

Viet Nam Energy Partnership Group Technical Working Group 4 – Energy Access Report of the 4th Meeting

Date: 3 October 2019

Location: MOIT meeting room 101, 25 Ngo Quyen, Hanoi

Time: 14:00 – 17:00

Key agenda points:

1. Update on the implementation of the Rural Electrification Programme

- 2. Preparation of the High-Level Meeting 2019 (VEPG Progress Report TWG 4)
- 3. Off-grid power systems presentation and discussion of a model project

Chair and Co-Chair:

- **Mr. Nguyễn Duy Hòa**, Director Power Grid Division, Electricity and Renewable Energy Authority (EREA/MOIT)
- Mr. Koen Duchateau, Head of Cooperation, EU Delegation to Viet Nam

Agreed Conclusions and Actions: (See next page)

Agenda:See Annex 1Participants:See Annex 2Minutes:See Annex 3Inputs:See Annex 4

4.1 – Assessment of TWG progress, challenges and outlook

4.2 - Presentations



Agreed Conclusions and Actions:

	Conclusion / Decision	Action
•	The Chair and Co-Chair thanked all TWG 4 participants for joining and for the very active and constructive participation in the meeting.	
•	The Secretariat provided an update on the VEPG activities and further process towards the HLM 2019. The $4^{\rm th}$ meeting of TWG 4 was used to capture inputs from all TWG members for the development of the VEPG Progress Report and the update of the TWG 4 work plan. Based on all inputs from the meeting the Secretariat will prepare the TWG 4 Progress Report and workplan for 2020 in coordination with the Chair and Co-Chair.	Secretariat Chair and Co-Chair
•	EREA gave an update on the implementation of the Rural Electrification Programme stipulated in PM Decision 1740 ('Target Programme'). TWG members discussed and reflected on this with many comments focusing on the challenge of financing and budget/resource mobilization in a context of ODA and loan ceiling constraints.	Chair and Co-Chair Secretariat
•	The Chair and Co-Chair with support of the VEPG Secretariat will address the topic of "Financing Energy Access" at the upcoming Steering Committee meeting and recommend including it as a priority topic at the High-Level Meeting 2019.	
•	The Secretariat presented the status of implementation of the TWG 4 Policy Recommendations and collected inputs from all participants on 'Progress', remaining 'Challenges', 'Outlook' for the work of TWG 4 as well as 'Support' from development partners and sector stakeholders.	Secretariat Chair and Co-Chair TWG
•	TWG members provided valuable comments and inputs (<i>see Annex 4.1</i>) which will be reflected in the draft TWG 4 Progress Report to be developed by the Secretariat in coordination with the Chair and Co-Chair and be submitted to the Steering Committee and HLM 2019. All TWG 4 members are invited to submit further comments to the Secretariat until 25 October (e.g. in case they could not participate at the meeting).	members
•	TWG 4 members provided valuable comments and reflections on the presented feasibility study for the off-grid power project on Bach Long Vy island, Hai Phong (see presentation of Mr. Ngô Đức Việt, PECC 3 in Annex 4.2).	EREA/MOIT
•	The comments and reflections that also referred to previous case study discussions delivered very relevant information and provided guidance to EREA/MOIT for the further work on the 'Target Programme' and for the implementation of the TWG 4 Policy Recommendations.	
•	The Chair and the Co-Chair thanked all members of the TWG for the active participation and will further update members on the development of the VEPG progress report and the preparation of the HLM 2019 in coordination with the Secretariat.	Chair and Co-Chair Secretariat
•	The Secretariat will share all presentations shortly after the meeting and the Report of the Meeting upon approval by the Chair and Co-Chair.	



ANNEX 1 - AGENDA

14.00-14.10 Opening remarks, overview of the agenda

Mr. Nguyễn Duy Hòa / Mr. Koen Duchateau

14.10-14.50 Update on Rural Electrification Programme and Current Developments

- <u>EREA/MOIT</u>: Update on implementation of the Rural Electrification programme, including progress in household connections and the work of the Coordination Board/Committee: progress/achievement and challenges
- *Plenary:* Q&A, further members updates and discussion

14.50-15.50 VEPG High-Level Meeting 2019 - TWG 4 Progress and Future Work

 <u>Secretariat and Chair/Co-Chair:</u> Update on the HLM 2019 planning and draft TWG 4 Progress Report (monitoring/implementing the TWG Policy Recommendations).

<u>Plenary:</u> Discussion and feedback on achieved progress, remaining challenges and future topics for TWG 4 work.

15.50-16.00 Coffee Break

16.00-16.50 Decentralized power systems - Experience from pilot projects

- *EREA/MOIT:* Introduction
- <u>Bach Long Vy island:</u> Project presentation (PECC3)
- *Plenary:* Q&A and discussion

16.50-17.00 Closing of the meeting

Mr. Nguyễn Duy Hòa / Mr. Koen Duchateau



ANNEX 2 - Participants

Co-Chairs

- Mr. Nguyễn Duy Hòa, Director Power Grid Division, Electricity and Renewable Energy Authority (EREA/MOIT)
- Mr. Koen Duchateau, Head of Cooperation, EU Delegation to Vietnam (EUD)

Participants

- Mr. Đinh Duy Phong, EREA/MOIT
- Mr. Trần Mạnh Hà, EREA/MOIT
- Ms. Trần Thuy Dương, EUD
- Mr. Ngô Đức Việt, PECC 3
- Mr. Phạm Nam Hưng, MONRE
- Mr. Trần Hồng Kỳ, World Bank
- Ms. Cassandra Bangay, UNDP
- Mr. Simon James, WWF
- Ms. Trương An Hà, Viet Nam Intiative for Energy Transition (VIET)
- Ms. Đinh Thị Minh Thái, Microcredit and Community Development Institute (MACDI)
- Ms. Pham Thu Hương, MACDI
- Mr. Võ Thanh Tùng, GIZ
- Mr. Lương Thế Hùng, VBF
- Ms. Julie Pham, Arsec Vietnam
- Mr. Wim Mathjis, Greenhack
- Mr. Tô Đình Thái, GIZ
- Mr. Nguyễn Hoàng Lan, GIZ
- Ms. Nguyễn Lan Chi, GIZ

VEPG Secretariat

- Mr. Rainer Brohm, VEPG Secretariat
- Ms. Nguyễn Phương Thảo, VEPG Secretariat
- Mr. Đỗ Quang Nhật, VEPG Secretariat
- Ms. Vũ Minh Hiền, GIZ Support Team



ANNEX 3 - SUMMARY MINUTES

Agenda item	Summary
Opening remarks and overview of the agenda	The Chair opened the meeting and welcomed the participants to the 4 th meeting of TWG 4 on Energy Access. The Chair also introduced that EREA/MOIT has submitted a request to MOF and MPI for additional loans from World Bank and ADB to support the Energy Access activities in the Target Programme for Rural Electrification.
	The Co-Chair welcomed the participants to the meeting and gave an update on the current EU budget support to MOIT on Energy Access and the disbursement of EUR 23 million (grant) in August 2019.
	The Secretariat introduced the agenda of the meeting, followed up on the main outcomes and discussions of the 3 rd meeting of TWG 4 in June 2019 and introduced the planning for the VEPG in 2019 including the planning for the 3 rd High-Level Meeting (HLM) and Stakeholder Forum of the VEPG that is tentatively scheduled for 10 December 2019 (<i>see presentation in Annex 4.2</i>).
Update on Rural Electrification Programme and current developments	Mr. Đinh Duy Phong, EREA introduced the Target Programme for Electrification of Rural, Mountainous, and Island Areas for the 2016-2020 Period (Target Programme) stipulated in PM Decision 1740/QD-TTg and updated the TWG on the implementation progress for the period of June-October 2019 (see EREA presentation in Annex 4.2):
	• On 16 July 2019, MPI issued the Decision 1066/QĐ-BKHDT for the Medium-Term Investment Plan. Most localities have approved Feasibility Study (FS) reports for projects (22 out of 23). One project – Quang Ngai Province - is waiting for MPI to approve the Medium-term budget allocation.
	• EVN has asked the Northern Power Company (NPC) to update the 2015 approved feasibility study for off-grid electrification project for Bach Long Vy island. The updated feasibility study has been completed and the report was submitted to MOIT. The report was approved and will be issued by EVN-NPC soon (see also the presentation of PECC3 later in the meeting).
	 MOIT is actively working with MPI for the investment preparation and instructing the project investors and owners on the investment procedures. MOIT is monitoring and engaging with investors and owners to speed-up the implementation progress.
	• In 2020, MOIT will:
	 Continue to monitor the investments and the implementation of the rural electrification projects and the Target Programme;
	 Complete and issue guidelines on investment procedures for rural electrification projects, especially off-grid projects;
	 Develop guidelines for renewable energy projects (grid-connected and off-grid);



- Conduct assessments and approval of sub-projects invested by EVN under the Target Programme;
- Organize regional workshops to disseminate information and share lessons learned from the implementation of the Target Programme specifically with provincial authorities and local stakeholders.

<u>The TWG 4 members</u> discussed and reflected on the update on the implementation of the Target Programme. The main comments and reflections as well as clarifications from EREA/MOIT are summarized here:

- Programme also includes a provision to provide electricity to pumping stations in the Mekong Delta. Providing electricity for irrigation and for pumping stations including new and retrofitted stations is important for the socio-economic development of the region. Provinces in the Mekong Delta have proposed funding for this objective to the Prime Minister (PM). Under Viet Nam's law, funding for such activities must be integrated into a PM decision or a national programme. Because of the similarity in providing electrification to stipulate socio-economic development for rural areas, the pumping stations in the Mekong Delta were integrated to the Target Programme.
- Ownership mechanism for ODA projects: There are two mechanisms for ownership of projects: (1) if the Provincial People's Committee is the investor: after the approval of the investment and implementation, the project will be transferred to EVN for ownership. (2) If the system is an off-grid ODA funded project: after the investment procures, the Provincial People's Committees will be responsible for the operation and maintenance of the system. The Target Programme is being implemented in 48 provinces. 29 provinces have asked to have the PPC as the investor and 17 provinces asked to have EVN as investor.
- Resource mobilization for the Target Programme: In the Target Programme, the total investment needed is around 25,000 billion VND. Currently, 2,200 billion VND have been mobilized from central state budget and up to 2,500 billion VND (100 million EUR) will be mobilized from the budget support programme of the EU. Thus, so far around 4,700 billion VND (18%) have been mobilized. MOIT is currently working with other ministries to mobilize more concessional loans from international financing organizations and donors, specifically from World Bank and ADB.

EREA/MOIT addressed several barriers to the process of resource mobilization: The resources must be approved in the Medium-term Investment Plan for 2016 – 2020 or must wait for the approval of the Medium-term Investment Plan for 2021-2025. In addition, the public debt ceiling is currently seen as a barrier that prevents obtaining additional concessional loans from international financial institutions. However, MOIT is working towards amending the Decree 132/2018/NĐ-CP on the Management of the ODA and Concessional Loans to support and mobilize more resources for the Target Programme as a special investment project.



It was further discussed that blending ODA loans with grants could be a viable solution to the existing challenges. Some bi- and multilateral banks as well as other development partners are currently discussing this. However, the need for an adjustment of the legal framework was again identified as a priority to allow such blending mechanisms in Viet Nam.

Furthermore, access to Global Climate Fund (GCF) should be another priority since the objectives of the GCF fit well with the rural electrification targets.

<u>The TWG members</u> concluded that the issue of the debt ceiling and the related challenges in mobilizing further international support for the Target Programme are key barriers for the successful development of rural electrification. They suggested that the topic of *Financing for Energy Access* should be addressed as a priority issue at the 3rd VEPG HLM. The Chair and Co-Chair agreed with this analysis and proposed to address this at the upcoming VEPG Steering Committee meeting with support of the Secretariat.

- Impact of the transfer of the supervision of EVN from MOIT to the State <u>Capital Investment Corporation (SCIC)</u>: TWG members mentioned that disbursement of funds to several energy related projects has been delayed after the supervision of EVN was transferred from MOIT to the SCIC. Now there is a concern that this could also affect rural electrification projects. EREA/MOIT assured TWG members that this transfer will have no effect on the Target Programme.
- <u>Potential assessment for off-grid RE projects:</u> Until now, there was no assessment report for the national potential of off-grid RE systems. MOIT will assess the implementation of several off-grid projects to potentially conduct an independent report and recommendations for the off-grid RE potential.

VEPG High-Level Meeting 2019 -TWG 4 progress and future work

The Secretariat recapitulated the topics and recommendations of the TWG 4 Policy Recommendations that were developed in 2018 and facilitated a discussion to capture inputs from TWG members on 'Progress', remaining 'Challenges', 'Outlook' for the work of TWG 4 as well as 'Support' from development partners and sector stakeholders.

Since SNV could not attend this meeting, the Secretariat will directly coordinate with SNV regarding the biogas for rural areas topic after the meeting to get input on this focal topic of the TWG 4.

The TWG members gave comments and recommendations for the Progress Report of the TWG 4 (the results are documented in Annex 4.1). Many inputs reflected the discussion on the Target Programme under the previous agenda topic, among others addressing the following aspects:

- Priority of mobilization of funding for the Target Programme (ODA loans/public debt ceiling, private sector involvement etc.);
- Need for addressing the 'O&M challenge' related to the sustainable operation of off-grid power systems;



• Need for prioritization of projects due to the reduced (perceived) relevance of the topic of Energy Access in Viet Nam;

<u>The Secretariat</u> will review all comments and include the member feedback to the draft VEPG Progress Report in coordination with the Chair and Co-Chair of TWG 4. This draft report will be submitted to the VEPG Steering Committee and subsequently to the HLM 2019.

Decentralized power systems – Experience from pilot projects

Mr. Ngô Đức Việt, PECC 3 presented the pilot project on Bach Long Vy island (see presentation in Annex 4.2). Some of the key messages and information on the project is summarized as following:

- The capacity demand of Bach Long Vy Island is projected to grow from 0.2 MW to 2 MW in 2020, and 8 MW in 2035;
- After a field survey and assessment of solar and wind potential, the island system will consist of 504 kWp solar power, 1,000 kW installed wind capacity (one turbine), battery storage with 500 kW/2MWh, two diesel generators of 1,000 kVA and 560 kVA for 2020 and three diesel generators of 1,000 kVA, 630 kVA and 560 kVA for 2030;
- The electricity price is fixed at 1,826 VND/kWh;
- Total investment costs: 202,940 million VND;
- The project will be commissioned in July 2020.

<u>The TWG members</u> discussed the presentation. Summarized here are the main comments and reflections of the TWG 4 members regarding PECC 3's presentation:

- On the issue of battery storage: it will consist of four separate systems which can be discharged to up to 70% of the storage capacity. The system can be charged depending on the wind and/or sun conditions. The battery storage will operate automatically with a turn-on time of about 2-3 seconds and will be mainly used for frequency stabilization. Due to the condition as an outpost island, far from the mainland, the consulting company recommended using high quality batteries.
- <u>Electricity users:</u> Both the military and civilians will be using the electricity on the island and all demands on the island were included in the projection and calculation of electricity usage.
- <u>Electricity tariffs:</u> The electricity tariff is set at 1,826 VND/kWh in accordance with the electricity tariff set by the government. The assessment conducted by the consulting company showed that the residents of the island can afford this price. However, with the current set price, the project will not be profitable. The consulting company has reported to MOIT to have a special assistance policy for the project.
- Operation and maintenance of the system: the operation and maintenance will be under the management of the Bach Long Vy branch of the Northern Power Company under EVN (EVN NPC). A distinct O&M plan will be developed for the project.
- *Ownership of the system:* the system will be under the ownership of the EVN NPC.



•	<u>Tidal energy:</u> Currently in Viet Nam, tidal energy is still in the research
	phase. Due to the lack of experience in implementing tidal energy
	projects, in addition to the high frequency and often high strength of
	hurricanes in the area of Bach Long Vy island, tidal power was not
	considered for the project.

Closing of the meeting

<u>The Co-Chair</u> thanked the participants for the active participation and update on the electrification process. The Co-Chair will work with the Chair to recommend the topic of financing for Energy Access to the Steering Committee to be included in the discussion at the HLM 2019. The Co-Chair also looks forward to the inauguration of the Bach Long Vy off-grid system as an example for other locations in Viet Nam.

The Chair thanked the TWG members for their active engagement. The Chair emphasized the diversity of options presented in the 3rd and 4th meeting of the TWG, ranging from small-scale renewable energy off-grid system to large-scale hybrid off-grid systems. He also thanked the participants for their constructive comments and recommendations on other technologies such as biomass, biogas, micro/mini hydro for rural electrification. The Chair will incorporate the comments and suggestions into the progress report of the TWG to the HLM to create a sound policy to promote the rural electrification.

<u>The Chair and the Co-Chair</u> will continue to work with the VEPG Secretariat to reach a good representation of the energy access topic in the VEPG Progress Report and the HLM 2019.



ANNEX 4.1 Assessment of TWG Progress, Challenges and Outlook











ANNEX 4.2 Presentations





Viet Nam Energy Partnership Group Technical Working Group 4 – Energy Access

4th Meeting – 3 October 2019 MOIT, Ha Noi

Key Objectives of the Meeting

- Update on the implementation of the Rural Electrification Programme and TWG 4 member activities
- Review of TWG 4 activities and progress on implementation of VEPG
 Policy Recommendations in preparation of VEPG High-Level Meeting 2019
- Outlook priorities for work of TWG 4 in the field of energy access and support needs for the future
- Off-grid power systems: presentation and discussion of model project

Viet Nam Energy Partnership Group

Agenda

Time	Subject
14.00-14.1	1. Opening remarks, overview of the agenda
14.10-14.5	2. Update on Rural Electrification Programme and current developments EREA/MOIT. Chair: Update on implementation of the Rural Electrification Programme and related EA topics Plenary: Q&A, further member updates and discussion
14.50-15.5	 3. VEPG High-Level Meeting 2019 - TWG 4 progress and future work Secretariat: Update on the HLM 2019 planning and presentation of the draft TWG 4 Progress Report (monitoring/implementation the TWG Policy Recommendations) Plenary: Discussion and feedback on achieved progress, remaining challenges, future work/priorities of TWG 4
15.50-16.0	Coffee/tea break
15.55-16.5	4. Decentralized Power Systems - Experience from model projects EREA/MOIT: Introduction Bach Long Vy island: Project presentation (PECC3) Plenary: Q&A and discussion
16.50-17.0	5. Conclusions and closing remarks • Mr. Nguyễn Duy Hòa / Mr. Koen Duchateau

Viet Nam Energy Partnership Grou

Top 1: Opening and Introduction

TWG 4 Chair:

• Mr. Nguyễn Duy Hòa, Director of Rural Electrification and Power Grid Division, EREA/MOIT

TWG 4 Co-Chair:

• Mr. Koen Duchateau, Head of Development Cooperation, EU Delegation to Viet Nam

Viet Nam Energy Partnership Grou

Top 1: Secretariat Report on VEPG Activities

VEPG Secretariat:

• Mr. Rainer Brohm, International Coordinator

Viet Nam Energy Partnership Grou

Follow up on 3rd TWG 4 meeting (June 2019)

New PM Dec. 1740/QD-TTg (13/12/2018)

• Presentation of PM Decision for the Targeted Programme for Electrification of Rural, Mountainous and Islands Areas for the 2016 - 2020 Period.

Presentation of Off-Grid Projects

- Quang Binh (DOIT)
- An Giang & Dak Lak (GreenID)

Technical Solutions for Energy Access (off-grid)

Examples from SolarBK (Trường Sa, Thanh Hoa, etc.)

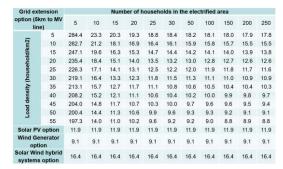


Viet Nam Energy Partnership Group

Follow up on 3rd TWG 4 meeting (June 2019)

Economic analysis of Energy Access options

- · Co-Benefit research project of Institute of Energy
- Comparison of alternative off-grid options and grid extension
- Identification of viable Renewable Energy options for energy access:
 - Single household: Solar (>800Wp) + Battery
 - <u>5-10 households:</u> Hybrid/mini-grid solar + wind + battery
 - 10-1<u>5 households:</u> Hybrid/mini-grid solar + wind + battery + Diesel
- Inputs and feedback of TWG members supported EREA/MOIT for EA work and further policy process!



Viet Nam Energy Partnership Group

VEPG – Timeline for 2019

March-June May Sep/Oct Nov Dec TWG meetings SC meeting TWG meetings SC meeting HLM/Stakeholder Forum 3rd TWGs 4th TWGs 5th SC 3rd HLM 4th SC 28. May 2019 Progress Key topics Key topics Progress review Update VEPG review Progress review Progress Stakeholder Preparation of review Planning 2019 dialogue Planning of HLM Tentatively: HLM 2019 10 Dec ■ TWG co-chair replacements

Viet Nam Energy Partnership Grou

TWG's 4th Round of Meetings – Overview

TWG	3 rd Meeting	Key Topics/Highlights
TWG 1 RE	23. Sep 2019	 Updates on current policy processes (Solar FIT 2, RTS programme, bioenergy FIT etc.) Focus topic: RE grid integration (Grid Assessment in Southern Vietnam)
TWG 2 EE	2. Oct 2019	 Presentation and discussion on draft National EE Action Plan (NEEAP) Discussion of MRV Framework for EE/VNEEP and EE Database
TWG 3 ESR	12. Sep 2019	 Report on first half year of VWEM operation Update on DirectPPA process and pilot scheme Discussion on priority topics / scope-of-work for TWG 3 (competitive power market)
TWG 4 EA	3. Oct 2019	 Progress and Challenges in Rural Electrification Discussion of Energy Access projects in different VN regions
TWG 5 D&S	Nov 2019	 Discussion on VEIS Circular and Pre-Feasibility Study Discussion of approved outline for PDP 8 Discussion of Energy Balance 2017

Viet Nam Energy Partnership Group

High-Level Meeting 2019 – Planning



Proposed date: 10 December 2019

Concept of 3rd VEPG HLM and 1st VEPG Stakeholder Forum:

3rd VEPG HLM:

- Progress review regarding VEPG Policy Recommendations and TWG work since HLM 2018
- Outlook 2020 and guidance of VEPG Chairs for TWGs and Secretariat

1st VEPG Stakeholder Forum:

- Exchange of sector stakeholders on "hot" topics (progress/best-practice in VN/international, challenges, etc.)
- Focus topics:
 - **Strategic Sector Planning** (e.g. PDP 8, Party Energy Strategy, sector scenarios/energy mix of the future)
 - Energy Efficiency (VNEEP 3, etc.)
 - Integration of Renewable Energy / Distributed RE (e.g. Rooftop Solar, community level RE solutions)

Viet Nam Energy Partnership Group

VEPG Partner Support – DP Project Survey

Warrant transport

MAPPING OF CURRENT DONOR AND INTERNATIONAL EFFORT IN VIETNAM ENERGY SECTOR

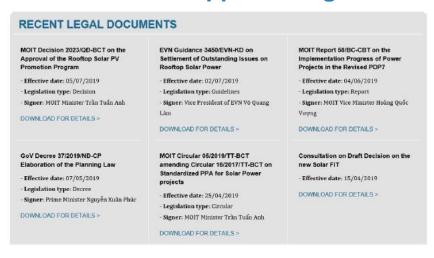
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- Overview of VEPG partner projects in the energy sector (http://vepg.vn/resources/vepg-documents/)
- 80 partner projects with key information included
- New survey update running in September 2019

Viet Nam Energy Partnership Group

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VEPG Partner Support – Legal Database



- Legal Database online and constantly expanding
- +30 legal documents (VN and EN versions).
- PM Decisions, MOIT documents, Consultation Documents, EVN guidelines, etc.
- www.vepg.vn

Viet Nam Energy Partnership Group

VEPG Partner Support – Information Sharing







- **VEPG Partner events** are featured on the website
- +25 workshops and events featured on website and information disseminated to members via TWG email groups in last 10 months.
- Including e.g. Renewable Energy Week 2019 and support of public consultation on Solar FIT 2.

Viet Nam Energy Partnership Group

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Top 2: Update on Rural Electrification

EREA/MOIT:

EREA presentation

Mr. Nguyễn Duy Hòa,
 Director of Rural Electrification and Power Grid Division, EREA/MOIT

Q&A and plenary discussion

TWG 4 members, please share updates on your Energy Access projects

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Top 3: Progress Review and Outlook for TWG 4 / Preparation of HLM 2019

Progress Review - TWG 4 Policy Recommendations

- Progress on the VEPG / TWG 4 Policy Recommendations
- · Review of work of TWG 4

Challenges and Outlook - Future Scope-of-Work and Priority Topics for TWG 4

- Challenges in the field of energy access
- Priority topics and workplan for TWG 4 What is the scope-of-work for TWG 4 in the coming year?

Viet Nam Energy Partnership Group

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VEPG Policy Recommendations



Implementation of the VEPG Policy Recommendations

- MOIT Minister and Co-Chairs of VEPG endorsed the Policy Recommendations from 5 TWGs.
- Technical Working Groups were asked to focus work on supporting the implementation of the Policy Recommendations.
- Monitoring Matrix with information on 40 recommendations with timeline, indicators, progress status and DP support developed for each TWG.
- Ongoing evaluation/assessment of progress during current phase of 4th round of TWG meetings (September/October)
- Presentation of Progress Report for HLM 2019 (submitted for SC review before next SC meeting (October 2019).

Viet Nam Energy Partnership Group

TWG 4 Policy Recommendations – Monitoring of Progress

1	→Financing for increased energy access ncrease the state budget allocation for the Rural Electrification P	rogramme and mobil	lize further domestic and international	funding sour	rces.
li	noreace state hudget for access to energy measures	Short-Term (end of 2019)	Increase state budget for access to energy	Partially Completed	Partly completed: PM Decision 1740/2018 was issued Dec. 2018 approving budget for EA measures
o	of new financial mechanisms such as blending ODA grants with	Medium-Term (end of 2020)	Develop and implement new financial and incentive mechanisms	Ongoing	4E/EVEF Study on policy and financing support for offgr systems
iı	ovestments to unlock additional non-state hudget and non-	Medium-Term (end of 2020)	Develop and implement new financial and incentive mechanisms	Ongoing	4E/EVEF Study on policy and financing support for offgr systems
	Develop a policy to promote independent power supply systems or off-grid areas.	Medium-Term (end of 2020)	Off-grid support programme (?)	Ongoing	4E/EVEF Study on policy and financing support for offgr systems
- 10	consider a Feed-in-Tariff (FiT) for biogas, which could incentivize armers or other private sector stakeholders to invest.	Medium-Term (end of 2020)	FiT for biogas	Ongoing	Not yet targeted (only solid biomass) Potentially W2E expanded to biogas FIT in 2020 (RE Division)

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TWG 4 Policy Recommendations – Monitoring of Progress

opic 2	→ Mini-grids and offgrid solutions in remote areas Implement measures that support the development, implementation/ investment in and efficient operation of high-performance mini-grid systems in Viet Nam's mountainous and island areas under the Rural Electrification Programme (Decision 2081).								
	Draw lessons from international best practice and as well as from pilot projects in Viet Nam for further development of minigrids in the country.	Short-Term (end of 2019)	Analyze international best practice and domestic pilot projects and prioritize off-grid projects in 2081 Programme	Ongoing	4E/EVEF Study on policy and financing support for offgrid systems				
	Prioritize off-grid projects identified in the targeted Programme (Dec. 2081), conduct feasibility studies within a site-specific approach and allocate State budget for implementation.	Medium-Term (end of 2020)	Conduct FS and allocate budget for implementation	Ongoing	Budget for Cao Bang and Bach Long Vy already approved Status of 26 prioritized off-grid systems (2081): ongoing				
	Develop capacities of local workers and other stakeholders by providing trainings on installation, operation and maintenance of renewable energy systems.	Medium-Term (end of 2020)	Develop and implement trainings / capacity building measures	Ongoing	Planned measures for 2020 (study tour, workshop)				

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TWG 4 Policy Recommendations – Monitoring of Progress

Topic 3	→Biomass and biogas (for cooking) Support and implement measures to increase access of households to biogas digesters and clean and efficient cookstoves.								
	Promote a nationwide biogas sector approach where financial resources would be merged, and a common approach, goal and strategy would be ensured.	Short-Term (end of 2020)	Develop a National Biogas Sector Strategy	Ongoing	To be discussed in TWG 1 as well (biogas FiT), to be discussed with MARD				
	Establish a harmonization and coordination mechanism to oversee all biogas initiatives to reach a comprehensive vision of biogas development in Viet Nam and assess remaining market opportunities.	Medium-Term (end of 2020)	Establish institutional framework and coordination mechanism for biogas development.	Ongoing	To be discussed in TWG 1 as well (biogas FiT), to be discussed with MARD				
	Facilitate and promote access to the Green Climate Fund (GCF) and other public climate funds to ignite markets and de-risk investments.	Medium-Term (end of 2020)	Facilitate access to GCF and other financing facilities.	Ongoing	To be discussed in TWG 1 as well (biogas FIT), to be discussed with MARD				

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Discussion: Key Questions

Progress

- Which policy recommendations have been fully implemented? What have been the driving factors (including special commitment from the government, donor support, etc.)?
- Which policy recommendations are progressing well? What is the status? What have been the main factors driving this progress (including special commitment from the government, donor support, etc.)?

Challenges

- Which policy recommendation are progressing only very slowly or have not progressed at all? What are the main challenges/bottlenecks impeding progress?
- Which actions are required to advance those policy recommendations?

Outlook

- Are all the policy recommendations still relevant? Those that are not, why?
- · Are there any new developments that require the addition of new policy recommendations?
- Which new developments, which could potentially have a positive/negative impact on specific policy recommendations, must be taken into account?
- Are there any new DP (or other stakeholder) programmes/projects foreseen for the next reporting
 period that will contribute to the implementation of the policy recommendations (projects/activities in
 the pipeline)?

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Outlook Topics for Future Work of TWG 4

- Financing for Energy Access
 - · Mobilization of State Budget for EA
 - · Mobilization of private sector investments / business models for off-grid systems
 - Feed-in-Tariff for rural biogas (in coordination with RE Division/TWG 1)
- · Off-Grid Mini-Grids
 - Further proceeding with 26 off-grid projects (Feasibility Studies)
- · Biomass & Biogas for Cooking
 - Options for coordination with MARD?
- Further / other topics...?

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Tea Break

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Top 4: Focus Topic – Off-Grid Systems

PECC3 presentation

Bach Long Vy Island Project presentation:

• Mr. Ngo Duc Viet , Deputy Head of Renewable Energy Division PECC3

Discussion / O&A

• Learnings for a sustainable design, implementation and operation of off-grid systems?

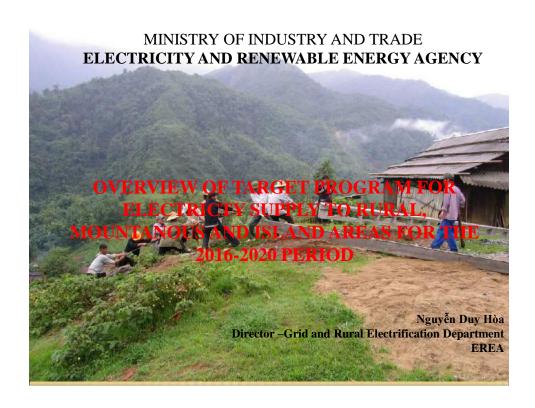
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Closure of the Meeting

Mr. Nguyễn Duy Hòa, Director of Rural Electrification and Power Grid Division, EREA/MOIT Mr. Koen Duchateau, Head of Development Cooperation, EU Delegation to Viet Nam





Nội dung:

- 1. Status of electrification of rural areas in the 2011-2016 period
- 2. Electrification program for rural, mountainous and island areas for the 2019-2020 period.

I- STATUS OF RURAL ELECTRIFICATION FOR THE 2011-2016 PERIOD

Year	2011	2012	2013	2014	2015	2016
Communes	98.72%	99.36%	99.57%	99.70%	99.85%	99.97%
Rural households	96.65%	97.19%	97.85%	98.05%	98.49%	98.69%





II- TARGET PROGRAM FOR RURAL ELECTRIFICATION FOR 2016-2020 PERIOD

Target program for electrification of rural, mountainous and islands areas for the 2016 - 2020 period in the Prime Minister's Decision 1740/QD-TTg dated 13/12/2018:

1. Program name: Target Program for Electrification of Rural, Mountainous and Island areas for the 2016-2020 period

2. Objective:

- a) Provide electricity for households without access to electricity or have unreliable and unsafe electricity
 - 17 Communes without access to electricity;
 - 9.890 villages
 - 1.055.00 households from national grid
 - 21.000 households from renewable energy sources, outside of the national grid
- b) Provide electricity for small and medium size pumping station in the Mekong Delta (13 provinces/ cities)
- c) Increase electricity access for island districts and communes (02 island district and 03 island communes)

3. Scope of the program:

- Provide electricity for household usage in 48 provinces, Central-administrated cities
- Provide electricity to 13 pumping stations in 13 provinces in the Mekong Delta

TARGET PROGRAM FOR RURAL ELECTRIFICATION FOR THE 2016-2020 PERIOD

- 4. Scope of Investment
- 4.1. Total Investment: about 30.116 billion VND, according to structure:
 - a) According to Investment sources:
 - Investment from the central budget 2016-2020 period: ~2.218 billion (domestic investment)
 - ODA and international concessional loan: ~ 23.381 billion VND including:
 - + 2.525 billion VND in grant from EU;
 - + 20.856 billion VND from mobilization of ODA and Concessional Loans;

Reciprocal investment arranged by local authority: ~ 3.121 billion VND;

- Reciprocal investment from EVN: ~ 1.397 billion VND

b) According electrification target:

- Rural and mountainous areas electrification: ~ 28.389 billion VND;

- Islands electrification: ~ 1.718 billion VND.

c) According to electrification type:

- Electricity supply from national grid: ~ 28.684 billion VND;

- Electricity supply from renewable energy sources: ~ 1.432 billion VND.

TARGET PROGRAM FOR RURAL ELECTRIFICATION FOR THE 2016-2020 PERIOD

- 4.2. Investment mobilization mechanism:
 - Investment from Central Budget: in accordance with the Medium-term public investment plan 2016-2020
 - ODA, concessional loan;
 - Reciprocal investment from local authorities
 - Reciprocal investment from EVN;
 - Encouragement for socialized investment
- 4.3. Principle for investment prioritization
 - Prioritize the electrification of commune without access to electricity;
 - Prioritize the electrification for projects/ urgent investment items in poor provinces which does not have balanced budget, provinces with lower than national average percentage of households with access to the national grid
- 5. Program implementation time frame: 2016-2020

For projects using ODA, international concessional loans must be in accordance with rules under Treaties

TARGET PROGRAM FOR RURAL ELECTRIFICATION FOR THE 2016-2020 PERIOD

- 6. Project components, tender delivery mechanisms
- 6.1. Project components
- a) Project using investment from Central budget (included in the medium-term public investment plan): including 28 projects, among which: EVN is the investor of 05 projects, local authorities manage 23 projects;
- b) ODA Projects: The MOIT presides and coordinate with the MPI, MOF to submit to the Prime Minster for approval of the project components and scale

Project components and balance of investment (according to the Annex of the Decision 1740)

TARGET PROGRAM FOR RURAL ELECTRIFICATION FOR THE 2016-2020 PERIOD

- 6.2. Investor appointment and post-investment management
 - a) Investor appointment mechanisms
- Projects with investment from the central budget: current investors will continue to implement the project;
- Projects with investment from EVN, EVN will assigns Power Companies as investors;
- Projects implemented by local authorities: provincial PC will assign relevant local authorities as investors.
 - b) Post-investment operation management
- Projects implemented by EVN: Power companies will continue to mange the operation
- Projects implemented by the Local Authorities (from the national gird): assign EVN to coordinate with Power Companies to receive and management the operation in accordance to the existing regulations.
- Renewable Energy projects: assign to the Provincial People's Committee to directs the relevant provincial authorities to organize the management and post-investment operation (build, approving mechanisms, organizing operation management, maintenance process)

TARGET PROGRAM FOR RURAL ELECTRIFICATION FOR THE 2016-2020 PERIOD

7. Implementation organization

- MOIT shall assume prime responsibility and coordinate with the MOF, MPI to provide guidance to the Local Authorities and EVN for the implementation of the Program
- MPI and MOF will balance and allocate the development investment in accordance to the Medium-term plan and yearly plan in order to the implement the program
- Provincial/ Cities People's Committee
 - + Establish Steering Committee
 - + Assume the responsibilities for land clearance and compensation
 - + Arranging reciprocal capital
- EVN:
- + Provide guidance to the Power Companies to fulfill the function as investor
- + Provide reciprocal capital
- + provide guidance for Power Companies to perform the reception and handover of post-investment work.

III. UPDATED IMPLEMENTATION PROGRESS OF THE PROGRAMME

- x 3.1. Legal documents on mid-term budget allocation:
- MPI issued Decision 1066/QD-BKHDT dated 16/7/2019
- × 3.2. Investment status
- x 3.2. Project implementation progress
- b) Localities
- Most of localities have approved Feasibility Study reports for projects: 22/23 projects approved, accounting for 95.6%
- 01 project is awaiting MPI's decision on mid-term budget allocation
- × c) EVN
- Carried out component projects of remaining provinces under the Programme, particularly projects on power supply to Bach Long Vy island of







III. UPDATED IMPLEMENTATION PROGRESS OF THE PROGRAMME

- × 3.2. Project implementation progress
- * a) For MoIT
- Actively check the investment preparation
- Instruct Project owners to follow regulated investment procedures
- Push Project owners to speed up the projects implementation progress







III. UPDATED IMPLEMENTATION PROGRESS OF THE PROGRAMME

- **x** 3.3. Upcoming implementation plan:
- + Continue checking and supervising the Programme implementation in provinces where provincial PCs are owners of sub-projects.
- + Finalize and promulgate guidelines on investment procedures for power supply projects for rural, mountainous areas and islands
- + Develop guidelines for renewable energy sub-projects of provinces (gridconnected and off-grid projects)
- + Validate and approve sub-projects invested by EVN under the Programme.
- + Organize regional workshops in various regions and areas to disseminate and draw lessons from the Programme implementation.





CÔNG TY CP TƯ VẤN XÂY DƯNG ĐIỆN 3

EVNPECC3 POWER ENGINEERING CONSULTING J.S. COMPANY 3

NORTHERN POWER CORPORATION POWER DEVELOPMENT PROJECT MANAGEMENT BOARD

Power supply for Bach Long Vy island district of Hai Phong City in the period 2015-2020

Oct-2019

Project manager: Master Ngo Duc Viet Renewable Energy Division



CÔNG TY CP TƯ VẪN XÂY DƯNG ĐIỆN 3 **EVNPECC3** POWER ENGINEERING CONSULTING J.S. COMPANY 3

OUTLINES:

- 1. Status of Power Sources and Power Grid in Bach Long Vy island
- 2. Planned Power System
- 3. Wind and Solar Radiation Potential
- 4. Field Survey Results
- 5. Hybrid Power System Calculation and Connection
- 6. Total Investment Cost and Schedule
- 7. Investment Effectiveness Analysis
- 8. Conclusion



1. Status of Power Grid

A. POWER SOURCE

Currently, the Diesel generator unit comprises of the following generators:

- ✓01 630kVA generator (operationalized in 2017);
- ✓01 560kVA generator (operationalized in 2015);
- ✓02 414kVA generators (old, received from the existing power grid of Bach Long Vy operated for long time, generation capacity of 30% only)

The island has 236 power meters in total.

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1. Status of Power Grid

B. POWER GRID

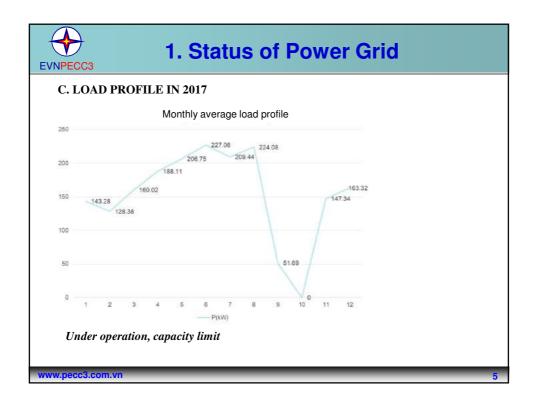
Substation

		Total				
No.	Name of property	Number of substation/transformer	Capacity (kVA)			
1	Distribution transformer 10/0.4kV	5/5	1060			
2	Step-up transformer 0.4/10kV	01	1000			
3	Diesel generator	03	1.604kVA			

Substation A-180kVA, Substation UB-180kVA, Substation CBNC-250kVA, Substation B-50kVA and Substation HCNC-400kVA Mid-voltage and low-voltage cable lines

No.	Name of property	Total length (km)
1	Mid-voltage	3.260
2	0.4kV	18.280

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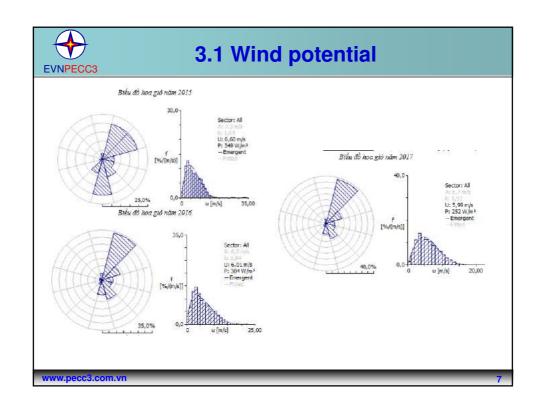
2. Planned Power System

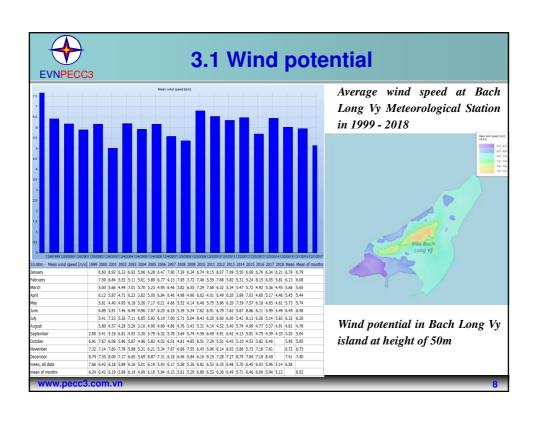
The (load) demand forecast of Bach Long Vy island district is conducted based on the Decision No. 4274/QD-BCT on approving the Hai Phong City's Power Development Plan (PDP). The electricity demand is forecast as below:

Capacity demand (MW)			
2020	2025	2030	2035
2	3	5	8

As initially proposed, it is expected to invest in developing wind power of 1,000kW, solar power of 500kW, and storage battery capacity of 7.4MWh.

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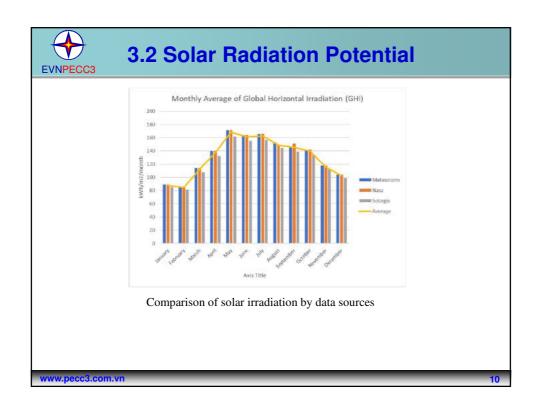
3.1 Wind potential

Based on the profile and figures, it can be seen that the wind in Bach Long Vy island area is relatively good with **prevailing wind direction of Northeast** and East-Northeast. The wind potential in this area at **turbine tower height of 50m** ranges from 6.4m/s to 7.9m/s, with average wind speed at this height of **7.39m/s**. This is an ideal condition to make best use of wind energy for power production and supply for the island.

In addition, the wind frequency and direction in Bach Long Vy island do not change much which could help assure design optimization to get wind energy as much as possible.

Calculation results from the WindPro software are as follows:

Calculated Annual Energy for each of 1 new WTGs with total 1.0 MW rated power Annual Energy Park Efficiency Capacity Free mean Links Valid Manufact. Type-generator Power, Rotor Hub Creator Name Result rated diameter height factor wind speed [kW] [m/s] ENERCON E-58/10.58-1,000 1,000 Level 0 - guaranteed - - 03-2003 100.00 58.0 50.0 3,148.9 EMD 7.39





3.2 Solar Radiation Potential

In this Feasibility Study report, the solar irradiation data of Meteonorm were used as input data for calculation for solar power plant in Bach Long Vy island district. The results show that the annual average irradiation in the project area is around 126.12kWh/m²/month (or 4.15 kWh/m²/day). Of which, the irradiation value from May to August is over 5 kWh/m²/day, and gradually decreases in early and late months of the year.

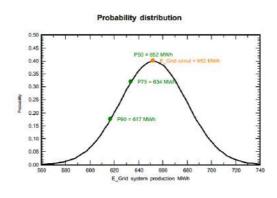
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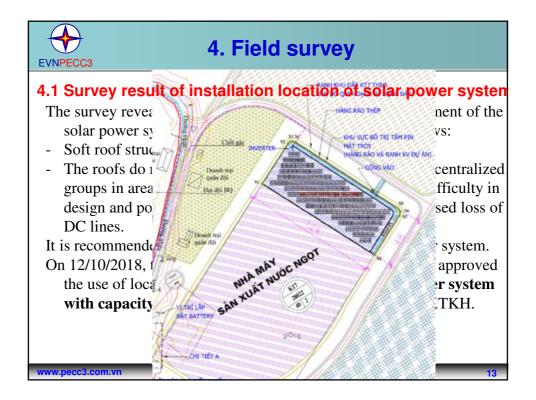


3.2 Solar Radiation Potential

The power yield generated from the solar power system in the island simulated by the PVSYST software is as follows:



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4. Field survey

4.2 Survey result of installation location of wind turbine

Through the survey, only the top of the Northeastern uplifted area (the existing wind turbine area) is <u>technically potential and feasible for connection and license agreement</u>. However, the area is limited by a particular slope, located between watchtower and the army's defensive artillery (measured distance of 123m). It is proposed to invest one wind turbine with capacity of 1,000kW near the existing wind turbine.

4.3 Survey result of installation location of storage battery

Via working with the district People's Committee, Bach Long Vy power branch and Bach Long Vy Battalion, installation locations of battery house are under management of Bach Long Vy power branch which fully facilitates the agreement and installation of the storage battery. The planned location has an area of 306m^2 . It is proposed to invest one storage battery system with capacity of 500kW/2MWh.

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5. Calculation results

5.1 Configuration declaration

Based on the survey results, demand and load forecast for the island, the design of the power grid system on the island has system configurations as follows:

Solar power system: 504kWp;

Installed capacity of wind turbine: 1,000kW;

Storage battery system of 500kW/2MWh

Peak demand/ power demand:

- + Case 1 in the period to 2020: 2,000kW/11,345kWh/day with requirement of full power supply for 100% load on the island (shortage = 0%).
- + Case 2 in the period to 2025: 3,000kW/17,017.5kWh/day with requirement of full power supply for 100% load on the island (shortage = 0%).
- Results of calculation by Homer software are as follows:

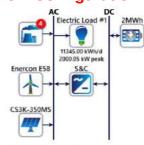
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5. Calculation results

5.1 Configuration declaration: the period to 2020

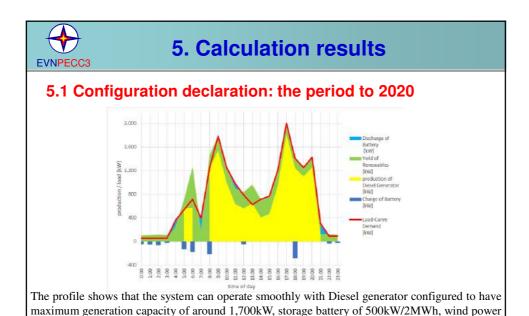


Conclusion: With the maximum capacity demand-power demand on the island of 2,000kW-11,345kWh/day, the hybrid power system needs operating two Diesel generator units of 1,000kVA and 560kVA in association with operating the wind and solar power systems to meet the power demand.

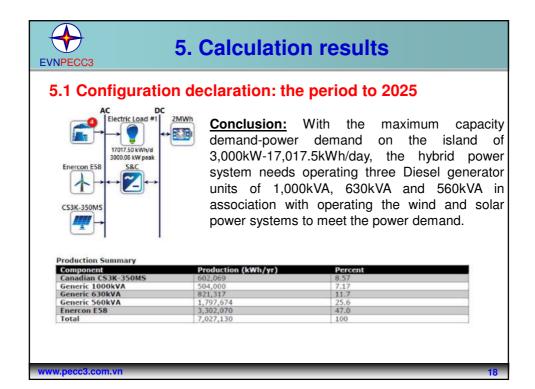
Production Summary

Component	Production (kWh/yr)	Percent	
Canadian CS3K-350MS	602,069	11.3	
Generic 1000kVA	597,463	11.2	
Generic 560kVA	817,803	15.4	
Enercon E58	3,302,070	62.1	
Total	5.319.406	100	

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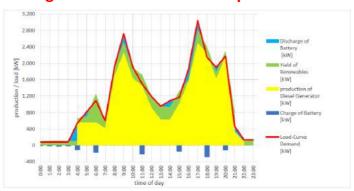
of 1,000kW and solar power of 504kWp. The number of operating hour of the Diesel system is remarkably reduced, around 14 hours/day. Expected generation cost of the system per power unit is 14.5 UScents/kWh, equivalent to 3,369 VND/kWh. www.pecc3.com.vn





5. Calculation results

5.1 Configuration declaration: the period to 2025



The profile shows that the system can operate smoothly with Diesel generator configured to have maximum generation capacity of around 2450kW, storage battery of 500kW/2MWh, wind power of 1,000kW and solar power of 504kWp. The number of operating hour of the Diesel system is remarkably reduced, around 16 hours/day. Expected generation cost of the system per power unit is 21.6 UScents/kWh, equivalent to 5,019 VND/kWh.

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5. Calculation results

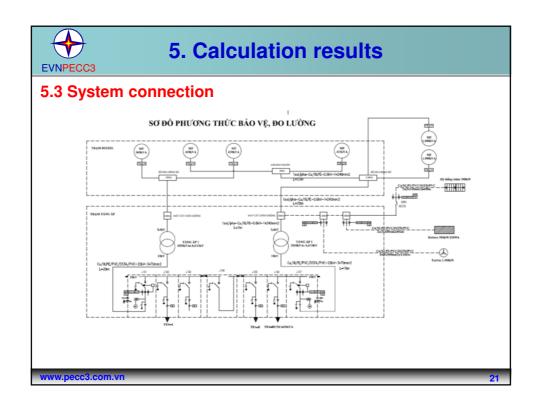
5.2 Calculation results

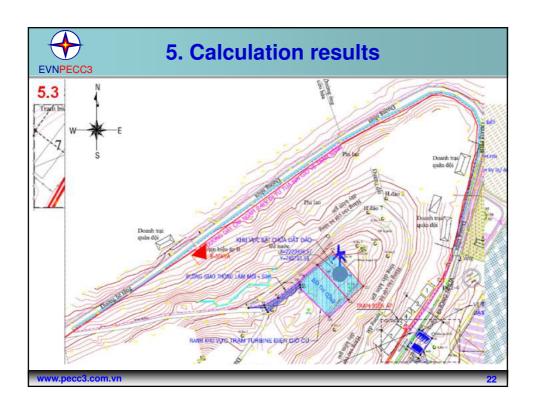
The above HOMER-based calculations show that the power system with planned Diesel-based power to 2020 of 3,190kVA, wind power of 1,000kW and solar power of 500kW can fully meet the power demand of 3MW to 2025.

The general configuration of the renewable energy system in Bach Long Vy island:

Specifications	Configuration	
Solar PV panel capacity Wp (STC)	350	
Total solar PV panels	1,440	
Total installed PV capacity (kWp)	504	
Total installed wind capacity (kW)	1,000	
Total installed battery capacity (kW/kWh)	500/2,000	
Diesel system (kVA)	3,190 (630+560+1,000+1,000)	

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Total investment cost:			
+ Cost for land compensation and site clearance	:	4,941	Million VND
+ Cost for construction	:	16,150	Million VND
+ Cost for equipment	:	140,270	Million VND
+ Project administration cost	:	3,015	Million VND
+ Cost for consulting services	:	5,285	Million VND
+ Other expenses	:	5,829	Million VND
+ Contingencies	:	27,459	Million VND
Total	:	202,949	Million VND

No.	Item	Implementation time
1	Preparation of F/S report and design	January 2018 - September 2019
2	Layout and alignment agreement	June 2018 - April 2019
3	Site clearance	October 2019 - January 2020
4	Bidding and procurement	October 2019 - March 2020
5	Equipment import	March 2020 - June 2020
6	Construction of facilities and infrastructures	March 2020 - May 2020
7	Equipment installation, building of connection part	May 2020 - June 2020
8	Inspection, acceptance and commission	July 2020



7. Financial analysis

Financial indicator	P50
FNPV (million Dong)	-5.954
FIRR (%)	1,82
$\mathrm{B/C_f}$	0,89

The results show that if the electricity price is fixed at 1,826 VND/kWh for long term, the project will not be financially effective.

The cost-saving effect of the project compared with the option of using 100% diesel generators of same capacity can be seen as below:

- → Total power amount generated from renewable energy sources is 3,801 MWh/year
- → Total fuel cost (power production cost) can be saved each year thanks to RE project is VND 17,321,157,000 billion.

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8. Conclusion

The investment of continuous and secure power source in Bach Long Vy island district will surely make great contribution to maritime economic development of the Gulf of Tonkin area. Given the fact in the past when the ice water factory had electricity for operation, Bach Long Vy island welcomed tens of thousands of turns of vessel and ship to avoid thunderstorms, procure commodities and repair services every year. Up to date, the electricity is enough for minimum living activities only resulting in closure of fishery logistics companies and failure of Bach Long Vy island to promote and make use of its available potentials and favorable geographic location. Recently, the Central Communist Party and the Government have prioritized to invest a fresh water reservoir and an additional lock for Bach Long Vy island. Adequate and secure power sources will obviously make fishery logistics services better develop and keep fishermen exploiting the sea more efficiently and safely.

The investment in RE development is in line with the development trend of the Government and the global trend.

Furthermore, the association of RE with favorable natural conditions and beautiful beaches will also promote and significantly contribute to economic development of the island district, affirmation of country's sovereignty and improvement of the residents' living.

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