT Expert X 1-2 persons MOC Expert X 1 person EVN Science, Technology & Environment X 1 person EVN Productive Technical Engineer X 1 person WG: Hydro_2 (Under MOC) <ol style="list-style-type: none"> MOC Expert X 1-2 persons MOIT Expert X 1 person EVN Science, Technology & Environment X 1 person EVN Design Engineer X 1 person MARD (HQ) X 1 person WG: Thermal (Under MOIT) <ol style="list-style-type: none"> MOIT Expert X 1-2 persons EVN Productive Technical Engineer X 1-2 persons Power Plant Productive Technical Engineer (in principle from Plant) X 1 person 	<p>Inputs: Japanese Side</p> <p><Dispatch of Experts></p> <p><Long-term Expert></p> <ul style="list-style-type: none"> Chief Advisor <p><Short-term Expert></p> <ul style="list-style-type: none"> Hydro (civil engineering, electrical) Thermal (mechanical, electrical) Network (transmission, substation, distribution) <p><Technical Training in Japan></p> <p>< Workshops ></p> <p><Cost></p> <ul style="list-style-type: none"> Necessary cost for hiring consultants supporting JICA experts <p>< Machinery and Equipment ></p> <ul style="list-style-type: none"> Other machinery such as vehicles and equipment to be agreed mutually upon as necessary for the implementation of the Project 	<p>Pre-conditions:</p> <ul style="list-style-type: none"> Project Purpose and necessary commitment for the Inputs are understood and secured.

Appendix II

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<ul style="list-style-type: none"> • WG: Thermal (Under MOIT) • WG: Network (Under MOIT) <p>3.3 Review the drafts of Technical Guidelines in English and Vietnamese comprehensively</p>	<ul style="list-style-type: none"> • WG: Network (Under MOIT): <ol style="list-style-type: none"> 1) MOIT Expert X 3 persons 2) EVN Science, Technology & Environment X 1 person 3) EVN Productive Technical Engineer X 1 person • Expert team (MOIT) • Expert team (MOC) <Building & Facilities> • Project Office Space for Japanese Experts <Administration Cost > • Necessary cost for activities of WG Members (from MOIT & MOC respectively) 		

Abbreviation: WG: Working Groups, JMC: Joint Management Committee

Appendix III. List of Japanese Experts

Name		Assignment		Period		Office affiliated		1st ST MM	2nd ST MM	Total MM
				[Long-term]						
SHIGERU	NAKAMURA	Team Leader / Hydropower Expert A		(1st Stage) 10.3.9~10.3.23 10.6.2~10.9.19 10.10.7~10.11.9 10.12.1~11.4.2 11.4.17~11.6.4 11.6.19~11.7.7 (2ns Stage) 11.10.6~11.12.24 12.1.8~12.3.24	Electric Power Development Co., Ltd. (J-Power)	10.90	4.83	15.73		
[Short-term]										
YUTARO	MIZUHASHI	Hydropower Expert B (Civil Works)		(1st Stage) 10.3.13-10.3.21 10.6.21-7.14 10.10.7-10.30 11.3.3-3.17 11.6.19-7.16 (2nd Stage) 11.11.10-11.23	Electric Power Development Co., Ltd. (J-Power)	3.00	0.47	3.47		
SHUJI	UMESAKI	Hydropower Expert C (Hydromechanical Equipment)		(1st Stage) 10.6.21-7.14 10.10.10-10.19 11.3.3-3.17 11.6.19-7.6 (2nd Stage) 11.11.14-11.22	Electric Power Development Co., Ltd. (J-Power)	2.23	0.30	2.53		
MOTOTARO	OKADA	Hydropower Expert D (Electrical Works)		(1st Stage) 10.3.13-3.2 10.6.2-6.12 10.10.10-11.2 11.3.3-3.17 11.6.19-7.6 (2nd Stage) 11.11.13-11.23	Electric Power Development Co., Ltd. (J-Power)	2.57	0.37	2.94		

YOSHIO	OOYAMA	Thermal Power Expert A (Mechanical Equipment A)	10.3.13-3.21 10.6.21-7.29 10.10.10-11.2 11.2.22-3.17 11.6.19-7.6 11.11.12-11.25		3.80	0.47	4.27
HIROAHI	IMAMURA	Thermal Power Expert B (Electrical Works A)	(1st Stage) 10.3.13-3.21 10.6.21-7.29 10.10.12-10.23 11.3.3-3.17 11.6.19-7.6 (2nd Stage) 11.6.19-7.6		3.10	0.30	3.40
MASAAKI	KOGA		(1st Stage) 10.6.21-10.7.14 10.10.10-11.2 11.2.22-3.17 11.6.19-7.6 (2nd Stage) 11.11.13-11.26		3.00	0.47	3.47
TAKASHI	EGASHIRA	Thermal Power Expert C (Mechanical Equipment B) Thermal Power Expert D (Electrical Works B)	(1st Stage) - (2nd Stage) -		0.00	0.00	0.00
KENICHI	KUWAHARA	Network Expert A (Transmission System)	(1st Stage) 10.3.13-3.21 10.6.21-7.29 10.10.7-10.30 11.2.22-3.17 11.6.20-7.7 (2nd Stage) 11.11.8-11.19	Shikoku Electric Power Co., Inc.	3.80	0.40	4.20

TOSHIO	AKI	Network Expert B (Substation System)	(1st Stage) 10.3.14-3.21 10.6.20-7.29 10.10.10-11.2 11.3.8-3.16 11.5.4-11.5.18 11.6.19-7.6 (2nd Stage) 11.11.21-12.3	Shikoku Electric Power Co., Inc.	3.80	0.43	4.23
YOSHITETSU	FUJISAWA	Network Expert C Distribution System)	(1st Stage) 10.6.21-7.3 10.10.7-10.30 (2ns Stage)	Shikoku Electric Power Co., Inc.	1.23	0.00	1.23
TSUGUHIRO	YAMADA	Network Expert C Distribution System)	(1st Stage) 11.5.4-5.17 11.6.19-7.6 (2nd Stage) 11.11.8-11.12	Shikoku Electric Power Co., Inc.	1.07	0.17	1.24
TAKAYOSHI	MASUDA	Network Expert D (Grounding System)	(1st Stage) 10.6.20-7.13 10.10.10-10.21 11.3.3-11.3.17 11.6.19-7.6 (2nd Stage) 11.14-11.25	Shikoku Electric Power Co., Inc.	2.30	0.40	2.70
SHIGEO	FUJINO	Network Expert E (Inspection)	(1st Stage) - (2nd Stage) -	Shikoku Electric Power Co., Inc.	0.00	0.00	0.00
Total M/M					40.80	8.60	49.40

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Appendix IV. List of Trainees Received in Japan

Name	Position	Subject of training	Fiscal Year of Japan	Year of Duration	Duration	Output (Project Component)
Mr. Do Duc Quan	Deputy Director General / Energy Department, MOIT (Ministry of Industry and Trade)	Hydropower	2010	2010	November 15 to November 22	Technical Standards and Guidelines
Mr. Dinh Vu Thanh	Deputy Director General / Department of Science - Technology and Environment, MARD (Ministry of Agriculture and Rural Development)	Hydropower	2010	2010	November 15 to November 22	Technical Standards and Guidelines
Mr. Pham Duy Phu	Hydropower Expert / Energy Department, MOIT (Ministry of Industry and Trade)	Hydropower	2010	2010	November 15 to November 22	Technical Standards and Guidelines
Mr. Tran Viet Hoa	Manager of Division / Department of Science and Technology, MOIT (Ministry of Industry and Trade)	Hydropower	2010	2010	November 15 to November 22	Technical Standards and Guidelines
Mr. Duong Khac Hien	Hydropower Expert / Department of Science and Technology, MOIT (Ministry of Industry and Trade)	Hydropower	2010	2010	November 15 to November 22	Technical Standards and Guidelines
Mr. Pham Thanh Trung	Officer / Legal Department, MOIT (Ministry of Industry and Trade)	Hydropower	2010	2010	November 15 to November 22	Technical Standards and Guidelines
Mr. Doan Trong Tuan	Electrical specialist / Vietnam institute of architecture, urban and rural planning, MOC (Ministry of Construction)	Hydropower	2010	2010	November 15 to November 22	Technical Standards and Guidelines
Mr. Tran Hong Tien	Electrical Expert / Department of Technic and Production, EVN (Viet Nam Electricity)	Hydropower	2010	2010	November 15 to November 22	Technical Standards and Guidelines
Mr. Nguyen Khac Tien Hai	Deputy Head / Measurement Department, ETC (Northern Electrical Testing Company)	Hydropower	2010	2010	November 15 to November 22	Technical Standards and Guidelines
Mr. Nguyen Van Long	Expert / Science and Technology Department, MOIT (Ministry of Industry and Trade)	Thermal Power	2010	2011	March 28 to March 31	Technical Standards and Guidelines
Mr. Nguyen Quoc Thuy	Senior Expert / Science and Technology Department, MOIT (Ministry of Industry and Trade)	Thermal Power	2010	2011	March 28 to March 31	Technical Standards and Guidelines
Ms. Vu Thi Hau	Assistant / Science and Technology Department, MOIT (Ministry of Industry and Trade)	Thermal Power	2010	2011	March 28 to March 31	Technical Standards and Guidelines
Mr. Vu Dinh Khien	Deputy Director, ETC (Northern Electrical Testing Company)	Thermal Power	2010	2011	March 28 to March 31	Technical Standards and Guidelines
Mr. Trinh Van Yen	Manager / Thermotechnology Department, ETC (Northern Electrical Testing Company)	Thermal Power	2010	2011	March 28 to March 31	Technical Standards and Guidelines

Mr. Phuong Hoang Kim	Deputy Director General / Science and Technology Department, MOIT (Ministry of Industry and Trade)	Network	2011	2011 March 31 to April 6	Technical Standards and Guidelines
Mr. Tran Huu Ha	Deputy Director General / Department of Science, Technology and Environment, MOC (Ministry of Construction)	Network	2011	2011 March 31 to April 6	Technical Standards and Guidelines
Mr. Dang Hai Dung	Deputy Chief / Technical Standards, Metrology, Quality and Intellectual Property Division Science and Technology Department, MOIT (Ministry of Industry and Trade)	Network	2011	2011 March 31 to April 6	Technical Standards and Guidelines
Mr. Tran Manh Hung	Head / Energy Economic, Demand Forecast & Demand Side Management Department, Institute of Energy under MOIT	Network	2011	2011 March 31 to April 6	Technical Standards and Guidelines
Mr. Nguyen Tuan Anh	Manager / Energy Department, Institute for Industrial Policy and Strategy under MOIT	Network	2011	2011 March 31 to April 6	Technical Standards and Guidelines
Ms. Do Lan Binh	Senior Expert / Technical Production Department, EVN (Viet Nam Electricity)	Network	2011	2011 March 31 to April 6	Technical Standards and Guidelines
Mr. Tran Xuan Tuan	Manager / Electromechanic Department, ETC (Northern Electrical Testing Company)	Network	2011	2011 March 31 to April 6	Technical Standards and Guidelines

Appendix V. Equipment provided by Japanese Side

JFY 2009 (JPY) Hand Carried Equipment

Date	Item	Unit Amount	Unit	Cost
	NA			0.00
Total (JPY)				0.00

JFY 2010 (JPY) Hand Carried Equipment

Date	Item	Unit Amount	Unit	Cost
June 4, 2010	EPSON LCD Projector	117,000.00	1	117,000
Total (JPY)				117,000

JFY 2011 (JPY) Hand Carried Equipment

Date	Item	Unit Amount	Unit	Cost
November 30, 2011	EPSON LCD Projector	128,000.00	2	256,000
Total (JPY)				256,000

JFY 2009 (VND) Locally Purchased Equipment

Date	Item	Unit Amount	Unit	Cost
	NA			0.00
Total (VND)				0.00

JFY 2010 (VND) Locally Purchased Equipment

Date	Item	Unit Amount	Unit	Cost
July 20, 2010	Desktop PC	42,439,000.00	1	42,439,000
Total (VND)				42,439,000

JFY 2011 (VND) Locally Purchased Equipment

Date	Item	Unit Amount	Unit	Cost
	NA			0.00
Total (JPY)				0.00

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Appendix VI: Local cost borne by Japanese side

(Unit: JPY '000)

	1st Stage	2nd Stage	Total
General activity budget			
(1) General Activities	8,408	19,360	27,768
(2) Local Consultant Contracts	13,996	19,721	33,717
Total	22,404	39,081	61,485

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Appendix VII. LIST OF COUNTERPARTS

FULL NAME		ORGANIZATION	POSITION
JCC Members			
1	1	Nguyen Dinh Hiep Science and Technology Dept.- MOIT	Director
2	2	Phuong Hoang Kim Science, Technology and Energy Efficiency Dept, General Energy Directorate- MOIT	Director
3	3	Dang Hai Dung Science, Technology and Energy Efficiency Dept, General Energy Directorate- MOIT	Deputy Chief of Technical Standards, Metrology, Quality and Intellectual Property
4	4	Tran Huu Ha Science, Technology & Environment Dept.- MOC	Deputy Director
5	5	Dang Hoang An EVN	Deputy Director General of EVN
JMC Members			
6	1	Nguyen Dinh Hiep Science and Technology Dept.- MOIT	Director
7	2	Phuong Hoang Kim Science, Technology and Energy Efficiency Dept, General Energy Directorate- MOIT	Director
8	3	Dang Hai Dung Science, Technology and Energy Efficiency Dept, General Energy Directorate- MOIT	Deputy Chief of Technical Standards, Metrology, Quality and Intellectual Property
9	4	Tran Huu Ha Science, Technology & Environment Dept.- MOC	Deputy Director
10	5	Dang Hoang An EVN	Deputy Director General of EVN
WG Members (Hydropower Group-1)			
11	6	Tran Viet Hoa Science and Technology Dept.- MOIT	Manager of Energy Efficiency Division
12	7	Duong Khac Hien Hydropower Department, General Energy Directorate- MOIT	Expert
13	8	Dinh Vu Thanh Science, Technology & Environment Dept.- MARD	Deputy Director
14	9	Khong Trung Duan Science, Technology & Environment Dept.- MARD	Expert
15	10	Nguyen Tuan Anh Science, Technology & Environment Dept.- MARD	Expert
16	11	Le Huu Hoang Technical-Operational Dept. -EVN	Expert
17	12	Tran Hong Tien Technical-Operational Dept. -EVN	Expert
18	13	Le Kim Ngoc Science, Technology & Environment Dept. -EVN	Expert
19	14	Nguyen Quang Trung Northern Electrical Testing Company (ETC1)	Staff
20	15	Ngo Thanh Northern Electrical Testing Company (ETC1)	Deputy Manager of High Voltage Division
21	16	Nguyen Van Dau Northern Electrical Testing Company (ETC1)	Expert
WG Members (Hydropower Group-2)			
22	4	Tran Huu Ha Science, Technology & Environment Dept.- MOC	Deputy Director
23	17	Hoang Quang Nhu Science, Technology & Environment Dept.- MOC	Expert
24	18	Nguyen Cong Thinh Science, Technology & Environment Dept.- MOC	Expert
25	19	Dinh Chinh Loi Science, Technology & Environment Dept.- MOC	Expert
26	20	Doan Trong Tuan Vietnam Institute of Architecture, Urban and Rural Planning - MOC	Staff
27	6	Tran Viet Hoa Science and Technology Dept.- MOIT	Manager of Energy Efficiency Division
28	7	Duong Khac Hien Hydropower Department, General Energy Directorate- MOIT	Expert
29	8	Dinh Vu Thanh Science, Technology & Environment Dept.- MARD	Deputy Director
30	9	Khong Trung Duan Science, Technology & Environment Dept.- MARD	Expert
31	10	Nguyen Tuan Anh Science, Technology & Environment Dept.- MARD	Expert
32	11	Le Huu Hoang Technical-Operational Dept. -EVN	Expert
33	12	Tran Hong Tien Technical-Operational Dept. -EVN	Expert
34	13	Le Kim Ngoc Science, Technology & Environment Dept. -EVN	Expert
35	21	Le Quang Vinh The Center for Water Research and Engineering Application (CRA)	Director
WG Members (Thermal Power Group)			
36	22	Nguyen Van Long Science, Technology and Energy Efficiency Dept, General Energy Directorate- MOIT	Expert
37	12	Tran Hong Tien Technical-Operational Dept. -EVN	Expert
38	23	Vu Ta Thong Technical-Operational Dept. -EVN	Expert
39	24	Trinh Van Yen Northern Electrical Testing Company (ETC1)	Manager of boiler calibration
40	25	Nguyen Xuan Truong Northern Electrical Testing Company (ETC1)	Staff
41	26	Nguyen Tuan Anh Northern Electrical Testing Company (ETC1)	Staff
WG Members (Network Group)			
42	3	Dang Hai Dung Science, Technology and Energy Efficiency Dept, General Energy Directorate- MOIT	Deputy Manager
43	27	Nguyen Duy Hoa Science and Technology Dept.- MOIT	Expert
44	28	Cu Huy Quang Science and Technology Dept.- MOIT	Expert
45	29	Cao Van Dung Safe Technique and Industry Environment Dept.-MOIT	Expert
46	30	Trinh Kim Hung Expert hired by MOIT	Retired
47	31	Nguyen Sy Be Expert hired by MOIT	Retired
48	32	Nguyen Quang Viet Science, Technology & Environment Dept. -EVN	Deputy Director
49	33	Nguyen Xuan Khiem Science, Technology & Environment Dept. -EVN	Expert
50	34	Nguyen Trung Kien Science, Technology & Environment Dept. -EVN	Expert
51	35	Do Lan Binh Technical-Operational Dept. -EVN	Expert
52	36	Tran Nam Trung Technical-Operational Dept. -EVN	Expert
53	37	Ho Viet Thong Hanoi Power Corporation (EVN Hanoi)	Deputy Director of Technical Dept.
54	38	Cao Chan VINACONSULT	Chairman of Management Board
55	39	Tran Vinh Tinh Da Nang Technology University	Head of Power system Faculty
56	40	Nguyen Tuan Anh Strategy Institute	Expert of Energy Division
57	41	Vu Dinh Khiem Northern Electrical Testing Company (ETC1)	Deputy Director
58	42	Tran Xuan Tuan Northern Electrical Testing Company (ETC1)	Manager of Workshop
59	43	To Tuan Anh Northern Electrical Testing Company (ETC1)	Deputy Manager of Planning Division
60	44	Phan Thu Thuy Northern Electrical Testing Company (ETC1)	Staff
61	45	Nguyen Danh Duc Northern Electrical Testing Company (ETC1)	Deputy Manager of Relay Division
62	46	Mr. Hai Northern Electrical Testing Company (ETC1)	Staff
63	47	Nguyen Hoang Linh Northern Electrical Testing Company (ETC1)	Deputy Manager of Technical Division

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