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CAPACITY BUILDING NEEDS ASSESSMENT

For energy transition progress in Viet Nam



EXECUTIVE SUMMARY

This report was developed and reviewed by Ms. Vu Chi Mai - Project Director of the Clean, Affordable and Secure Energy for Southeast Asia (CASE) Project in Viet Nam; Mr. Ta Quang Hung - CASE's Senior Energy Advisor, Ms. Nghiem Thi Ngoan - CASE's Energy Advisor, and Ms. Mai Thi Xuyen - Junior Knowledge Management Specialist based on the initial study results of an expert group including Dr. Le Duy Binh, MSc. Pham Tien Dung from Economica Viet Nam, and Mr. Ha Huy Ngoc - Energy Policy Expert.

The study was conducted within the framework of the CASE Project, which aims to support partner countries in Southeast Asia in transitioning to a future clean energy system that provides reliable and affordable energy to the people while advancing political ambitions to achieve the Paris Agreement. With a comprehensive approach involving public, private, and research organizations, the CASE project seeks to contribute to the transformation of the energy sector in Thailand, Indonesia, the Philippines, and Viet Nam towards an evidence-based energy transition.

This study on the Assessment of Capacity Building Needs has an overall objective of identifying the needs of the key stakeholders and then providing suggestions on feasible measures to better support the main actors involved in the energy transition (ET) progress in Viet Nam. The study results might be a reference for not only the CASE project but also others while considering capacity-building measures for the Vietnamese stakeholders.

Human capacity is not only with capability of human resources or individuals, but it depends heavily on the policy and institutional levels which are seen as the first condition for decision-makers to act and fulfill his or her mandates. Accordingly, to get a comprehensive picture of the capacity building needs, it is important to look at various levels of gaps in terms of **legal frameworks, and institutional capacities of actors involved in state governance, implementation, and supporting** the process of energy transition (including but not limited to RE development and energy efficiency measures) will be analyzed. Consequently, capacity building measures will be provided to support the related parties in better performing their mandates and participation in the energy transition progress.

Based on the survey's results, **limited enforcement personnel** in respective units poses a constraint, hindering smooth implementation. Addressing this, comprehensive training on novel energy paradigms is essential, particularly for senior leadership and technical experts as well as junior professionals. However, **a scarcity of skilled personnel due to inadequate** focus on new and renewable energy resources in universities and research institutes underscores the need for improved training frameworks. This gap impacts strategy execution and may lead to higher costs due to the reliance on foreign labor.

In terms of employment, transitioning from coal-powered energy to renewable energy industries risks job displacement for coal industry workers. This requires systematic vocational training, with precise job-role allocation within target groups. This approach ensures a methodical transition, aligning with broader energy transition goals.

The survey results from this study suggested a total of **11 general topics** and **49 specific topics** for capacity-building measures. Out of these topics, the majority of need lies in the realm of new technology in Viet Nam (green hydrogen, offshore wind, waste to energy), power market (bidding mechanism, competitive market, capital mobilization, risk management), and international best practices. The topics and format of capacity measures shall also be tailored to the specific requirements of different target groups.

Limitations of the study: Owing to time and resource constraints, this study is subject to certain limitations. For instance, the quantity and scope of survey samples remain modest, potentially overlooking pertinent and necessary topics, as well as lacking in-depth exploration of each subject matter. Nonetheless, to ensure the effectiveness and relevance of capacity-building activities, a pre-survey before organizing training sessions shall be conducted to reconfirm the needs at that time.



DISCLAIMER

While to the maximum extent possible the authors have attempted to provide up-to-date and reliable information provided in this report, the authors cannot be held legally responsible for its absolute accuracy. The information presented was provided at the time of research and may change over time.

The views expressed by the authors do not necessarily reflect those of the donor and GIZ.

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ABBREVIATION

CASE	Clean, Affordable, and Secured Energy for Southeast Asia	ET	Energy transition
CMSC	Committee for the Management of State Capital at Enterprises	EVN	Viet Nam Electricity Corporation
CNA	Capacity Needs Assessment	FIT	Feed-in Tariffs
CSTE of NA	Committee on Science, Technology and Environment - National Assembly	GDT - MOF	General Department of Taxation - Ministry of Finance
CFPP	Coal fire power plant	GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
DCC of MONRE	Department of Climate Change - Ministry of Natural Resources and Environment	HUNRE	Hanoi University of Natural Resources and Environment - Ministry of Natural Resources and Environment
DCP of MARD	Department of Crop Production, Ministry of Agriculture and Rural Development	HUST	Hanoi University of Science and Technology
DEESD of MOIT	Department of Energy Efficiency and Sustainable Development - Ministry of Industry and Trade	IEC	Information – Education - Communication
DISA of MPI	Department of Investment Supervision and Appraisal - Ministry of Planning and Investment	IEVN-MOIT	Institute of Energy - Ministry of Industry and Trade
DLH of MARD	Department of Livestock Husbandry, Ministry of Agriculture and Rural Development	IRENA	International Renewable Energy Agency
DPM - MOF	Department of Price Management - Ministry of Finance	ISPENRE of MONRE	Institute of Strategy and Policy on Natural Resources and Environment - Ministry of Natural Resources and Environment
DSENRE of MPI	Department of Science, Education, Natural Resources and Environment - Ministry of Planning & Investment	MARD	Ministry of Agricultural and Rural Development
DST of MONRE	Department of Science and Technology - Ministry of Natural Resources and Environment	MEA	Metropolitan Electricity Authority
DOIT	Department of Industry and Trade	MOC	Ministry of Civil Construction
DONRE	Department of Natural Resources and Environment	MOET	Ministry of Education and Training
DUT	Da Nang University of Science and Technology	MOF	Ministry of Finance
ECA	Economica Vietnam	MOF	Ministry of Finance
EGAT	Electricity Generating Authority of Thailand	MOIT	Ministry of Industry and Trade
EPU	Electric Power University	MONRE	Ministry of Natural Resources and Environment
ERAV of MOIT	Electricity Regulatory Authority - Ministry of Industry and Trade	MOST	Ministry of Science & Technology
EREA of MOIT	Electricity and Renewable Energy Authority - Ministry of Industry and Trade	MOT	Ministry of Transportation
ESI	Electricity Supply Industry	MPI	Ministry of Planning and Investment
		NGO	Non-Government Organization
		PDP 8	Power Development Plan VIII
		PEA	Provincial Electricity Authority



1. Introduction

1.1. Objective of the assignment

This study on the Assessment of Capacity Building Needs has the overall objective of identifying the needs of the key stakeholders and then providing suggestions on feasible measures to better support the main actors involved in energy transition (ET) progress in Viet Nam. Relevant capacity building measures supporting key actors to better perform their mandates, and participation in energy transition progress are supposed to be recommended.

1.2. Methodology

To achieve the specific outputs of this assignment, the following framework is applied to conduct the assignment:

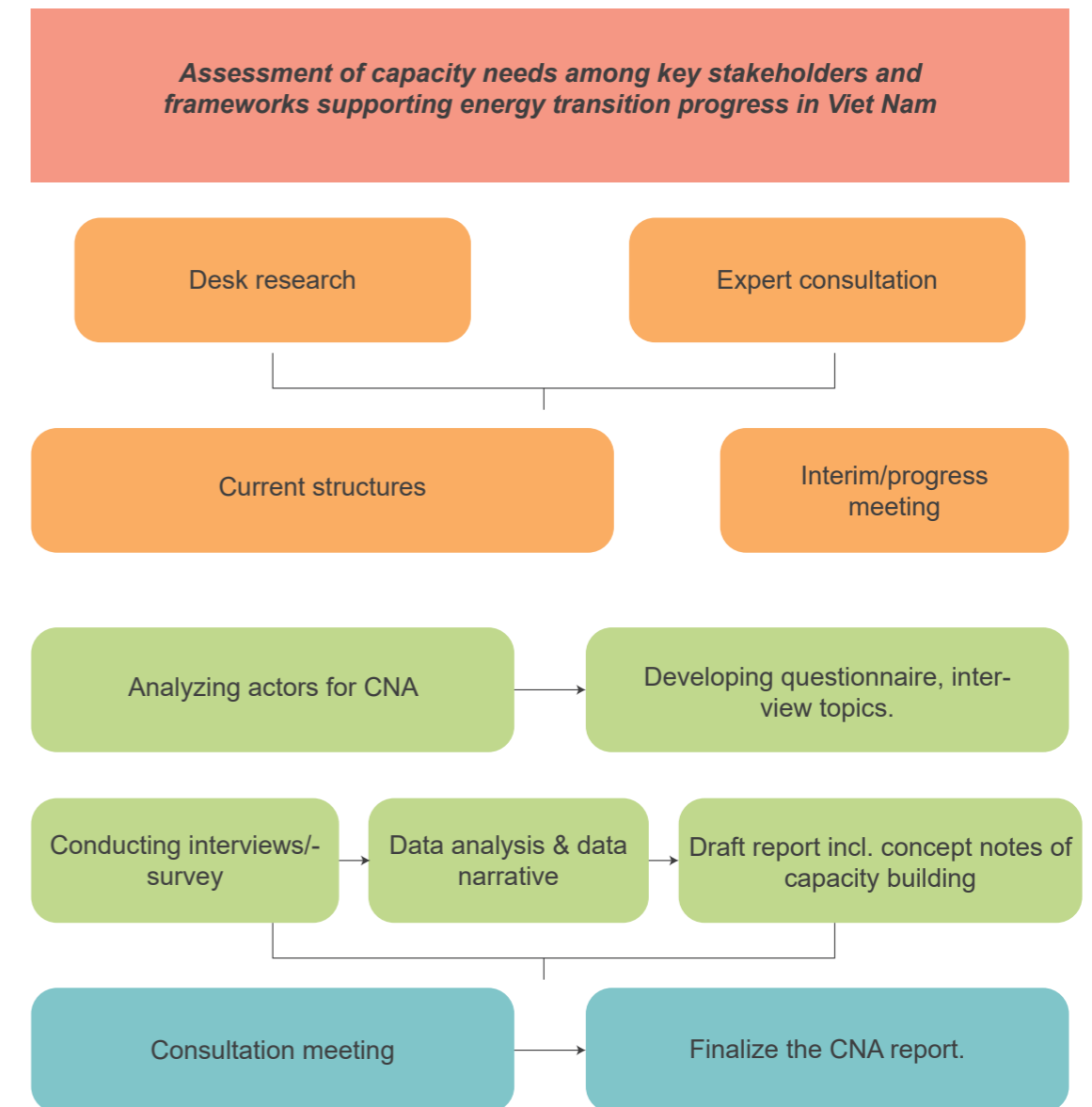


Figure 1 - The research process

Given the varying methodologies employed across each work package, detailed analysis methods will be outlined at the outset of the subsequent chapters.

The report will be divided into 3 parts:

- Energy transition landscape in Viet Nam
- Capacity needs assessment
- Proposed capacity building program



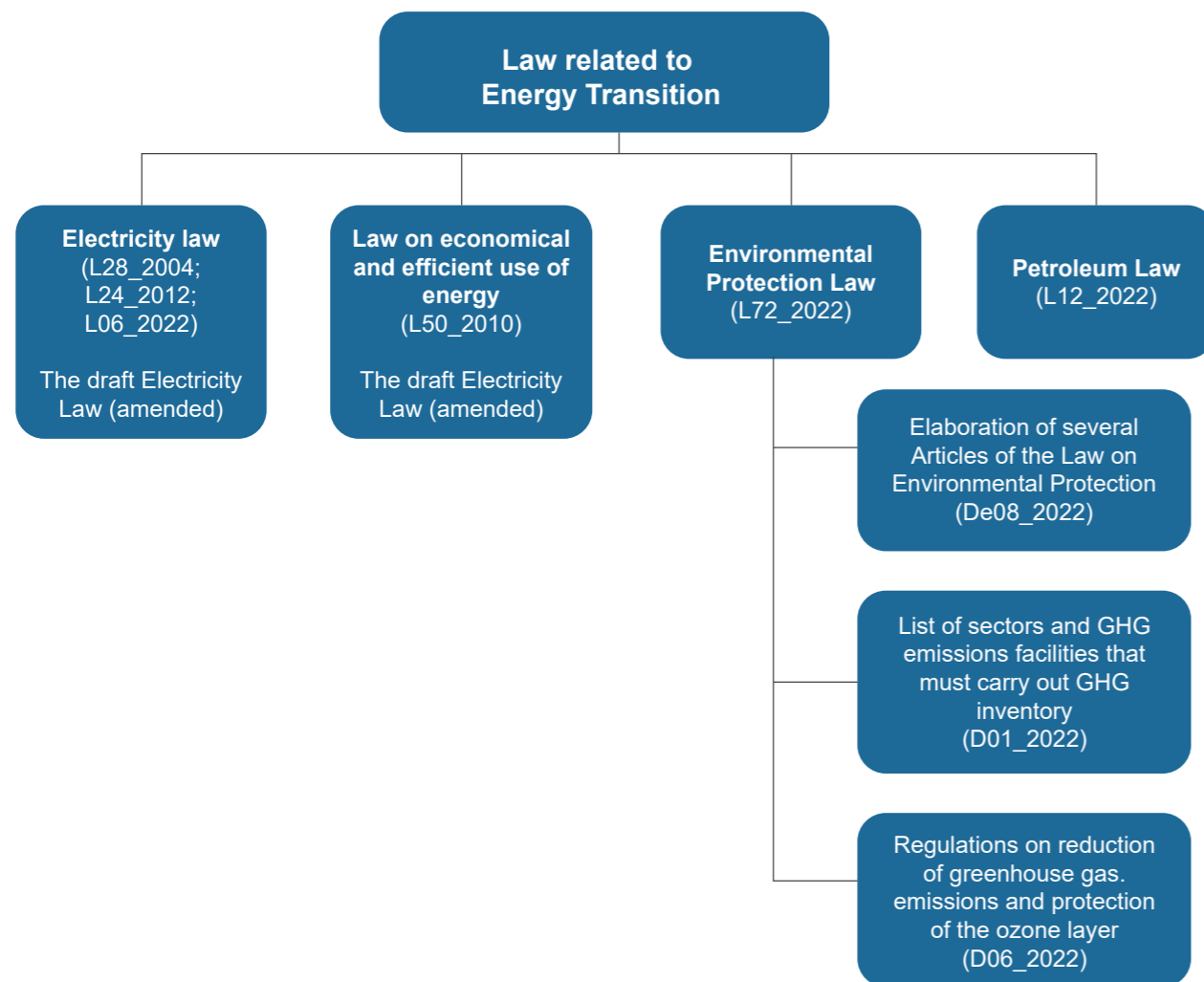
2. Energy transition landscape in Viet Nam

2.1. Overview of Regulatory Landscape for Energy Transition in Viet Nam

Viet Nam is undergoing a significant transition in its energy sector, driven by the need to address energy security concerns, mitigate climate change impacts, and promote sustainable economic growth while aligning with and fulfilling international commitments and NDC targets to achieve net zero by 2050. The country's energy transition journey is characterized by a shift towards cleaner and more diversified energy sources, with a particular focus on renewable energy development.

To realize this target, Viet Nam has made significant strides in establishing a supportive policy and regulatory framework for energy transition by introducing numerous legal documents, policies, and initiatives aimed at enhancing its regulatory landscape and facilitating the transition to a more sustainable energy system.

Resolution 55-NQ/TW dated 11 February 2020 by the Politburo on orientations for Viet Nam's National Energy Development Strategy towards 2030 with a vision to 2045 is one of the important documents related to the energy transition in Viet Nam. It outlines the Party's general orientations and the highest principles for energy transition in Viet Nam, including providing adequate, stable, high-quality energy at reasonable prices for rapid and sustainable socio-economic development, ensuring national defense, security, improving people's living standards, and contributing to environmental protection. Resolution 55 highlights the critical objectives of providing a stable and high-quality energy supply while maintaining reasonable prices. These objectives are not only related to rapid and sustainable socio-economic development but also ensure national defense, security, and enhance people's living standards. Additionally, Resolution 55 emphasizes the importance of environmental protection.



Note:
 L: Law; D: Decision; De: Decree; Di: Directive; C: Circular
 L12_2022: 12 is the number of the Law and 2022 is the year the law was issued

Figure 2 - Main laws related to energy transition in Viet Nam

The Electricity Law No. 28/2004/QH11 dated 3 December 2004 by the National Assembly, effective from 1 July 2005, amended and supplemented by Law No. 24/2012/QH13 dated November 20, 2012, and Law No. 28/2018/QH14 dated 15 June 2018, is a crucial legal framework for the development of Viet Nam’s electricity sector. It sets out requirements and regulations for power planning and investment, energy efficiency, and the establishment and development of the electricity market. Currently, the Government has proposed a comprehensive revision of the Electricity Law to be adopted in 2025 with five major policy areas, including: power planning and investment to ensure national energy security; improving regulations on conditions for electricity operations and the issuance and revocation of electricity operation licenses; managing electricity trading towards promoting a transparent, fair, and efficient competitive electricity market with market-based pricing mechanisms; managing power system operations, emphasizing the promotion of energy efficiency and demand-side management solutions; implementing demand response and addressing issues related to electricity safety and hydropower plant operations.

The Law on Economical and Efficient Use of Energy No. 50/2010/QH12, dated 17 June 2010 by the National Assembly, effective from January 1, 2011, amended and supplemented by Law No. 28/2018/QH14 dated 15 June 2018, regulates the economical and efficient use of energy, as well as policies and measures to promote energy efficiency in household activities and other sectors such as commercial services, industrial production, agriculture, construction, lighting, and transportation, contributing to environmental protection, sustainable economic development, and energy security. The Viet Nam’s National Energy Efficiency Programs (VNEEP) for the periods 2006-2010 (VNEEP 1) and 2012-2015 (VNEEP 2) were successfully implemented, achieving the set energy-saving targets. The National Energy Efficiency Program for the period 2019-2030 (VNEEP 3) aims to achieve energy savings of 5.0 to 7.0% of the total national energy consumption from 2019 to 2025 and 8 to 10% from 2019 to 2030. The Ministry of Industry and Trade has also proposed reviewing and amending the Law on Economical and Efficient Use of Energy to meet practical needs and institutionalize the Party and State’s policies, aligning with the development orientations outlined in the Politburo’s Resolution 55-NQ/TW dated 11 February 2020.

The Petroleum Law No. 12/2022/QH15 regulates sustainable, efficient, and environmentally safe oil and gas exploration, prospecting, and exploitation activities to contribute to ensuring national energy security and economic development.

The Environmental Protection Law No. 72/2020/QH14, dated 17 November 2020 by the National Assembly, effective from January 1, 2022, introduces regulations aimed at protecting the environment, creating a foundation for sustainable socio-economic development, responding to climate change, and supporting energy transition. These include: The Government issuing policies to encourage and support the development of low-emission and low-fuel consumption transportation modes using renewable energy, and the conversion or elimination of fossil fuel-based transportation; mitigating greenhouse gas (GHG) emissions through implementing activities to reduce and sequester GHGs according to the country’s conditions and international commitments, conducting GHG inventories and reporting, establishing domestic carbon market mechanisms involving trading of GHG emission allowances and carbon credits obtained from domestic and international carbon offset mechanisms; providing incentives, support, and development of the green economy, circular economy, and extended producer responsibility (EPR) for product and packaging recycling; encouraging enterprises to conduct environmental audits and green procurement. The Government has also issued subordinate legal documents to enhance the implementation of the Environmental Protection Law and combat climate change, such as Decree 06/2022/ND-CP dated 7 January 2022 on GHG emission reduction and ozone layer protection, Decree 08/2022/ND-CP dated 10 January 2022 detailing provisions of the Environmental Protection Law, and Decision 01/2022/QD-TTg dated 18 January 2022 promulgating the list of GHG emission sources required to conduct GHG inventories.

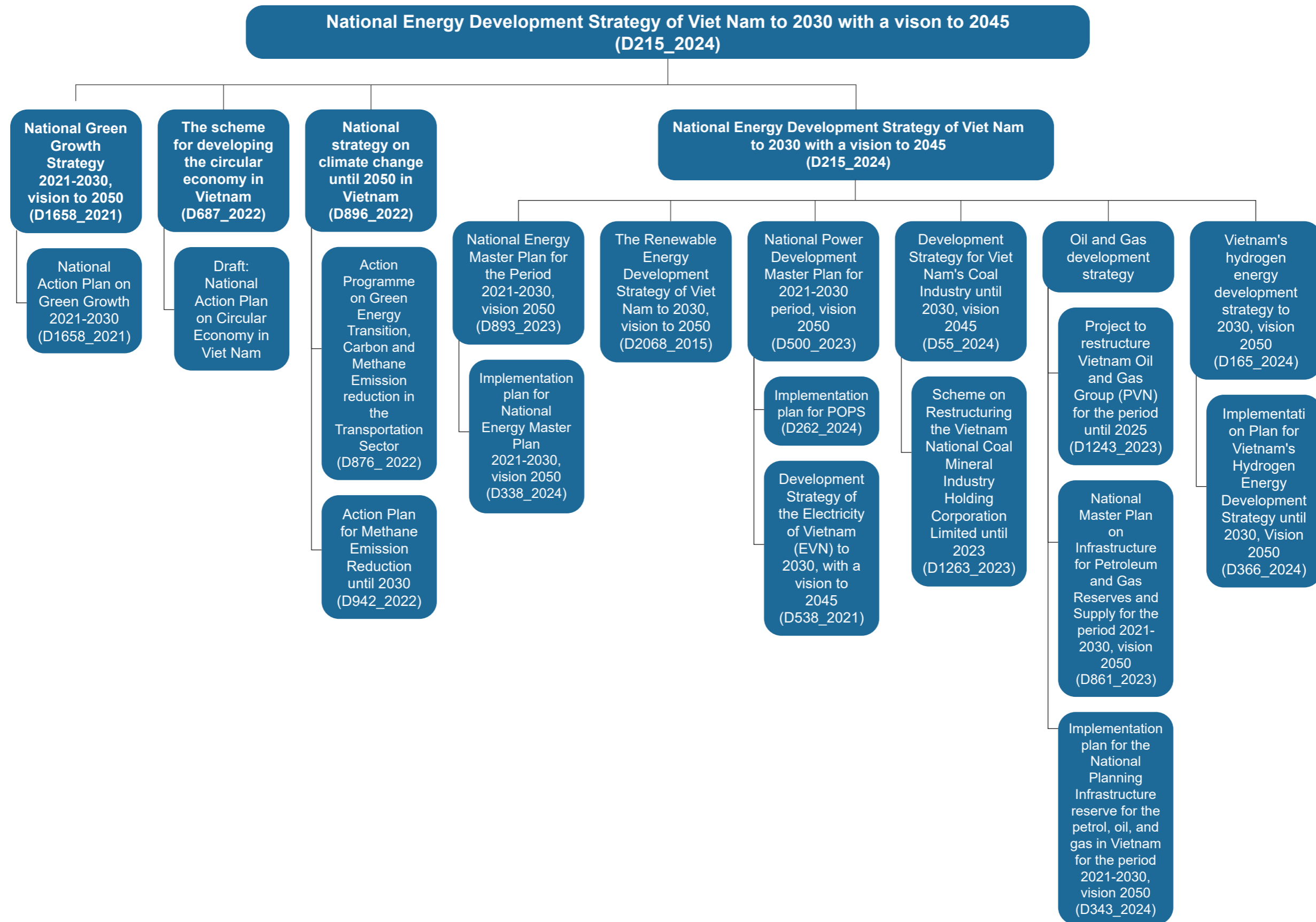


Figure 3 - Main policies related to energy transition in Viet Nam

In addition, some important policies and strategies shaping Viet Nam's energy sector include:

The **National Strategy on Green Growth for the period 2021-2030 and vision to 2050** issued by the Prime Minister in Decision 1658/QĐ-TTg dated 01 October 2021 identifies the objective of developing a green growth economy, contributing to restructuring the economy associated with renovating the growth model to achieve economic prosperity, environmental sustainability and social equity, towards a green, carbon-neutral economy and contributing to the goal of limiting global temperature rise. Reducing emission intensity and increasing GHG absorption capacity, greening sectors is gradually becoming a mandatory and important target in the country's socio-economic development, with the goals of: By 2030, primary energy consumption per GDP on average during 2021-2030 decreases by 1.0-1.5%/year and the share of renewable energy in total primary energy supply reaches 15-30%, the proportion of clean energy buses in special cities reaches at least 15% of the total operating bus fleet and 10% of new buses in Grade I cities; By 2050, primary energy consumption per GDP on average in each period (10 years) decreases by 1.0%/year and the share of renewable energy in total primary energy supply reaches 25-30%, the proportion of clean energy buses in special cities and Grade I cities reaches 100% and at least 40% of new bus investments, respectively. The Prime Minister has introduced the National Action Plan on Green Growth for the period 2021-2030 in Decision 882/2022/QĐ-TTg dated 22 July 2022, with themes, tasks and measures for effective implementation of this Strategy.

The **Scheme on "Developing a Circular Economy in Viet Nam"** issued by the Prime Minister in Decision 687/QĐ-TTg dated 07 June 2022 aims to develop a circular economy to create momentum for innovation, improve labor productivity, contribute to promoting green growth associated with economic restructuring and growth model renovation towards increasing efficiency and circular linkages between enterprises and economic sectors, enhancing competitiveness and resilience of enterprises and supply chains against external shocks, in order to achieve economic prosperity, environmental sustainability and social equity; towards a green, carbon-neutral economy and contributing to the goal of limiting global temperature rise, specifically realizing the target of reducing GHG emission intensity per GDP by at least 15% by 2030 compared to 2014, striving for the net-zero emission target by 2050. The Government has also assigned the Ministry of Natural Resources and Environment to take the lead in developing a **draft National Action Plan on Circular Economy Development to 2030** to effectively achieve the set objectives in the Scheme, achieving specific targets by 2030 on efficient use of resources, materials, energy savings and renewable energy development such as: The capacity of biomass power plants and waste-to-energy plants reaches 2,270 MW (accounting for 1.5% of the total capacity of power plants); The energy consumption per unit of GDP (KgoE/GDP) gradually decreases over the years; The share of renewable energy in total primary energy supply by 2030 reaches 15-20%.





The National Strategy on Climate Change for the period to 2050, issued by the Prime Minister in Decision 896/QD-TTg dated 26 July 2022, sets out specific objectives for climate change adaptation and greenhouse gas (GHG) emission reduction, as well as tasks and solutions for effective implementation of this strategy. By 2030, it aims to ensure that the total national GHG emissions are reduced by 43.5% compared to the business-as-usual scenario, with a 32.6% reduction in the energy sector, and emissions not exceeding 457 million tons of CO₂ equivalent (CO₂e). Facilities with annual GHG emissions of 2,000 tons of CO₂e or more must implement emission reductions. By 2050, it ensures that the total national GHG emissions reach net-zero emissions; emissions will peak in 2035 and then decrease rapidly. The energy sector will reduce emissions by 91.6%, with emissions not exceeding 101 million tons of CO₂e; Facilities with annual GHG emissions of 200 tons of CO₂e or more must implement emission reductions. The strategy also requires promoting clean energy development solutions, energy-efficient use, and breakthrough technology solutions; continuing to selectively develop small hydropower plants that meet environmental protection standards; expanding some medium and large hydropower plants to maximize hydropower efficiency; increasing the capacity of concentrated solar power plants, rooftop solar power, onshore wind power, offshore wind power, biomass power, developing hydrogen fuel, ammonia, and tidal and wave energy technologies; gradually transitioning from coal-fired power to cleaner energy sources; reducing the share of fossil fuels, not developing new coal-fired power projects after 2030, and gradually reducing the scale of coal-fired power capacity after 2035; developing energy storage technologies, upgrading energy transmission and distribution systems, applying carbon capture and storage (CCS) technology for fossil fuel-fired power plants and industrial facilities; enhancing energy-efficient solutions and promoting clean energy use in industrial sectors and green fuel and vehicle transition in the transportation sector.

The **Action Program on Green Energy Transition, Carbon and Methane Emission Reduction in the Transportation Sector**, issued by the Prime Minister in Decision 876/QD-TTg dated 22 July 2022, aims to develop a green transportation system, working towards the goal of net-zero GHG emissions by 2050. Accordingly, the specific objectives of the program for the period up to 2030 are to improve energy efficiency and promote the use of electricity and green energy in transportation sectors that are technologically, institutionally, and resourcefully ready, in order to fulfill Viet Nam's commitments in the Nationally Determined Contributions (NDCs) and methane emission reduction goals. For the period up to 2050, Viet Nam targets to reasonably develop transportation modes and strongly implement the transition of all vehicles, equipment, and transportation infrastructure to use electricity and green energy, aiming for net-zero GHG emissions by 2050. The action program also sets out the roadmap for green energy transition, as well as tasks and solutions for implementing infrastructure and mode-specific measures for road, waterway, rail, air, and urban transportation in each phase to ensure effective implementation and achievement of the program's objectives. To strengthen the effective implementation of nationwide methane emission reduction targets and solutions, the Prime Minister also approved the **Action Plan for Methane Emission Reduction by 2030** in Decision 942/QD-TTg dated 5 August 2022, with specific tasks and solutions to implement national efforts to reduce total methane emissions by at least 30% by 2030 compared to 2020 levels in activities such as crop cultivation, livestock, solid waste management, wastewater treatment, oil and gas extraction, coal mining, and fossil fuel consumption.

The **National Energy Development Strategy of Viet Nam to 2030 with a vision to 2045** was approved by the Prime Minister in Decision 215/QD-TTg dated 01 March 2024, with the objective of firmly ensuring national energy security; providing sufficient, stable, high-quality, and reasonably priced energy for rapid and sustainable socio-economic development, national defense and security, improving people's lives, and contributing to environmental protection; successfully implementing the energy transition, making an important contribution to achieving the net-zero emission target by 2050, etc. The Strategy also clearly outlines the development orientations for the oil and gas sub-sector (exploration, exploitation, production; gas industry; oil and gas processing; transportation, storage, and distribution of oil and gas products); coal sub-sector (coal exploration and mining; coal screening and processing; coal market; safety and environmental protection; infrastructure development for coal production and business); electricity sub-sector (electricity source development; grid development; regional grid interconnection); new and renewable energy sub-sector; and energy efficiency and conservation. Regarding the development orientation for the new and renewable energy industry, the Government encourages and strongly promotes the development of renewable energy sources to maximize the replacement of fossil energy sources, prioritizing the use of wind and solar power for electricity generation, and promoting the development of other renewable energy forms including biofuels, hydrogen fuels, and fuel cells for transportation and other purposes, etc. Some specific targets include: The share of renewable energy in total primary energy supply of 15 - 20% by 2030 and 65 - 70% by 2045; Energy savings of around 7 - 10% of total final energy consumption compared to the business-as-usual scenario by 2030 and around 14 - 20% by 2045; Reducing GHG emissions from energy activities compared to the business-as-usual scenario by 15 - 35% by 2030, and 70 - 80% by 2045.

The Renewable Energy Development Strategy of Viet Nam until 2030 with a vision to 2050 was issued by the Prime Minister in Decision 2068/QD-TTg dated 25 November 2015 with the following main contents: Encouraging the mobilization of all resources to promote the development and use of renewable energy sources, aiming to reduce dependence on fossil energy sources, contributing to ensuring energy security, mitigating climate change, protecting the environment, and promoting sustainable socio-economic development; Developing and using renewable energy sources to contribute to achieving sustainable environmental goals and developing a green economy. Specifically, it aims to reduce GHG emissions from energy activities compared to the business-as-usual scenario by about 5% by 2020; around 25% by 2030; and around 45% by 2050; with a target share of renewable energy in total primary energy consumption of around 31.0% by 2020; around 32.3% by 2030; and increasing to around 44.0% by 2050.

The **National Energy Master Plan for the period 2021-2030 with a vision to 2050**, approved by the Prime Minister in Decision 893/QD-TTg dated 26 July 2023, sets out development goals and orientations, planning targets for the oil and gas, coal, electricity, new energy, and renewable energy sub-sectors for the period 2021-2030, with a vision to 2050. The strategy aims to firmly ensure national energy security, meet the requirements for socio-economic development and industrialization and modernization of the country, ensure national defense and security, improve people's lives, and protect the ecological environment; successfully implement the energy transition, making an important contribution to achieving the net-zero emission target by 2050, with the energy industry developing harmoniously among sub-sectors with synchronous and smart infrastructure, reaching an advanced level in the region, in line with global scientific and technological development trends; while also developing an independent energy industry; forming an overall industrial energy ecosystem based on renewable energy, new energy, and becoming a regional clean energy industrial center and renewable energy exporter. The master plan also emphasizes the need to promote the production and use of renewable energy, strengthen the application of renewable energy technologies, making an important contribution to implementing Viet Nam's commitments at COP26 to achieve net-zero emissions by 2050, with a focus on developing offshore wind power in combination with other renewable energy forms (solar power, onshore wind power, etc.) to produce new energy (hydrogen, green ammonia, etc.) for domestic use and export. Renewable energy sources for new energy production to serve domestic and export demands will be prioritized/allowed to develop unlimitedly on the basis of ensuring national defense and security, energy security, and high economic efficiency, becoming a new economic sector of the country. To effectively implement this Master Plan, on 24 April 2024, the Prime Minister issued Decision 388/QD-TTg approving the **Implementation Plan for the National Energy Master Plan for the period 2021 - 2030 with a vision to 2050** (referred to as the Implementation Plan). The Implementation Plan has identified lists of important and prioritized investment projects in the energy sector, determined the implementation schedule of programs and projects for each phase from now to 2030; identified modes, resources, and coordination mechanisms among ministries, sectors, and provincial/municipal People's Committees in the implementation.

The **National Power Development Plan for the period 2021 – 2030 with a vision to 2050** (referred to as the PDP8) was approved by the Prime Minister in Decision 500/QD-TTg dated 15 May 2023. The overall objective of the PDP8 is to firmly ensure national energy security, meet the requirements for socio-economic development and industrialization and modernization of the country; successfully implement a just energy transition associated with production modernization, building a smart grid, and advanced power system

governance, in line with global trends of green transition, emission reduction, and scientific and technological development; and form an overall industrial energy ecosystem based on renewable energy and new energy sources. The Plan sets a target to strongly develop renewable energy sources for power generation, reaching a share of around 30.9 - 39.2% by 2030, aiming for a 47% renewable energy share on the condition that international partners fully and substantively implement their commitments under the Just Energy Transition Partnership (JETP) Political Declaration with Viet Nam. The orientation towards 2050 is to increase the renewable energy share to 67.5 - 71.5%. It aims to control GHG emissions from power generation at around 204 - 254 million tons in 2030 and around 27 - 31 million tons in 2050, striving to reach a peak emission level of no more than 170 million tons in 2030 on the condition that international partners fully and substantively implement their JETP commitments. To effectively achieve the objectives and tasks set out in the PDP8, the Prime Minister approved and issued the **Implementation Plan for the National Power Development Plan for the period 2021 – 2030, with a vision to 2050** in Decision 262/QD-TTg dated 01 April 2024. This includes requirements, contents of the implementation plan for the PDP8, a list of important and prioritized investment projects in the power sector by 2030 for various power sources, including renewable energy sources, transmission and regional grid interconnection, rural, mountainous and island electrification programs, plans for developing the renewable energy industrial ecosystem and services, prioritized projects/schemes for improving policies, laws and enhancing capacity of the power sector, land use and investment capital needs up to 2030, as well as solutions and organization for implementing the Plan.

The **Strategy for the Development of Viet Nam's Coal Industry until 2030 with a vision to 2045** was approved by the Prime Minister in Decision 55/QD-TTg dated 16 January 2024. The perspective of the Strategy is to develop the coal industry based on effective and efficient exploitation, processing and utilization of the country's coal resources; reasonably managing exports and imports in association with domestic production, consumption and ensuring national energy security; developing a sustainable and efficient coal industry in an integrated manner aligned with the overall development of domestic economic sectors, closely linked to environmental protection and improvement, promoting cleaner production and circular economy, adapting to climate change, reducing GHG emissions and conforming to international commitments that Viet Nam has joined; applying scientific, technical and technological advances in coal exploration, mining and processing to achieve and maintain the criteria of "green, modern, safe and environmentally friendly" mines, protecting the coal industry's environment in line with the goal of reducing greenhouse gas emissions, towards achieving net-zero emissions by 2050. The Strategy also sets out tasks and solutions for effective implementation of its objectives, contributing to the country's overall goals and commitments. The Prime Minister also approved the **Scheme on Restructuring the Vietnam National Coal-Mineral Industry Holding Corporation Limited until 2025** in Decision 1263/2023 dated 27 October 2023, with the goal of continuing to improve operational efficiency for the Vietnam National Coal-Mineral Industry Holding Corporation Limited (VINACOMIN) to become a strong state economic group with modern production technology and techniques, gradually meeting international corporate governance standards; improving labor productivity, product quality, operational efficiency and competitiveness of enterprises; developing sustainably, harmoniously with the environment and workers; developing in line with trends of the Fourth Industrial Revolution, green transition, digital transformation, and new energy transition; making an important contribution to ensuring national energy security and socio-economic development of the country.

At Decision 861/QD-TTg dated 18 July 2023, the Prime Minister approved the **National Plan for Development of Infrastructure for Reserve and Supply of Petrol, Oil, and Gas Products for the period 2021-2030 with a vision to 2050**. The objective is to develop a national infrastructure system for petroleum and gas reserves and supply, including strategic reserves (national reserves); production reserves, commercial reserves, transportation, circulation, and distribution, meeting economic, technical, and environmental criteria, ensuring sufficient, safe and continuous supply for socio-economic development, national security and defense, meeting domestic market demand and feedstock/fuel for energy and industrial sectors. Along with that, the Prime Minister also approved the **Scheme on Restructuring the Viet Nam Oil and Gas Group until the end of 2025** in Decision 1243/QD-TTg dated 25 October 2023, aiming to build and develop the Viet Nam Oil and Gas Group into a leading national and regional Energy Industry Group, in line with new development trends, the Fourth Industrial Revolution, green transition, digital transformation, and new energy transition; playing a key role in ensuring national energy security, performing functions, tasks and authority in accordance with the Petroleum Law, the Charter of Organization and Operation, having modern technology and highly specialized management suitable for Viet Nam's conditions; contributing to ensuring energy security, food security and safeguarding national sovereignty at sea. The development strategy for Viet Nam's oil and gas industry for the new period is also being drafted.

The Hydrogen Energy Development Strategy of Viet Nam to 2030 with a vision to 2050, was approved by the Prime Minister in Decision 165/QD-TTg dated 7 February 2024, with the aim of developing Viet Nam's hydrogen energy ecosystem based on renewable energy, including production, storage, transportation, distribution, domestic use and export with synchronous and modern infrastructure to contribute to ensuring energy security, achieving national goals on climate change, green growth and the net-zero emission target by 2050 in line with Viet Nam's roadmap and commitments in sustainable and just energy transition. Viet Nam will apply advanced global technologies in green hydrogen production and carbon capture/utilization (CCS/CCUS) associated with hydrogen production from other energy sources (such as coal, oil, gas, etc.); hydrogen production from renewable energy utilization and carbon capture processes will reach about 100 - 500 thousand tons/year by 2030 and about 10-20 million tons/year by 2050; gradually developing a hydrogen energy market in line with the fuel transition roadmap in various energy-using sectors of the economy, including power generation, transportation (road, rail, waterways, aviation), industry (steel, cement, chemicals, oil refining, other industries), commerce and residential services; and implementing pilot applications of hydrogen-derived energy in some sectors that can take advantage of existing infrastructure in a safe and cost-effective manner such as power generation (co-firing hydrogen and coal with ammonia), transportation and industry; making an important contribution to achieving the net-zero emission target by 2050. To implement this Strategy, on 21 February 2024, the Minister of Industry and Trade approved Decision 366/QD-BCT promulgating the **Implementation Plan for Viet Nam's Hydrogen Energy Development Strategy to 2030 with a vision to 2050**. The implementation plan covers: Developing and implementing tasks and solutions to realize the Hydrogen Energy Strategy under the functions and tasks of the MOIT; Serving as a basis for units under the MOIT to review, develop, and adjust plans and action programs to implement the Hydrogen Energy Strategy in line with their assigned functions and tasks; Serving as a basis for organizing inspection, monitoring, preliminary and overall reviews, and evaluating the implementation of the Hydrogen Energy Strategy, reporting to the Prime Minister on the implementation results.

Overall, Viet Nam has established a relatively complete and comprehensive legal framework for implementing the energy transition in line with global trends.

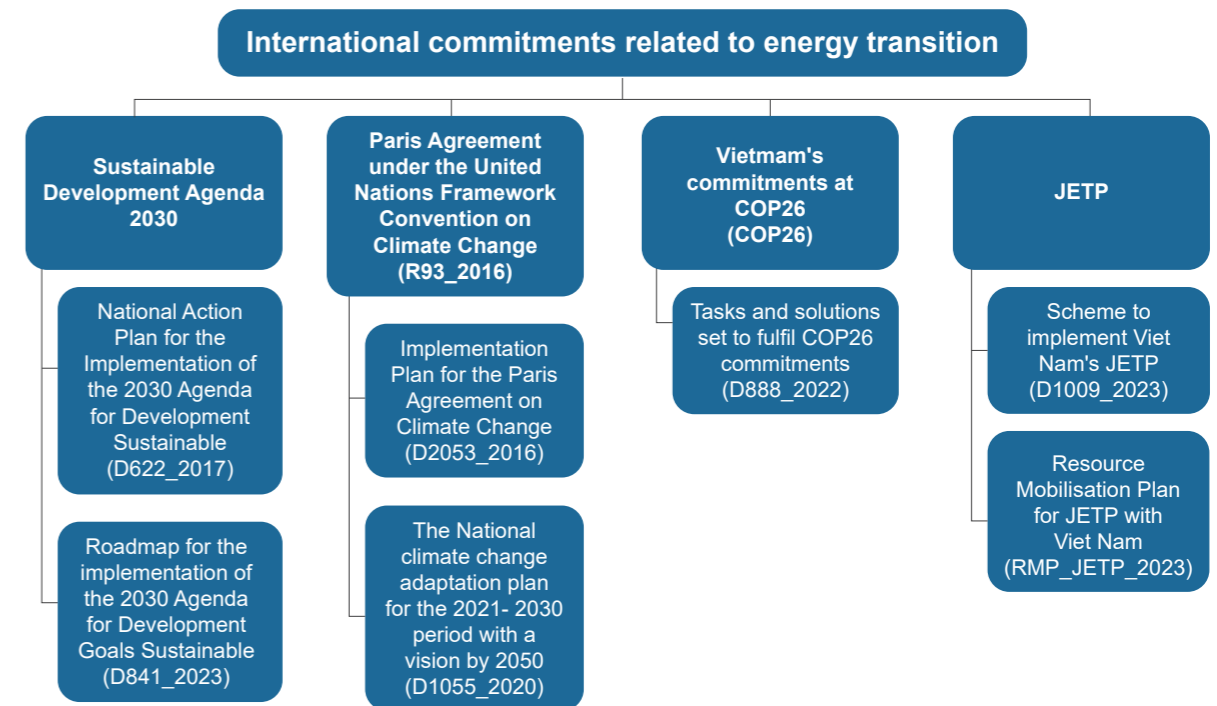


Figure 4 - Viet Nam's international commitments related to energy transition

In addition to the important policy frameworks mentioned above, Viet Nam has also demonstrated its commitment and determination to achieving international sustainable development goals and energy transition objectives, such as:

The **National Action Plan to Implement the 2030 Agenda for Sustainable Development**, issued by the Prime Minister in Decision 622/QD-TTg dated 10 May 2017 which emphasizes the **Sustainable Development Goal (SDG) 7** on ensuring access to affordable, reliable, sustainable, and modern energy for all. This includes a target for Viet Nam to significantly increase the share of renewable energy in the country's total primary energy consumption, specifically reaching 32.3% by 2030.

The **2022 Nationally Determined Contributions (NDCs - 2022)** of Viet Nam were submitted by the Government of Viet Nam in November 2022. Compared to the 2020 NDC, the updated 2022 NDC has increased the unconditional emission reduction contribution by 2030 from 9% to 15.8% and the conditional contribution from 27% to 43.5% (compared to the business-as-usual scenario). To achieve the goals set out in the NDCs - 2022, a total of 38 greenhouse gas emission reduction measures in the energy sector were considered and evaluated in the report (11 supply-side measures and 17 demand-side solutions).

The **Scheme on Tasks and Solutions to Implement the Results of the 26th Conference of the Parties to the United Nations Framework Convention on Climate Change** was approved by the Prime Minister in Decision 888/QD-TTg dated 25 July 2022. The scheme sets out the goal of proactively participating in the global trend of low-carbon development, mobilizing resources, and innovating technologies to shift the growth model, restructure the economy, and contribute to global efforts to address climate change. It aims to develop and implement comprehensive tasks and solutions to respond to climate change and promote energy transition toward achieving net-zero emissions by 2050.

The Scheme to Implement the Political Declaration on Establishing the Just Energy Transition Partnership (JETP) was approved by the Prime Minister in Decision 1009/QD-TTg dated 31 August 2023. One of the scheme's perspectives is to "ensure an open, transparent, and just energy transition process with broad consensus among stakeholders, including businesses, workers, and communities affected by the energy transition; enhance the effectiveness and efficiency of the just energy transition process." Additionally, it ensures the effective reception and utilization of international partners' support in technology transfer, governance, human resource training, and financing for the implementation of the JETP Declaration, contributing to the implementation of Viet Nam's National Energy Development Strategy and the global pledge on the transition from coal-fired power to clean energy. On 01 December 2023, in Dubai, Viet Nam officially announced the **Resource Mobilization Plan for the Implementation of the Just Energy Transition Partnership (JETP)** Political Declaration at COP28, together with the International Partner Group (IPG), including the European Union, the United Kingdom and Northern Ireland, the United States of America, Japan, the Federal Republic of Germany, the Republic of France, the Republic of Italy, Canada, the Kingdom of Denmark, and the Kingdom of Norway.

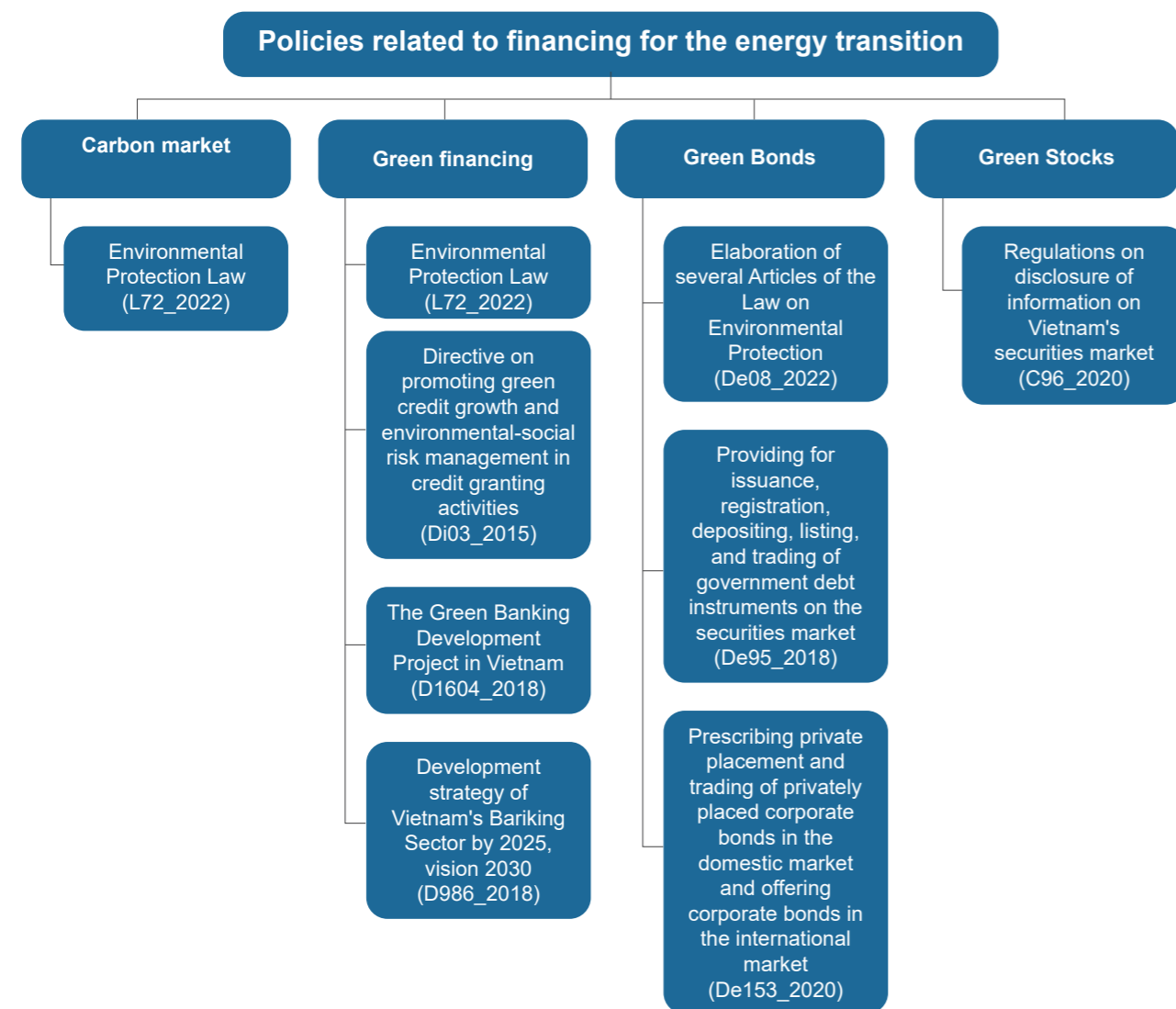


Figure 5 - Policies related to financing for the energy transition

2.2. Key Stakeholders Engaged in the Energy Transition in Viet Nam

This section aims to picture various organizations, agencies, and units involved in the state management and implementation of the energy transition process. The analysis of stakeholder roles and responsibilities in Viet Nam's energy transition is a crucial step in assessing their capacity-building needs for Viet Nam's energy transition. Through a methodological approach of literature review in combination with stakeholder survey, relevant information was collected to identify and describe the roles and responsibilities of key stakeholders.

By analyzing the roles and responsibilities of these key stakeholders, targeted groups can be identified for surveying capacity-building needs. This assessment will support the development of tailored capacity-building programs and interventions in a later phase to strengthen the capabilities of stakeholders in driving Viet Nam's energy transition forward.

2.2.1. Overview of Roles and Responsibilities of Key Stakeholders

The organizational framework comprising the principal actors engaged in steering the energy transition process in Viet Nam can be illustrated in the Figure below.

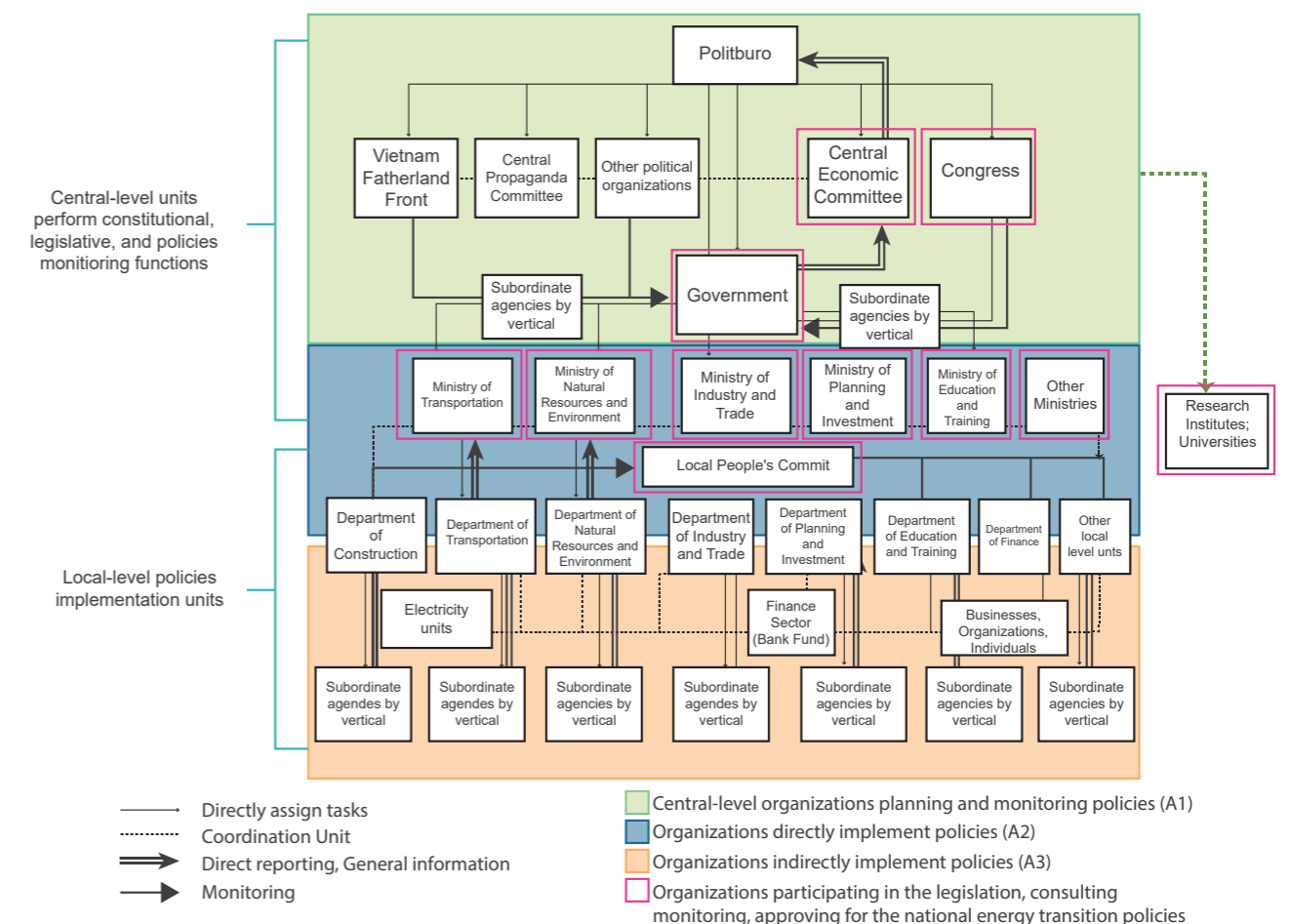


Figure 6 - The organizational framework for steering Viet Nam's energy transition process

It can be observed that there are three levels of engagement in the energy transition in Viet Nam, including:

Policy-Making Level:

At the highest level of policymaking, key stakeholders include the Politburo, Viet Nam Fatherland Front, Central Committee's Commission for Publicity and Education (CCCPE), Central Economic Committee, and the National Assembly's Committees. These governmental bodies are responsible for developing and modifying overarching policies and strategies related to the energy transition in Viet Nam, overseeing the planning, monitoring, and representation of central views on policy implementation. The National Assembly, for instance, plays a crucial role in legislating and formulating laws relevant to energy development, such as environmental protection laws and laws governing the energy sector.

Implementation Coordination Level:

Key stakeholders at this level are ministries and ministerial-level agencies, including the Government, Ministry of Industry and Trade (MOIT), Ministry of Construction (MOC), Ministry of Science & Technology (MOST), Ministry of Agriculture and Rural Development (MARD), Ministry of Natural Resources and Environment (MONRE), Ministry of Transportation (MOT), Ministry of Finance (MOF), Ministry of Planning and Investment (MPI), Ministry of Education and Training (MOET), and Local People's Committees. These stakeholders are tasked with implementing policies and programs formulated at the policy-making level. They provide solutions and coordinate the execution of government decisions related to energy transition.

Execution Level:

At the execution level, organizations directly involved in implementing policies and carrying out projects include ministerial-vertical departments, institutes, universities, state-owned enterprises, non-governmental organizations (NGOs), and private enterprises working in the energy sector, among others. These entities play a vital role in executing action plans and programs established by higher-level authorities. For example, state-owned enterprises in the energy sector such as Vinacomin, EVN, and PVN are responsible for deploying business models, investing in infrastructure construction, and participating in all stages of energy supply. NGOs and private enterprises also contribute to the execution of energy transition initiatives through their expertise and resources.

The main subordinated entities involved in the implementation of energy transition of ministries can be listed below:

- MOIT: Institute of Energy, Department of Energy Efficiency and Sustainable Development, Electricity and Renewable Energy Authority, Electricity Regulatory Authority of Viet Nam and their divisions/ departments.
- MONRE: Institute of Strategy and Policy on Natural Resources and Environment, General Department of Environment, and agencies under the management of the governing ministry.
- MPI: Department of Science, Education, Natural Resources and Environment; Investment Supervision and Appraisal Department; Agencies under the management of the governing ministry.
- Departments and agencies under the management of the governing ministries such as MOC, MOST, MARD, MOT, and MOF.

The roles and responsibilities of key stakeholders engaged in the energy transition of Viet Nam can be summarized in the Table below.

Table 1 - Roles and Responsibilities of Key Stakeholders Engaged in Viet Nam's Energy Transition and their Respective Resources for Implementation

Stakeholder Group	Roles and Responsibilities	Financial and Human Resources
<p>Policy-Making Level</p>	<p><i>Strategies and Policy Planning and Modification</i></p> <ul style="list-style-type: none"> - Formulate and modify overall resolutions, national strategies, and policies related to the energy transition. - Represent central views on policy implementation. - Legislate and pass energy-related laws. <p><i>Communication and Supervision</i></p> <ul style="list-style-type: none"> - Disseminate central policies to subordinate units and localities for understanding and fulfillment (CCCPE) - Supervise and monitor the implementation of policies by implementing and local entities. - Oversee government agencies' enactment of resolutions, strategies, master plans, and plans related to energy development. - Conduct thematic supervisions to assess the implementation of energy development policies and laws over specific periods (National Assembly). 	<ul style="list-style-type: none"> - Access to central budget allocation for policy formulation and oversight. - Availability of specialized personnel in policy analysis and legislation drafting.

Stakeholder Group	Roles and Responsibilities	Financial and Human Resources
Implementation Coordinating Level	<ul style="list-style-type: none"> - Develop and approve action plans and programs for implementation of the energy-related Resolutions, Strategies, and Plans adopted by the Policy-making agencies. - Coordinate with other ministries, agencies, and stakeholders to implement energy-related policies. - Implement policies, advise solutions, and perform tasks assigned by the Government in general strategies. - Advise the Government to issue appropriate decisions to facilitate the energy transition implementation. - Develop and executive sector-specific strategies and plans related to energy transition. - Assign tasks to respective subordinated units to implement policies. - Monitor and report the implementation progress and results to the Policy-Making Agencies for information and adjustments (if needed). 	<ul style="list-style-type: none"> - Budget allocation for program implementation and coordination - Availability of departmental staff and technical experts for project implementation
Execution Level	<ul style="list-style-type: none"> - Directly or indirectly execute energy-related projects and programs as per government mandates. - Implement specific tasks assigned by Government ministries and agencies. - Carry out tasks related to research, training, and policy implementation. - Deploy business models and invest in infrastructure development (state-owned enterprises and private sector). - Report the implementation progress and results to the responsible line ministries and agencies. - Provide proposals/recommendations for improvement. 	<ul style="list-style-type: none"> - Project-specific funding from government budgets or donor agencies. - Access to private sector investments and financing mechanisms - Availability of technical staff for project implementation

The coordination among the various stakeholders involved in Viet Nam’s energy transition is facilitated through two main approaches:

- Program Steering Committee: This committee, established by the Government upon the proposal of the governing body, serves as a central platform for high-level decision-making and strategy formulation. Comprising leaders from relevant units, the Program Steering Committee enables comprehensive discussions and timely implementation of tasks.
- Consultancy Mechanism When specific tasks related to the energy transition are assigned to units, they can collaborate through the engagement of consultants. These consultants, who are experts in their respective fields, will provide cross-consultation and expertise. The effectiveness and quality of task implementation are enhanced by leveraging the specialized knowledge and skills of consultants from different organizations.

2.2.2. Observations on the human resources for the energy transition

The findings of the literature review and stakeholders survey reveal both strengths and areas for further improvement in the current governance structure overseeing and implementing the ET process.

Regarding the manpower for ET implementation, limited enforcement personnel capacity in respective units poses a constraint, hindering smooth implementation. Policy-making agencies have access to human resources to assist leadership in performing tasks. At lower levels, they manage and mobilize human resources from subordinate local units to carry out assigned tasks. Meanwhile, the Implementation Coordination Agencies face challenges such as insufficient staffing and workload overload in specialized units. While staff possess high expertise, additional knowledge is needed for emerging energy domains. The workload is exacerbated by the need to handle overlapping programs from multiple leading ministries with limited human resources. The Executing Agencies encounter similar workload challenges due to overlapping policies. Addressing this, comprehensive training on novel energy paradigms is essential, particularly for senior leadership and technical experts as well as junior professionals.

Universities and research institutes are not sufficiently prioritizing emerging energy sectors. Training efforts for domestic energy professionals have not reached their full potential, leading to a shortage of skilled personnel in critical areas such as wind, solar, and hydrogen energy. This shortage may increase the costs associated with employing foreign labor in the energy transition sector, affecting the execution of strategies in the long term. All these factors underscore the need for improved training frameworks.

Lastly, transitioning from coal to renewable energy carries the risk of job displacement for coal industry workers. To align with the state’s goal of reducing coal power generation, the number of coal power plants must decrease. Consequently, providing vocational training for affected workers is essential. However, this transformation requires careful planning and precise job allocation within target groups to minimize adverse impacts and support broader energy transition objectives.

2.2.3. Observation of the policies related to energy transition

◆ RE development

Firstly, about mechanisms and policies to develop renewable energy projects: One of Viet Nam's major potential wind power fields is offshore wind power. However, the current legal regulations of Viet Nam do not have specific mechanisms, policies, and guidelines in the implementation of planning, investment, and construction of offshore power projects. Specifically, the regulations related to the mechanism to support the development of offshore wind power projects are being included in the regulations on wind power projects (including onshore wind power) and are not complete¹. In addition, the policy of DPPA (direct power purchase agreement) selling electricity to private parties in power projects is still in discussion, leading to the fact that investors have not been able to develop specific plans to sell electricity to private partners.

Second, about the preferential electricity purchase price applied to renewable energy projects:

The selling price of solar and wind power to EVN according to Decision 13/2020/QĐ-TTg, Decision 37/2011/QĐ-TTg amended and supplemented by Decision 39/2018/QĐ-TTg has expired from December 31, 2020, and November 1, 2021, respectively. However, up to now, there has not been a new mechanism or regulation to guide electricity purchase prices. This creates a legal vacuum and can greatly affect investor sentiment. Currently, the Ministry of Industry and Trade is coordinating with ministries and sectors to develop draft regulations on the development of wind and solar power projects, including considering the bidding mechanism to purchase electricity to select investors.

Third, tax incentives:

- Corporate tax incentives apply for the entities invested in RE projects are stipulated in Clause 1, Article 15 and Clause 1, Article 16 of Decree No. 218/2013/ND-CP of the Government in terms of in which the entities enjoys the preferential tax rate of 10% for a period of 15 years (Clause 1, Article 15), tax exemption for 4 years, 50% reduction of tax payable for the next 9 years (Clause 1, Article 16).
- Export-import tax incentives: according to article 16 of the Law on Export - Import Tax 2016 and following the guidance in the Decree 134/2016/ND-CP, the RE projects could have import tax exemption for the raw materials, supplies, and semi-finished products that cannot be produced domestically and are imported to serve the project's production.

However, the above-mentioned incentives have not applied to the EE projects (even the EE project has been considered crucial for energy transition), although the Law on Economical and Efficient Use of Energy stipulates that organizations and individuals invest in production lines and expand their production scale by using energy-saving technologies can enjoy corporate income tax incentives. Additionally, decree 102/2003/ND-CP also stipulates the encouragement of import and production of energy-saving products, but only at the level of general regulations in principle, there are no regulations yet, specifically on tax incentives (import and export tax; value added tax and corporate income tax), on land use fee incentives, land rent for import projects, production of products energy saving.

Regarding the value-added tax: Although the Law on High Technology stipulates that organizations and individuals that research and develop high technologies and high-tech applications are entitled to the highest incentives according to the provisions of the law on value-added tax, the result of reviewing the regulations on value-added tax shows that there is no specific regulation related to this content.

Fourth, for capital mobilization: Although the local commercial banks show their interest in investing in the RE projects, the proportion of outstanding credit debt for renewable energy is still quite low (from 0.6%-1%) in the total outstanding debt that the banking system grants to the economy due to some following reasons²:

- RE projects require a large investment amount, while commercial banks require investors to have a minimum of 30% equity. In addition, loans from local commercial banks come with interest rates equal to other commercial loans, which are not as favorable as they could be, and bring more difficulties for investors to access the loans.
- Renewable energy investment projects have a long investment payback period (about 10 years - 15 years), meanwhile, besides the entrusted loan from international organizations, commercial banks lending to RE projects are a normal capital source. In addition, RE projects are considered specialized financing projects, so the banks often set the high level of risk-weighted asset (RWA) (in the calculation for capital safety) at a high of 160%. Therefore, the capital resources that commercial banks balance to invest in the field of renewable energy are still quite limited.
- The un-synchronization of the power transmission system causes difficulties in connection and the RE power projects may have the risk of curtailment and can not release all the electricity yield, leading to the risks of decreased revenue from selling electricity. Consequently, it can reduce the ability of the projects to repay debt to the banks.
- Renewable energy requires a deep understanding of specific techniques, while credit appraisers do not have much knowledge or practical understanding of the techniques and operations of the power system. renewable energy, so the project's risks may not be fully assessed.

Accessing the State's investment credit capital also has potential risks for the investors and the State Bank. Taking the Viet Nam Development Bank as an example, one of the lending conditions is "Customers do not have bad debts at credit institutions at the time when Viet Nam Development Bank considers lending and disbursing loans". However, with large-scale investment and long construction period projects, the customers (the investors) can fall into temporary financial difficulties or temporarily incur bad debts at credit institutions, leading to the Viet Nam Development Bank being unable to continue disbursing. As a result, the projects faced with pressure of finances and might stop the construction, and could not recover the disbursed capital for the project.

¹ Decision 37/2011/QĐ-TTg amended and supplemented by Decision 39/2018/QĐ-TTg, Circular 02/2019/TT-BCT amended and supplemented by Circular 42/2019/TT-BCT, and in Circular 06/VBHN-BCT dated 21/02/2023

² Phát triển tín dụng cho năng lượng tái tạo ở Việt Nam - Tạp chí Tài chính (tapchitaichinh.vn)

◆ Research and development for new technologies

Firstly, the regulation on hi-tech parks under Decree No.99/2003/ND-CP is no longer consistent with relevant current regulations, not keeping up with the reality of developing hi-tech parks. However, there is no alternative solutions. Some provisions in Decree 99/2003/ND-CP are not recognized or are invalidated because new regulations of specialized law such as planning, investment, construction, land, and tax have changed; investment attraction activities face certain limitations due to the lack of adequate attraction criteria for each type of project permitted to invest in hi-tech parks; lack of specific regulations on conditions, order and procedures for the establishment and expansion of hi-tech parks, causing difficulties for localities in proposing as well as state management agencies in handling dossiers³.

Secondly, on the process of licensing investment, development, construction, and operation of the project, for Hi-tech projects, and renewable energy projects: The process of implementing hi-tech investment projects is still relatively complicated and time-consuming, especially procedures for land, site clearance, etc. These are some issues that are assessed to directly affect the competitiveness of the investment environment in Viet Nam (Doan Hong Nhung and Nguyen Thanh Hai, 2019).



³ Report on assessment of the current situation of issues related to the policy requesting the formulation of a decree regulating hi-tech parks, Part I. Refer to the Draft Dossier of the Decree regulating hi-tech parks at: <https://www.most.gov.vn/vn/Pages/chitietduthao.aspx?iDuThao=845>

◆ Energy transition approach of selected countries

Box 1. Philippines and its energy transition approach

The Philippines promotes the participation of the private sector in generating electricity. Therefore, creating a favorable environment for investors and developers is very important for the country's energy supply. The feed-in tariff introduced in 2012 is an attraction for the private sector. Private companies mostly responded to feed-in-tariff-supported wind and solar power projects, to the point of oversubscribing. In addition, the Renewable Energy Portfolio Standards (RPS) were subsequently implemented in 2020 to mandate that electricity suppliers, particularly distribution companies, source part of their electricity supply from qualified renewable energy sources.

To further boost renewable energy investments, the Department of Energy (DOE) has recently removed the restrictions on Filipino ownership of renewable energy projects and allowed 100 percent foreign ownership. Renewable energy expansion received a stronger justification from the global coal price hike brought about by the war in Ukraine given that 80 percent of coal use in the Philippines came from imports. Renewable energy sources are not only becoming more cost-competitive, but they are also increasingly seen as an indigenous solution to reduce reliance on imported energy sources.

While the Philippines places significant emphasis on facilitating the private sector's role in electricity generation, it is equally mindful of the interests of consumers. The Green Energy Option Programme (GEOP), mandated by the 2008 RE Act and launched in late 2021 by the Independent Electricity Market Operator of the Philippines, give consumers the choice to source their electricity from licensed renewable energy suppliers. This is in contrast with having to consume whatever distribution utilities sell them.

There is a growing recognition of the need for consumer-centric energy transition strategies. In which, electricity price for end-users is also considered. Given the existence of price transfer mechanisms, typically embedded within Power Purchase Agreements, allow coal power producers to automatically pass on any additional fees resulting from fluctuations in global coal prices to end-users, a call has been made to reconsider and potentially eliminate these pass-through mechanisms to shield consumers from high electricity prices during periods of low demand and price volatility. Therefore, the lesson for Viet Nam in the energy transition process is that there must be strong participation from the private network and actions from consumers.

Box 2. Thailand Energy Transition Progress

The energy transition in Thailand has progressed slowly since the enactment of the Energy Conservation Promotion Law in 1992 and the establishment of the Ministry of Energy Education in 2002. Despite the policy promotion of energy conservation and its measures and programs have been designed and incorporated into various energy plans to align with national development plans, Thailand's achievements still lag compared with energy targets. Some of the barriers and limitations are pointed out as follows:

(i) Fragmented authority and limited capacity

In Thailand, the National Energy Policy Council of Thailand (NEPC) and the Ministry of Energy (MOE) together with the Energy Policy and Planning Office (EPPO) are policy makers, launching the Thailand Integrated Energy Blueprint (TIEB) in 2015, in which the Energy Regulatory Commission of Thailand (ERC) is the regulator and the three SOEs are the operators in the power supply industry. According to the NEPC resolution, the ERC, together with the MOE, is responsible for determining tariffs and financial incentives for energy conservation projects, in particular determining FiT prices. In addition, other ministries also participate in energy-saving programs directly related to their jurisdiction.

Under the enhanced single-buyer model, energy SOEs play a dominant role in ESI. At the beginning of the adoption and implementation of energy conservation programs, three SOEs are assigned to lead, implement, and evaluate pilot projects that are aligned with their specific locations, resources, and goals of the Thailand government. However, some of the mechanisms that encourage SOEs to promote energy efficiency are at odds with their main roles and responsibilities. As operators, they are genuinely interested in maximizing electricity sales, while the successful implementation of energy conservation programs coupled with the promotion of renewable energy can reduce their revenue.

Only solar has been successfully promoted through initiatives and partnerships from private operators. Responsibility for energy policy, planning, and implementation is fragmented and conflicting. It requires a strong government agency to act as the focal point to coordinate all relevant agencies and conduct comprehensive policy analysis and performance reviews.

(ii) Lack of coordination between the public and private sectors

To pursue the energy transition, the government alone cannot provide endless financial support, especially in energy-saving projects, from which the private sector, such as the manufacturing sector, and production, can benefit financially in the form of energy cost savings. Coordination between the public and private sectors is required to develop projects both technically and financially. Furthermore, financial institutions need to be involved in the project development and implementation process to ensure the ability to borrow and finance the project in the long term. During 1992-1997, energy efficiency finance (EEF) in Thailand was initially supported by the public sector, such as projects by the Energy Conservation Fund and the Industrial Finance Corporation of Thailand (IFCT). Since 1997, public-private partnerships in energy-saving projects have been initiated and implemented, mainly in the form of joint investment programs, ESCO funds, BOI incentives for energy-saving projects, and energy efficiency revolving funds (EERF) until 2012. Then in 2012, the government attempted to move away from public financing mechanisms to support direct incentives and move to market measures and rely on private financing through the private sector and energy service companies (ESCOs). However, state efforts have, to date, failed to shift energy efficiency financing measures to the private finance sector because energy efficiency projects are often large in size, small investments and the stream of intangible benefits mainly come from saving resources. The behavior of banks in Thailand is considered conservative and risk averse. In addition, to realize benefits from energy-efficient investments and projects, some supporting parties such as project developers, equipment suppliers, ESCO, technology experts, and the insurance company must work together effectively.

The energy transition involves all stakeholders in society. However, in Thailand, energy policy and planning have been centralized for government agencies, regulators, and state-owned enterprises for decades (Puree S., Praipol K., 2017). The lack of transparency and accountability in the electricity planning and development process creates suspicion among the public, leading to a persistent lack of trust in the decisions made by the government. An example is the process of developing a Power Development Plan (PDP) and planning the construction of coal-fired power plants. Although a participatory process by the PDP is underway, only a limited number of stakeholders participate in public meetings and consultations.

Box 3. Energy transition in Germany

The German transition of the energy supply system (Energiewende) is incorporated into a system of multiple levels.

- Being a European Union member, German energy policy is closely linked to the targets and directives developed at the European level (Vogelpohl et al. 2016). This will create many overarching mechanisms that regulate energy plans as a whole, rather than individual plans from different countries, creating synchronization in the whole region.
- Germany has a significant national strategy and regulatory framework for climate protection and renewable energy promotion in place. The dynamic development of renewables is, to a large extent, driven by financial incentives set at the federal level, and goes along with the influence of market actors. This has been crucial in the dynamic development of renewables in Germany in the past 20 years of innovation (Bruns et al. 2011).
- The transition process is accompanied by a shift to more decentralization, which leads to an increasing importance of sub-national authorities. The German State has a strong influence on policymaking and functions as important laboratories for experimentation: The State's motivation for pushing renewables forward has been crucial for the dynamic start-up phase of the transition process. They compete with each other with respect to co-benefits like private investments, trade tax revenue, distribution of returns, and regional added value by developing renewable electricity generation. Some Laender explicitly strives to be forerunners in renewable energy policy.
- The decentralization regime in Germany gives local management more power in the energy transition process, such as having more functions of policy advice, law-making, and creating a mechanism to invite investors. Investment, local planning, and creating programs to attract knowledge, have a higher ability to influence central policies.

2.3. Analyzing potential influences of actors on energy transition

This section will focus on analyzing the potential influence of the actors on the energy transition of Viet Nam using the Research and Assessment Framework (RAF) initially developed by the CASE project is adapted and used to analyze the actors as defined in Section 2.2. The results will be the input for implementing the Capacity Needs Assessment of those actors.

The following contents and indicators were used to analyze the actors:

- Power:
 - What is the level of influence on the energy transition?
 - What are the actor's roles in the energy transition?
 - What are the areas of influence concerning the energy transition?
- Engagement:
 - What is the willingness and capacity to support progressive energy transition policies?
 - What are the core interests of the actors in the energy transition?
- Direction:
 - Are the actors considered rather opponents of or supporters of progressive energy transition policies?
 - In which way are the actors (formally or informally) connected or bound to other stakeholders?

The consultants review and propose to analyze the following actors based on their involvement and potential influence in the energy transition progress.

Table 2 - The proposed actors for analysis

No	Institution/Organization	Short name
Central Organizations:		
1	Committee on Science, Technology and Environment - National Assembly	CSTE of NA
Governmental Stakeholders		
2	Electricity and Renewable Energy Authority - Ministry of Industry and Trade	EREA of MOIT
3	Electricity Regulatory Authority - Ministry of Industry and Trade	ERAV of MOIT
4	Department of Energy Efficiency and Sustainable Development - Ministry of Industry and Trade	DEESD of MOIT

No	Institution/Organization	Short name
5	Department of Science, Education, Natural Resources and Environment - Ministry of Planning & Investment	DSENRE of MPI
6	Department of Climate Change - Ministry of Natural Resources and Environment	DCC of MONRE
7	Viet Nam Environment Administration - Ministry of Natural Resources and Environment	VEA of MONRE
7	Department of Science and Technology - Ministry of Natural Resources and Environment	DST of MONRE
9	Department of Investment Supervision and Appraisal - Ministry of Planning and Investment	DISA of MPI
10	Department of Crop Production, Ministry of Agriculture and Rural Development	DCP of MARD
11	Department of Livestock Husbandry, Ministry of Agriculture and Rural Development	DLH of MARD
12	Department of Price Management - Ministry of Finance	DPM of MOF
13	General Department of Taxation - Ministry of Finance	GDT of MOF
14	Committee for Management of State Capital at Enterprises	CMSC
Academia or think-tank		
15	Institute of Strategy and Policy on Natural Resources and Environment - Ministry of Natural Resources and Environment	ISPARE of MONRE
16	Hanoi University of Natural Resources and Environment - Ministry of Natural Resources and Environment	HUNRE
17	Institute of Energy - Ministry of Industry and Trade	IEVN-MOIT
18	Electric Power University	EPU
19	Hanoi University of Science and Technology	HUST
20	Ho Chi Minh University of Science and Technology	VNUHCM-US
21	Da Nang University of Science and Technology	DUT
NGO		
22	Viet Nam Energy Association	VEA

No	Institution/Organization	Short name
Others		
23	Viet Nam National Coal - Mineral Industries Holding Corporation Ltd.	VINACOMIN
24	PETROVIET NAM (Viet Nam Oil and Gas Group)	PVN
25	Viet Nam Electricity Corporation	EVN
26	Vietcombank	VCB

Source: Collected by the authors

Analysis results: According to the information collected from the desk research and comparing with the three indicators (Power, Engagement, Direction), the analysis has marked the level of influence of the actors in the energy transition. The results are presented by using the pivot tools and are shown in the following figures:

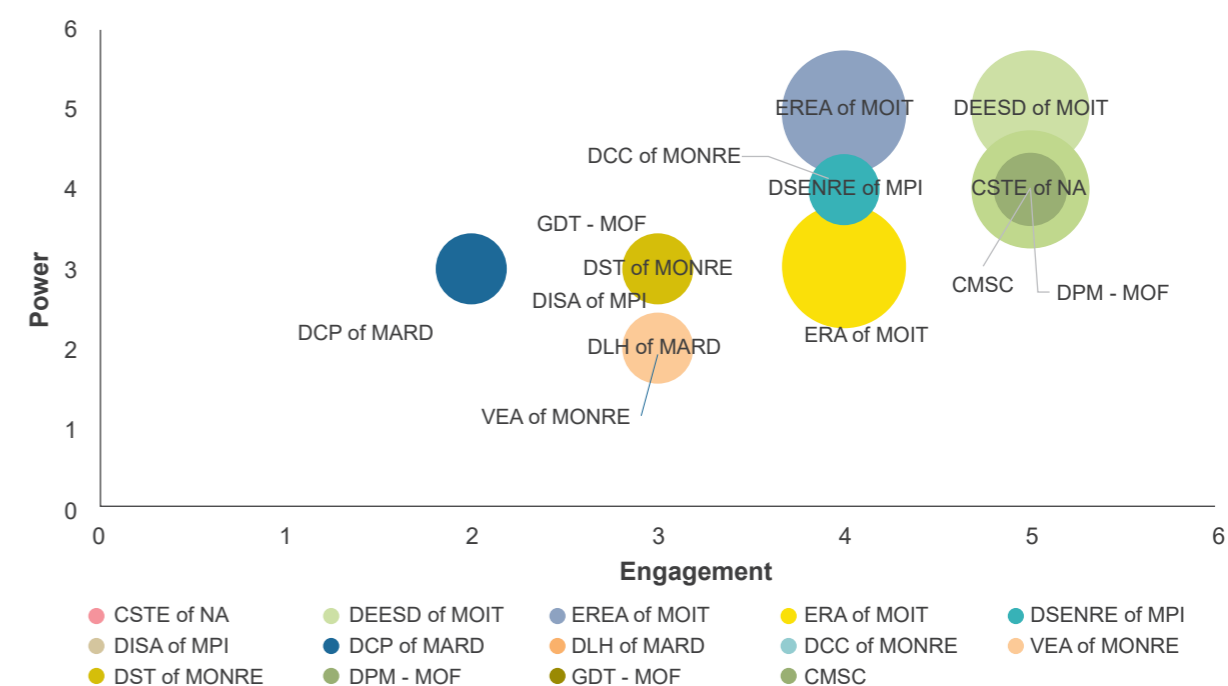


Figure 7 - Analyzing the governmental agencies of RFA

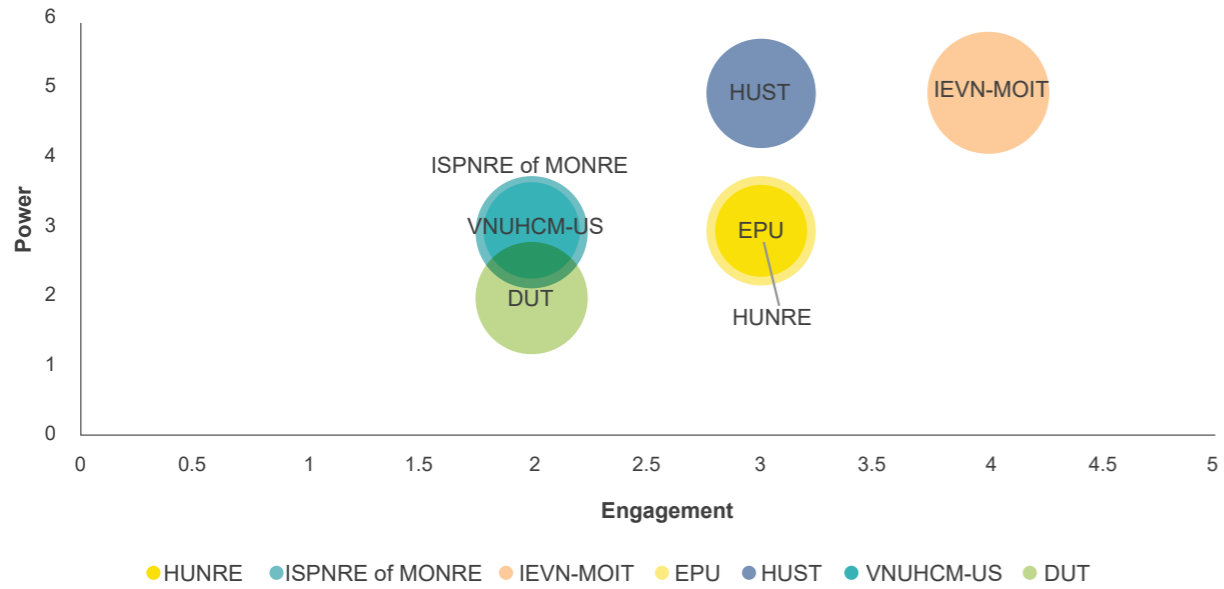


Figure 8 - Analyzing the institutes (academia and think tank) of RFA

The size of bubbles presents the direction of whether the actor is considered rather an opponent of or a supporter of progressive energy transition (1 - strong blocker, 5 - strong ally)

Source: Analyzed by the authors

3. Capacity needs assessment

3.1. Approach and Methodology

Collecting information:

The assessment used in-depth interviews, group interviews/focus group discussion, and studying secondary data to collect information regarding the current performance of the actors, the capacity gaps, and the needs of capacity building as well as the suggestion to organize and implement capacity building program for the actors.

Analysis framework:

The collected information for the topics including roles and mandate of the organization in terms of ET; structure, organization, and staff; self-assessment of performance against role and mandate; and gaps of performance... are also used to enrich the results of desk research as in PART I. In this part of the report, the consultant team focused on analyzing the gaps in the performance of the actors/ stakeholders in ET to define the need for capacity building in the area.

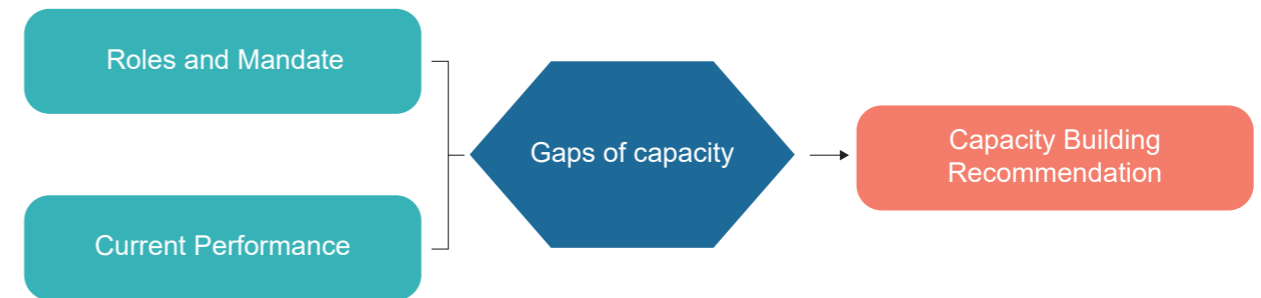


Figure 9 - The Analysis Framework of Capacity Building Needs

The Structure of Questionnaire: The Questionnaire consists of two following sessions:

Session 1: Overall information

- General introduction about the organization
- Roles and mandate of the organization in terms of ET
- Structure, organization and staff
- Self-assessment of performance against role and mandate
- Gaps of performance? Reason, especially the human resources, financial resources, technology, etc.

Session 2: The need for assistance in capacity building

The capacity topics (energy policy development, emergency response capability, energy statistics, energy-efficient technologies, renewable energy, and other low-carbon technologies) by the International Energy Agency (IEA)'s Energy Training Capacity-building Program⁴ will be considered to ask the interviewees to verify their needs, however, it is open for the interviewees to make their recommendations.

Table 3 - The list of capacity-building topics to be verified with the stakeholders

No	Short name	Topic content
1	Policies and regulations affecting ET	Policies and regulations affecting the energy transition (e.g., good policy and regulatory practices, policy and regulatory gap analysis, etc.)
2	Implications to the legal framework	Energy conversion: Implications for the legal framework and improvement of the policy and legal framework
3	Statistics and data	Statistical and data analysis on energy transition and use of statistics in evidence-based policy making
4	Assessment of ET impact	Assess the impact of the energy transition
5	Available technology options	Available technology options for energy conversion
6	Financing options for ET	Financing options available for energy transition
7	Managing the transition from CFPP to RE	Managing the energy transition and building energy conversion scenarios
8	Coordination among stakeholders	Coordination among stakeholders in energy transition
9	Emergency response ability	Emergency response ability
10	General knowledge of CFPP transition	General knowledge of early transition in coal-fired power

Source: Prepared by the authors

⁴ International Energy Agency (IEA)'s Energy Training Capacity-building Program, https://iea.blob.core.windows.net/assets/9c386287-779f-451c-bd79-bcefc4d34481/Energy_Training_Brochure.pdf

In this part, each topic was rated by the interviewees on a scale of 5 levels including 1) Not at all Necessary; 2) Not necessary; 3) Necessary but not prioritized; 4) Prioritized; 5) Highly prioritized and answered these questions:

- How should the capacity building program be implemented: The methods, time, location, etc.
- What are other recommendations for strengthening the organization's capacity for better performance regarding ET promotion?
- What kind of training on ET your organizations can provide or support (for institutes and universities)?

Actor selection for interview: Through policy review as well as the involvement of actors in terms of energy transition, the strategies and plans have been relatively well developed. Therefore, there is a need to prioritize enhancing the capacity of the forces involved in implementing strategies, planning, etc. in the current stage. Consequently, the research will focus on the following actors:

Table 4 - The list of selected actors

Ministry	Actors
MOIT	Electricity and Renewable Energy Authority
MOIT	Electricity Regulatory Authority
MOIT	Institute of Energy
MONRE	Department of Climate Change
MOF	Department of Price Management
	Department of Natural Resources and Environment of Quang Ninh Province
	Department of Science and Technology of Quang Ninh Province
	Hanoi University of Science and Technology
	Hanoi University of Natural Resources and Environment
	PETROVIET NAM (Viet Nam Oil and Gas Group)
	Viet Nam Electricity Corporation
	Viet Nam Energy Association.

3.2. Findings

The readiness for the energy transition of the actors is various.

The interview results show that the actors have different levels of readiness for ET, depending on their mandates and involvement in energy transition progress. Their readiness is influenced by the institutional system and regulation, as well as their capacity. Some of them have been preparing for a long time to deal with climate change and ET, while others are still preparing their response plan.

The difference is between the governmental agencies. While the actors from MOIT and MONRE at the central levels seem to be ready and experienced with the development of policies and interventions in ET, especially cooperating with international partners the other agencies claimed that they are not yet ready for ET due to lack of knowledge.

The level of readiness among agencies at different levels persists. The agencies from the ministry level seem more capable of doing the jobs regarding ET rather than the provincial actors. While the actors from MOIT and MONRE state that their capacity is enough to provide training and capacity-building assistance to other actors, the provincial actors, especially the ones outside of DOIT, DONRE claimed that they have not been trained on ET at all and almost all knowledge they got for the jobs of ET is from the internet. Others may rely on outsourcing by calling for consultancy providers.

“My department is in charge of the administration of the price of petroleum products. Within the last two years, various changes have been made requiring us to respond correctly including responding to the requirements of ET. In order to persuade the decision makers about our price proposal it would be good if the proposal is made based on international experience. However, this kind of information cannot be found only from internet while due to the shortage of manpower, we have not been able to assign our staff to join the delegation to come other countries for learning experiences.”

By one of the key informants from DPM - MOF

The difference appeared between the commercial actors such as PVN and EVN. PVN has already set up a plan and allocated the overseeing department and resources for studying, capacity building, and integrating the issues into the activities of the corporation from 2020. EVN's ET is considered as part of the strategic structure of EVN, so the Strategy Division is the focal point of ET in the corporation. EVN is studying to build an ET roadmap according to government policies. It is expected to be completed this year, followed by capacity-building workshops. Currently, EVN is implementing ET in a top-down fashion, based on the Program of the Ministry of Industry and Trade, and has not yet planned to assign specific tasks to the units.

“PVN takes the lead in this field. The reaction was started very early and they have the awareness even before the release of Resolution 55. In July 2020, the corporate established a Steering Committee for energy transition. Head of Electricity Division acts as secretary of the committee. The assisting team will be responsible for coordinating the implementation of the tasks while the vice directors of the other divisions of the corporation are members. The Department of Renewable Energy of the Electricity Division is the focal point for internal coordination and coordination with external partner including: the Party's Central Economics Board, CMSC, the Ministry of Industry and Trade, other ministries, and departments.

- + *Energy management: Quarterly Board of Directors meeting to update international and Vietnamese trends; Assess the impact on each unit and the work to be done; Supervising the ET activities of the units and international cooperation.*
- + *Emission management: Focusing on emissions, assessing the current state of emissions of corporations and units; Guidelines for calculating the carbon footprint.*
- + *Saving energy, investing in improving the efficiency of energy use: As a top priority; including standard statistics on quantity of each unit and the whole group; calculate and build solution.*
- + *Greening power plants: co-firing (technology, economic efficiency, value chain...); coordinate with international organizations on the conditions for early retirement... try to include the overall solution”.*

By one of the key informants from PVN

The difference between the areas of studying and researching of the research institutes: While HUST's specialists are leading mega-projects of electricity production then the scientist of HUNRE is experienced with ET on a smaller scale at small enterprises, households, and in rural areas.

Man-power shortage – A big challenge for ET:

Almost all the interviewed actors claimed that they had too much work while having too little manpower. This issue appeared on the observation of the consultant team right from the beginning while many of the actors/stakeholders had to refuse to meet with the team because they had no time available though they wanted very much to share their views with us. We witnessed many interviews were interrupted because of phone calls and people approached the interviewees for urgent things. Many of the interviews/discussions have been shortened because the interviewees have important work ahead. Many interviewees claimed that they are just not available to send the staff to attend training, and workshops, or oversee delegation on the issues of ET. Manpower shortage of the actors/stakeholders could be a huge challenge for the capacity-building program of CASE later.

Priority of the capacity building topics on ET:

Though facing the huge challenges described above, the capacity building program of CASE could be warmly welcomed by the actors/stakeholders based on the calculation of their answers about the necessity of the capacity building topics though the differences do exist.

During the discussions the interviewees/participants were asked to rank the capacity-building topics proposed by the team according to their own needs, their organization's

needs, and their sharing about the organization, the performance, and the gaps of capacity. The list of the topics is an “open-ended” one allowing the interviewees to add more topics according to their needs.

The interviewees/participants were asked to rank the capacity-building topics on a scale of five levels: Not necessary at all; Not necessary; Necessary but not prioritized; Prioritized; Highly prioritized. Besides the other recommendations and despite the different angles of the actors, the topics gaining priority from the participants are an outstanding trend.

From 70% to 90% of the participants agreed that 9 out of 10 proposed topics (see Table 3) are to be highly prioritized. Only the Topic of Coordination among stakeholders in the energy transition is considered less prioritized than the others.

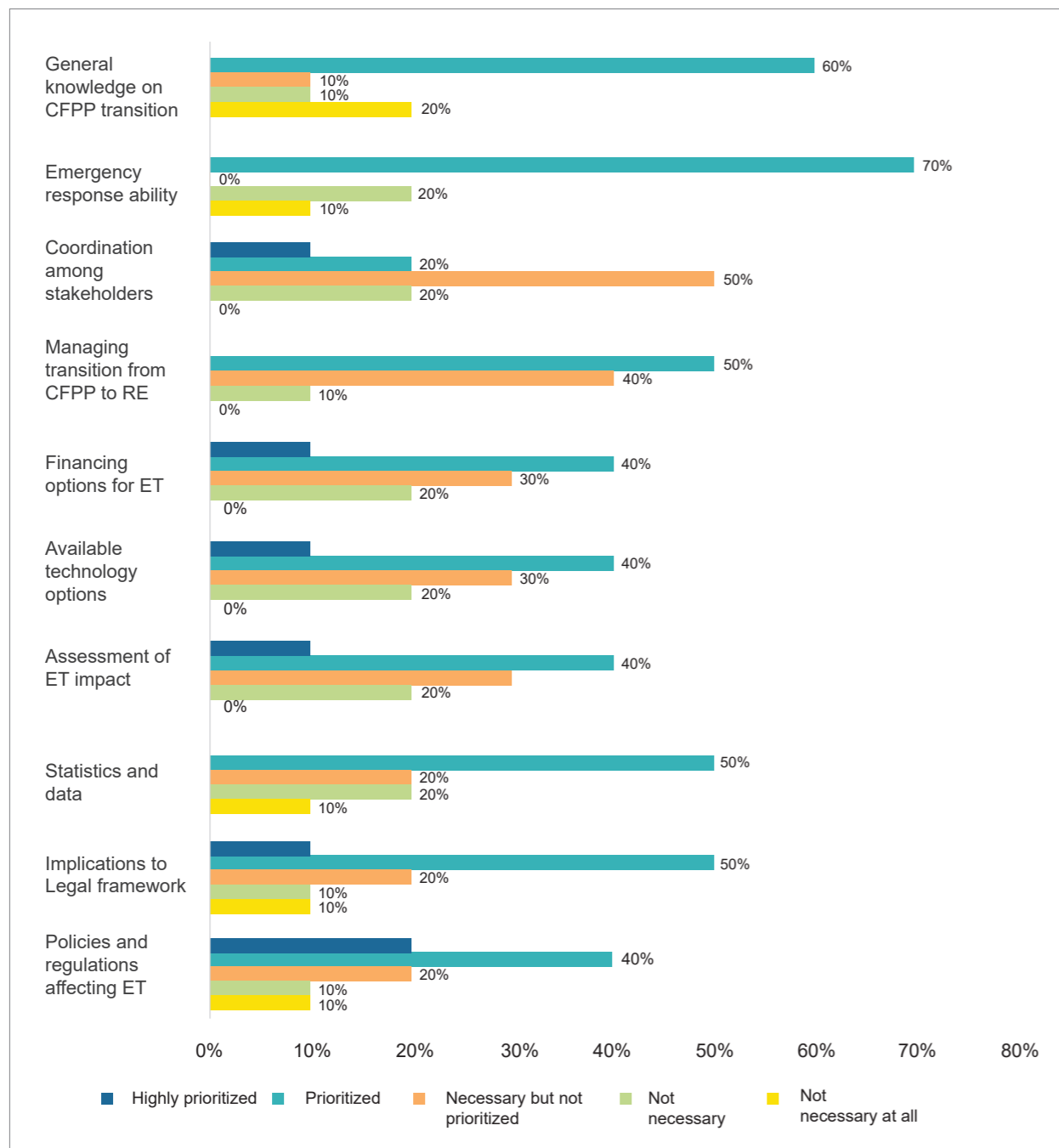


Figure 10 - General analysis of the topics of capacity building in ET

Source: Calculated and developed by the authors

In addition, the interviewees suggested including 02 topics needed for the capacity building, named: “Storage development” and “Behavior changing communication (BCC) skills in ET”. Therefore, the 11 agreed topics for capacity building are presented in the table below:

Table 5 - The agreed topics for capacity-building activities

ID topic	Topics	Proposed details
1	Policies and regulations affecting ET	1 - ET management, policy, and international experiences
		1 - Green mobility policy
		1 - Policy to promote local content and international experience
		1 - State governance of ET
		1 - Comprehensive analysis status of energy transition – co-benefit
		1 - International capital mobilization
		1 - Policy and regulatory gaps analysis
2	Implications to legal framework	1 - Hydrogen industrial development (incl. Hydrogen technology)
		2 - Management of off-grid RE projects
		2 - Interconnection grid
		2 - Status of Viet Nam's ET and policies implication (briefing paper)
		2 - ET legal framework
		2 - International experience of credit policies
		2 - Developing a competitive electricity market
		2 - Bidding mechanism for renewable energy projects
		2 - Off-shore wind power development
3	Statistics and data	3 - Energy information system
		3 - Effective data collection
		3 - Energy security index
		3 - Energy transition indicators
		3 - Policy making based on evidence

ID topic	Topics	Proposed details
4	Assessment of ET impact	4 - Gender equality in energy transition
		4 - Just energy transition (focus on just)
		4 - The socio-economic benefits of the ET process
5	Available technology options	5 - Smart energy systems
		5 - Ammonia technology
		5- Biomass co-firing technology
		5 - Green mobility technology
		5 - Training on international technical standards applicable to RE projects
		5 - Waste to energy technology
		5 - Off-shore wind power technology
6	Financing options for ET	6 - Improve clean/green project evaluation capacity
		6 - Credit arrangement for renewable projects
		6 - Global capital market
		6 - Start-up and renovation for energy transition
		6 - Capital mobilization
		6 - Carbon pricing
7	Managing the transition from CFPP to RE	7 - Management issue of career change for coal industry workers
		7 - Technological options for transition from CFPP to RE
		7 - International experience of EU countries (policy, labor, financial)
8	Emergency response ability	8 - Off-grid power project operation techniques
		8 - Flexibility of the power system
		8 - Harmonious integration of renewable energy into the power system
		8 - Risk management

ID topic	Topics	Proposed details
9	General knowledge of CFPP transition	9 - Specific case study in Germany (on CFPP transition)
10	Storage development	10 - Energy storage technology and cost
		10 - Energy storage technology supporting policies
		10 - BESS on the power market
11	Behavior changing communication for ET	11 - Briefing paper for spreading knowledge and best practices in ET to the community

Source: Developed by the authors from survey results



The topics obtained from the survey are all meaningful in promoting sustainable development in Viet Nam. However, within the resource constraints of the CASE project as well as the project's priorities, the prioritization of topics is reflected in the following chart:

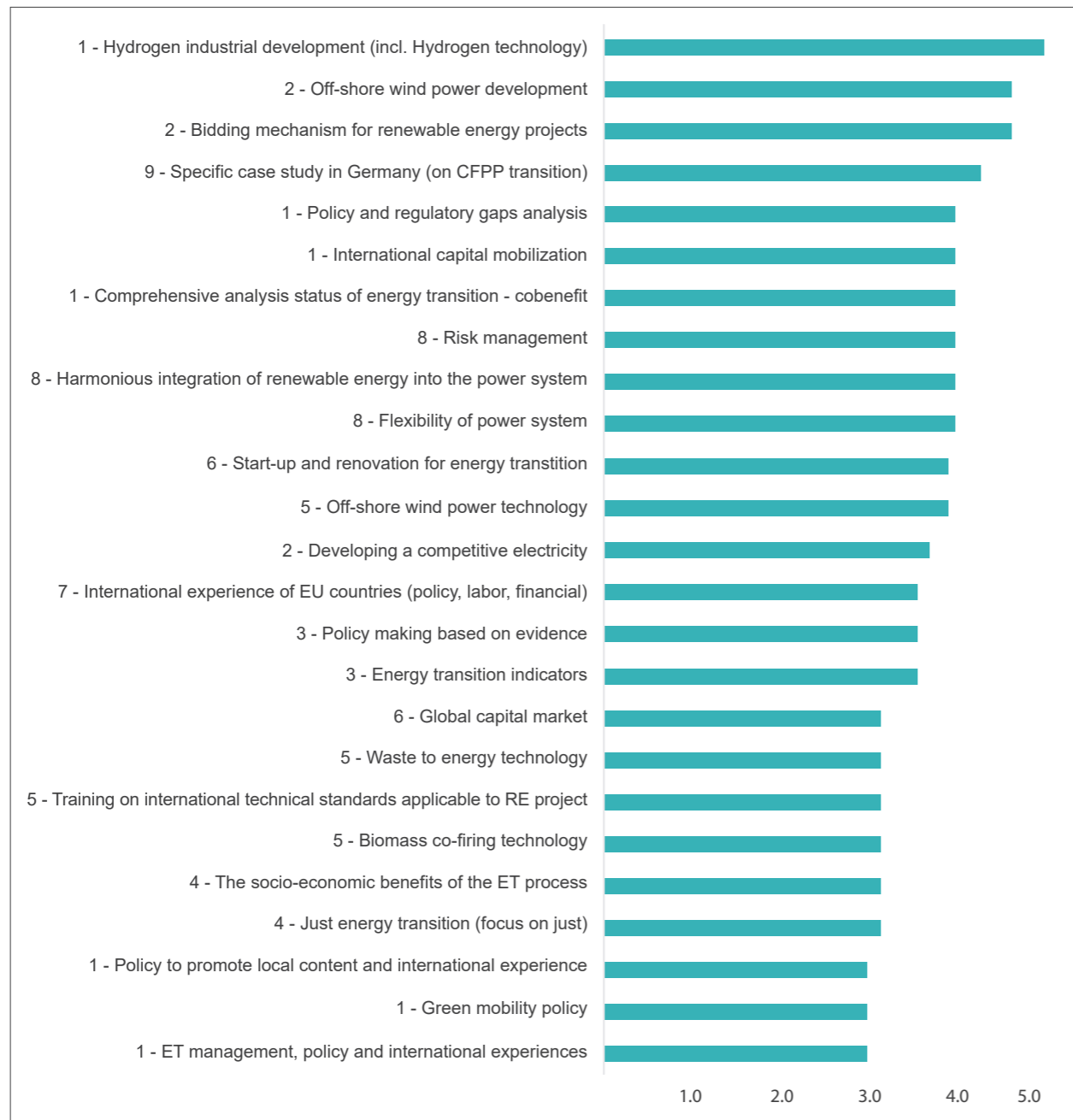


Figure 11 - Priority's the topics of capacity building in ET

The different need levels for capacity building:

Although the topics are necessary, prioritized, or highly prioritized, the participants also express their specific requirements according to their readiness for ET. For those who have been involved in, worked with, and studied in ET for a rather long time such as the institutes and some central-level agencies of MOIT and MONRE including IEVN-MOIT, HUST, HUNRE, PVN etc. The level of needs is different. Their needs for capacity building in the topics are at an advanced level.

Those who are hardly involved with training or capacity building activities in ET or just started with ET such as the agencies at the provincial level and the corporate like EVN should be provided with capacity building assistance at the level of beginners.

Special requirements also exist. International experience or international pattern is needed for capacity building for the staff of DPM – MOF, for:

- Storage technology and policy development should be one of the topics for building capacity regarding ET. However, the specific target groups should only be the policy makers from MOIT and the corporations due to their role and mandate
- Developing a competitive electricity market should be another topic for capacity building for the personnel of MOIT as well as the other central agencies
- Some other specific topics requested by the participants include new knowledge/technology of new energy sources including hydrogen, ammonia co-firing, waste to energy... (capacity building for staff in research, testing, management and operation of hydrogen, ammonia, new energy technologies from potential and developed countries around the world); Experiences from previous countries in developing mechanisms and policies; New technologies and investments in energy management; Forecast of pricing of new technologies such as hydrogen, ammonia and the development of coal price in the context of ET, etc.
- Pilot capacity building for the coal industry: Note on metal recovery of the coal industry (requires experts) this is typical of Vinacomin Viet Nam; The issue of a career change for coal industry workers
- Behavior-changing communication skills should be equipped for spreading knowledge and best practices in ET to the community; Encourage/promote enterprises/communities to participate in the energy transition; Carbon credit issue; Correct common knowledge about net-zero emissions to no longer be misunderstood, etc.
- Besides some of the central agencies and institutes whose staff can communicate in English, other participants request that to better access the world's knowledge on ET, many participants request assistance in enhancing English proficiency.

Types of capacity building measures

Workshops/ seminars are mostly mentioned by the discussion participants. Short training courses are the second choice mentioned by many participants. Other ways of capacity building include:

Reference documents: It is recommended that the documents should be prepared in the form of manuals which should be short (15 minutes of reading only), concise, and easy to understand; The documents could be delivered in hard copy, but internet provision could be a more efficient way to issue;

Study tour: Both domestic and international study tours are strongly requested by the participants due to the novelty of ET matters;

Training of Trainers (TOT): TOT should be prioritized for capacity building in large organizations such as EVN and PVN due to their extensive workforce requiring enhanced capacity in the ET. These organizations already possess internal capacity building staff who simply require TOT training. Additionally, engaging the staff of training centers within central agencies in TOT programs could further enhance capacity building efforts.

It should be creative in the form of training, for example, open contests to achieve the criteria of energy conversion (co-firing efficiency) in coal-fired power enterprises;

For the institutions: capacity building assistance can be done in the form of assisting the scientists in carrying out the research;

Local agencies and enterprises at the provincial level: local seminars should be organized, so it is easier for local agencies to participate; Governmental agencies need intensive training; For local enterprises, communication to raise awareness of benefits is the main thing;

From their own experience, the human resource staff of EVN shared that the e-learning system is not efficient because it is just suitable for providing very basic information to people;

It is necessary to identify the audience and their specific needs, time, and location in advance so that trainers/ facilitators can prepare to meet their requirements and expectations.



The needs for assistance in capacity building for ET – The case of EVN

EVN divides its personnel into three levels: 1) Senior staff already aware of ET; 2) Central level officials are interested in technology and cost but have no training resources; 3) Practitioners need to have a more specific survey of needs. The amount of training previously supported by GIZ is very small, not enough for EVN's member units.

The priorities shall include:

- Priority 1 - Training for senior leaders and staff in charge of energy efficiency with the following contents: Modern change management model oriented towards energy efficiency; Solving problems and challenges in ET; best international practices from models and technologies being applied; Existing tools and software;
- Priority 2 – Training, developing and implementing the unit's energy efficiency strategy with the target audience being leaders and experts of relevant units: Methodology, how to set targets, monitor - evaluate, tracking tools...

Requirements for EVN's capacity building on ET:

- Training according to the capacity profile: Job position (desire to train all relevant employees);
- It is necessary to coordinate with HR Division to assess the capacity gaps and provide training based on those skills; ToT should be provided to core personnel; the remaining can be trained in the direction of raising awareness;
- Training to transform awareness, mobilizing the support of employees in the units to be transformed... Designing a program for senior leaders in leadership of change management;

Training formats:

- Workshop: Basic Awareness
- Training course: Intensive training for subjects at all levels;
- International seminars and fairs: Focusing on level 1 and level 2; EVN can bare part of the cost; Content must be practical and useful;
- Pilot training at each level of staff, then EVN will deploy mass capacity building ... transferring training materials to member units to replicate the activities;
- E-learning is only suitable for basic training.

Organizing the appropriate ET capacity building activities for EVN:

- Level 1: A half to two days is the maximum, thus, in Hanoi or the location of the workplace town, should not be too far; Avoid the beginning of the year, the end of the year, the end of the quarter; Content: New, practical; Trainers should be senior experts, who can share about professional content, be ready to assist in solving problems; An interpreter is required though most of them can listen to English;
- Level 2: Two - three days is maximum; Avoid the beginning of the year, the end of the year, the end of the quarter; Especially in need of an in-depth interpreter...
- Level 3: Try with 2-3 days, maybe longer; should focus on studying... avoid the beginning of the year, the end of the year, the end of the quarter.



Who can help in providing capacity-building activities:

Besides the need for advanced capacity building, the DCC of MONRE can assist in the form of a series of seminars for provinces and businesses. The Department will share and propagate the contents regarding regulations and policies; emissions, greenhouse gases inventory, and technology conversion (Measurement, Reporting, and Verification (MRV)- Emission reduction assessment); The Department is also willing to be consulted by CASE once the training program is drafted.

HUST is the national leader in research and training in energy and ET; participated in many activities with GIZ. Therefore, HUST can provide training on related topics for units in need.

Power Market Development Research and Training Center is capable of and experienced in implementing training programs including ET training and can join the capacity activities.

HUNRE can assist in developing teaching materials: for people and businesses; Training on economic efficiency; environmental audit; Training monitoring and analysis; Training on risk assessment; Training on co-firing technology, especially waste treatment; Communication training...

4. Proposed capacity building program

4.1. Aims of the capacity building (CB) program

The capacity building program of the CASE project, within the project's available resources, aims to provide technical assistance to key actors/stakeholders in order to support them to have a better performance of their mandates, enhancing their voices and participation in energy transition progress in Viet Nam.

4.2. Target actors for the CB program

Because of limiting the time and resources, the consultants propose to select the target actors for the CB program by consolidating the primary data from interview results, analysis results on the actors' mandates, responsibilities, involvements, and potential influence in ET, and from other secondary sources. Thus, the target actors for the CB program should be covered:

- ◆ Central-level organizations:
 - Committee on Science, Technology, and Environment of National Assembly and other relevant bodies.
- ◆ Ministries and ministerial-level organizations and their subordinates
 - Energy actors: whose organizations are the host ministries for implementation of ET-related strategies including:
 - MOIT, MONRE and their departments, agencies including EREA, ERAV, DEESD, DOIT (under MOIT) and DCC, VEA, DST, DONRE (under MONRE).
 - State-Owned Enterprises: EVN, PVN, VINACOMIN
 - Non-Energy actors: Ministries are assigned to coordinate and implement the specific tasks related to ET and their departments, agencies including MOF, MPI, MOC, MOT, MOST, and local PPCs.
- ◆ Universities and research institutes: HUST, HUNRE, and IEVN...
- ◆ Finance representatives: State Bank, Commercial banks, Investment Funds, etc.
- ◆ Private sectors: Enterprises working in the RE industry.

4.3. The type of capacity-building activities

- Workshops/seminars (WS): WS is the method to deliver the CB mentioned mostly by the informants.
- Training (T): Short training courses are the second choice mentioned by many participants. The training course should be in creative ways, for example, open contests to achieve the criteria of energy conversion (co-firing efficiency) in coal-fired power enterprises. Also, the length of the training course should not exceed 02 days (maximum)

- Reference documents (REF). It is recommended that the documents be prepared in the form of manuals or IEC materials which should be short (15 minutes of reading only), concise, and easy to understand; The documents could be delivered in hard copy, but internet provision could be a more efficient way to issue;
- Study tour (ST): Both domestic and international study tour assistance are strongly requested by the participants due to the novelty of ET matters.
- Training of Trainers (TOT) courses should be the choice for building capacity for large organizations like EVN, and PVN because they have a huge number of employees who need improving capacity regarding ET while they have their internal capacity-building staff who just need to be trained by TOT. Besides, staff of training centers of the central agencies could be involved in TOT.
- Fundings for research (FR) or Assisting Initiative (AI): These options could be applied to research projects or initiatives from universities, research institutes, and enterprises.

4.4. Methods to implement the capacity building activities

- It is necessary to thoroughly apply the capacity building method of “Student-centered” capacity building according to learners’ requirements. Therefore, it is required to assess the needs of learners before the course, the lecturers/coaches shall redesign the lectures and student materials according to the objectives of each module, and the needs of the learners have been assessed and recognized;
- It is necessary to thoroughly apply the “Participation Method” in capacity building, with emphasis on the application of case studies, group discussions, group exercises, etc. to create conditions for students to share and experience;
- Strongly encourage self-study and self-capacity building by facilitating resources, time, and learning materials;
- Promote internal capacity building and combine with capacity-building activities for local civil servants;
- Requires assessment during and after the course to ensure quality.
- Capacity building process.

The following steps could be applied for each capacity-building activity.



Figure 12 - The process of capacity-building activities

4.5. Key risks and mitigation

The CNA shows that some risks could affect the performance of the CASE’s capacity-building program.

- The various needs of actors/ stakeholders for capacity building which may cause difficulties in organizing activities of the project. In this case, strictly following the capacity building process which assesses the needs of participants before each CB event and then designing the specific activities accordingly should be the solution for managing the effects of this risk;
- Time limit: The CNA clearly shows that almost all the actors/stakeholders are facing the difficulty of shortage of manpower which will create difficulty for the project to mobilize the participants for the capacity-building activities. Well planning for capacity building and keeping close contact with stakeholders should be the solution to limit the effects of this risk.

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