



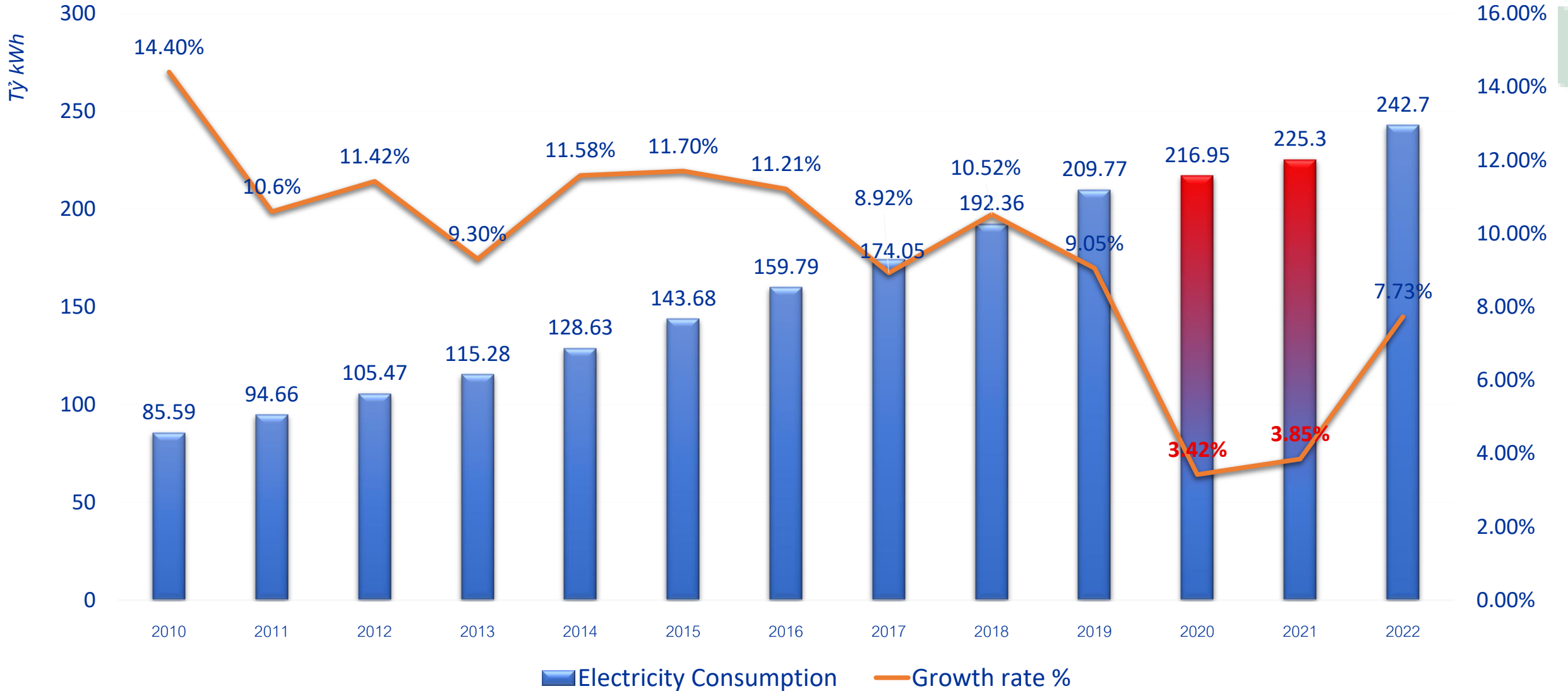
MINISTRY OF INDUSTRY AND TRADE
ELECTRICITY REGULATORY AUTHORITY OF VIETNAM

ENERGY TRANSITION IN VIETNAM

Presenter: Ms. Do Hong Thanh – ERAV

Bangkok, August 2024

CURRENT VIETNAM POWER SYSTEM – ELECTRICITY CONSUMPTION



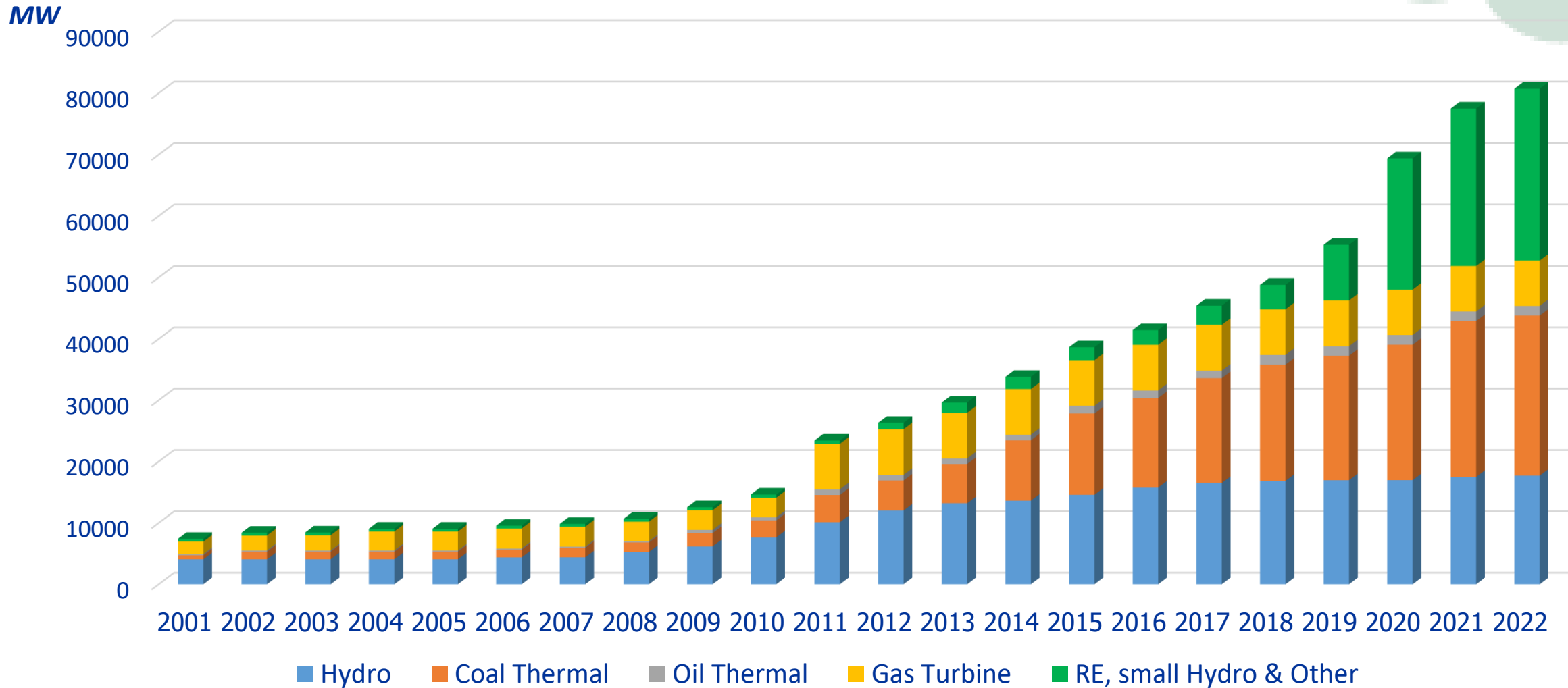
Source: ERAV, 2023

ERC FORUM

2023



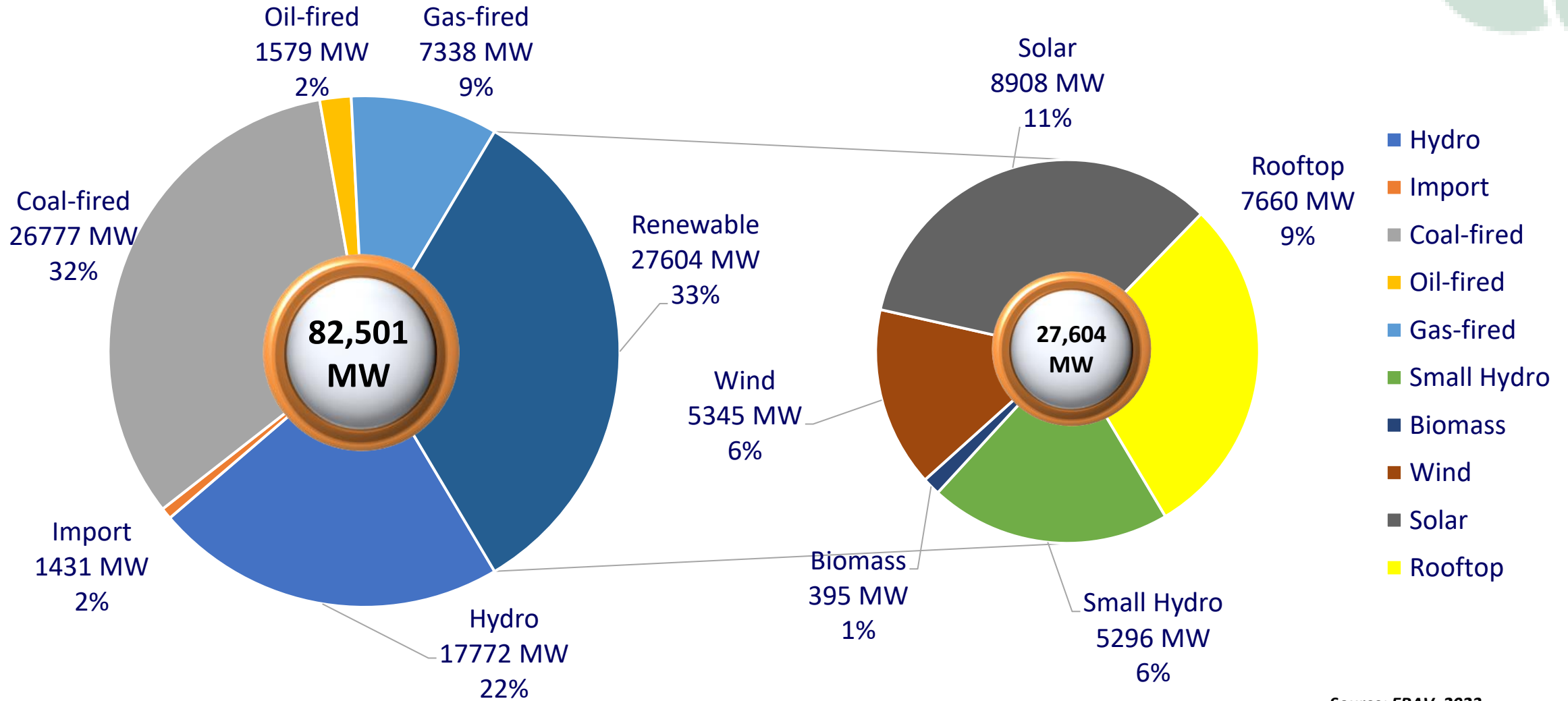
CURRENT VIETNAM POWER SYSTEM – INSTALLED CAPACITY



Source: ERAV, 2023



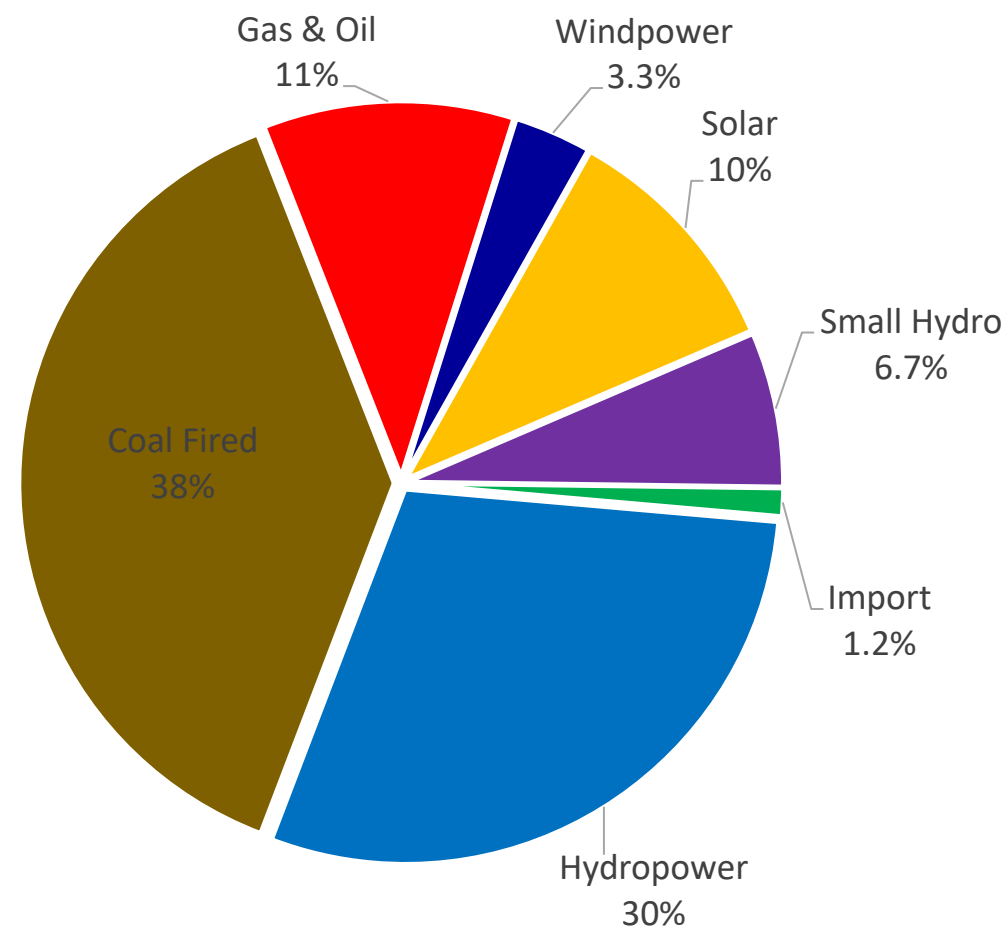
VIETNAM'S POWER SYSTEMS – INSTALLED CAPACITY 15/6/2023



Source: ERAV, 2023

Electricity Production of 2022: **271.1 TWh**

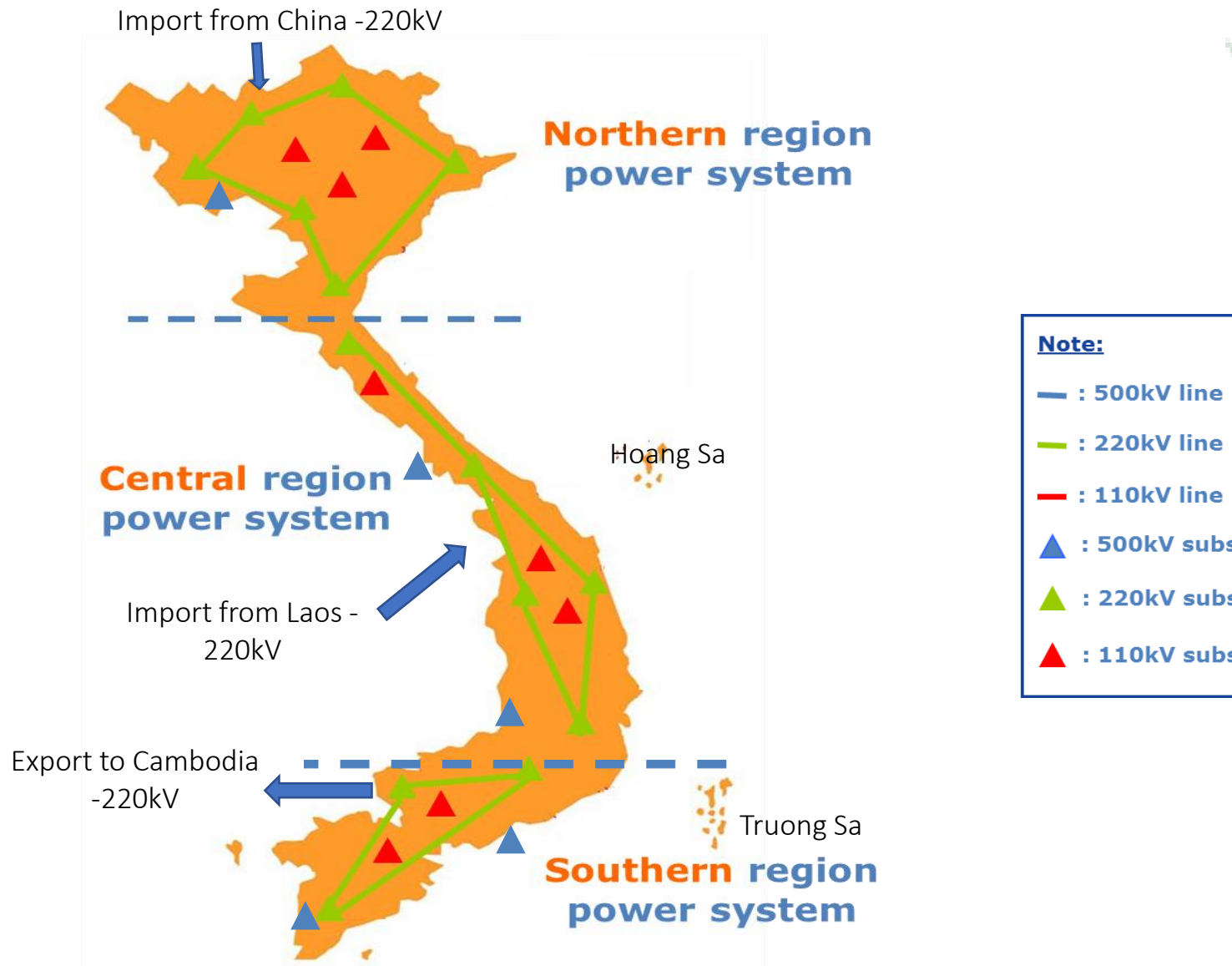
Type	Production (TWh)	Share (%)
Hydropower	80.35	30%
Coal Fired	104.54	38%
Gas & Oil	29.47	11%
Windpower	9.04	3.3%
Solar	28.39	10%
Small Hydro	18.19	6.7%
Import	3.23	1.2%



Source: ERAV, 2023



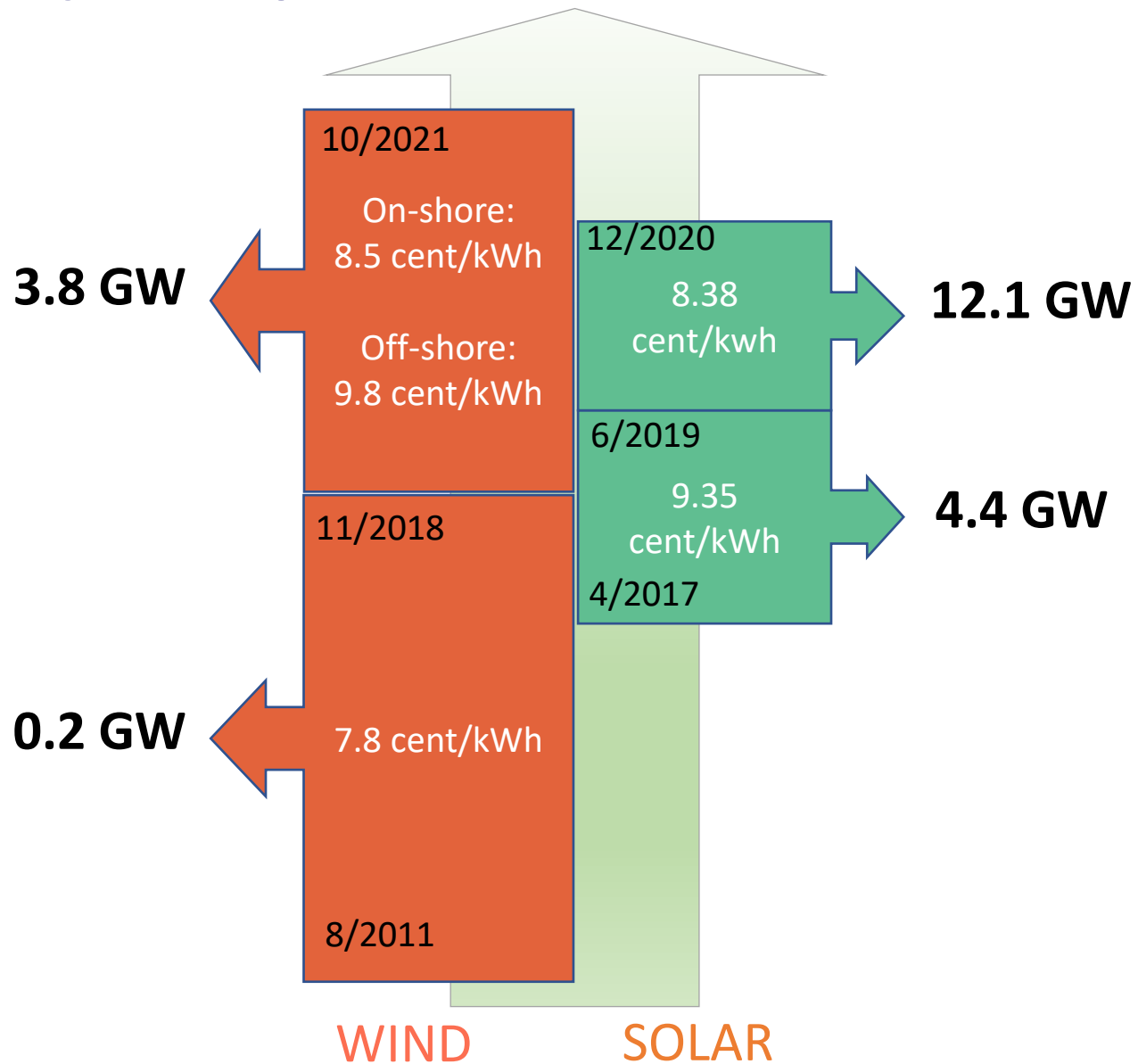
VIETNAM'S POWER SYSTEMS – CROSS-BORDER POWER TRADING



Source: ERAV, 2023



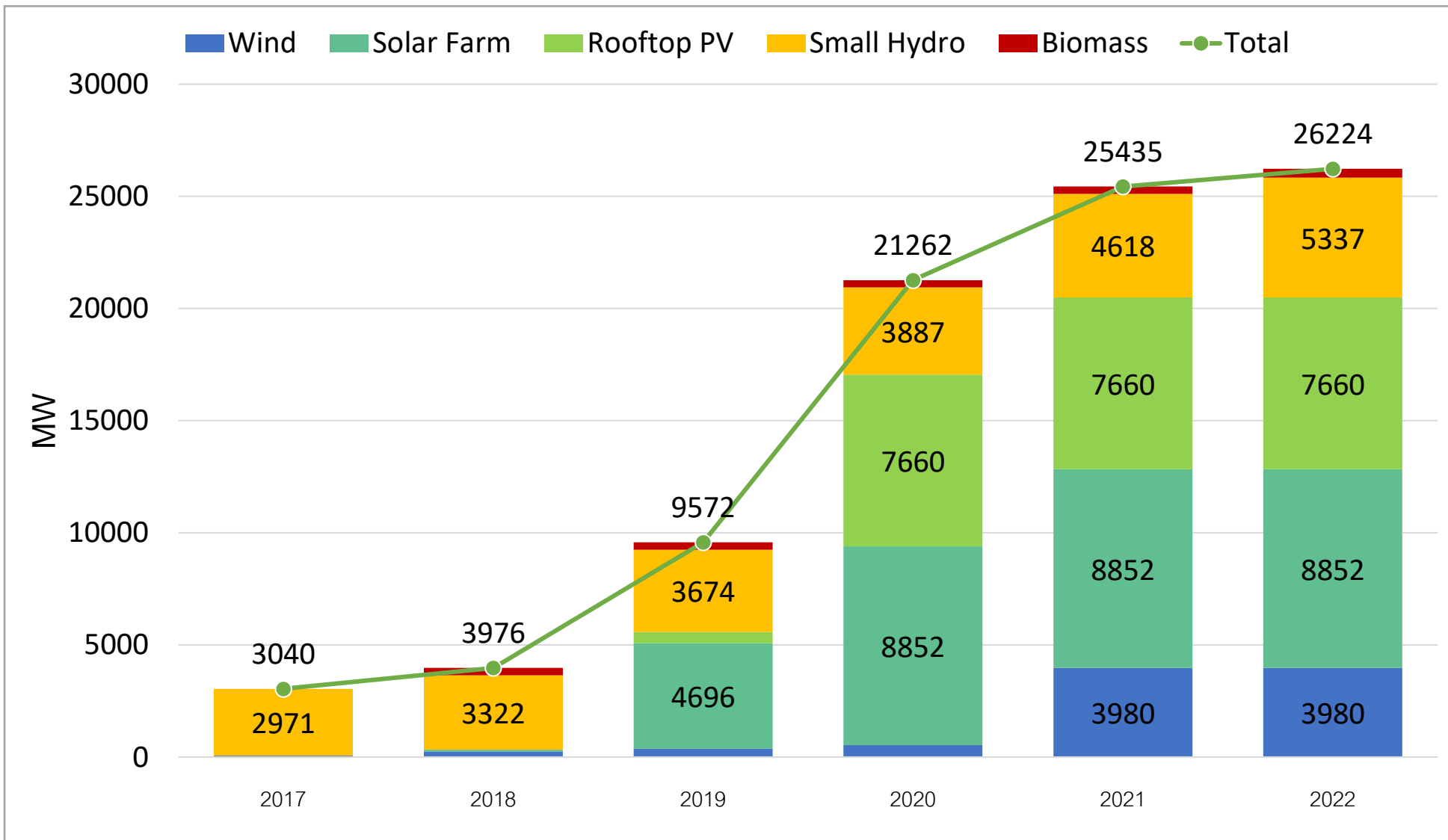
RENEWABLE ENERGY DEVELOPMENT



Source: ERAV, 2023



RENEWABLE ENERGY DEVELOPMENT





POWER MARKET DEVELOPMENT ROADMAP

Vietnam Retail Electricity Market - **VREM**
(being researched & developed)



Vietnam Wholesale Electricity Market - **VWEM**
(since 2019)

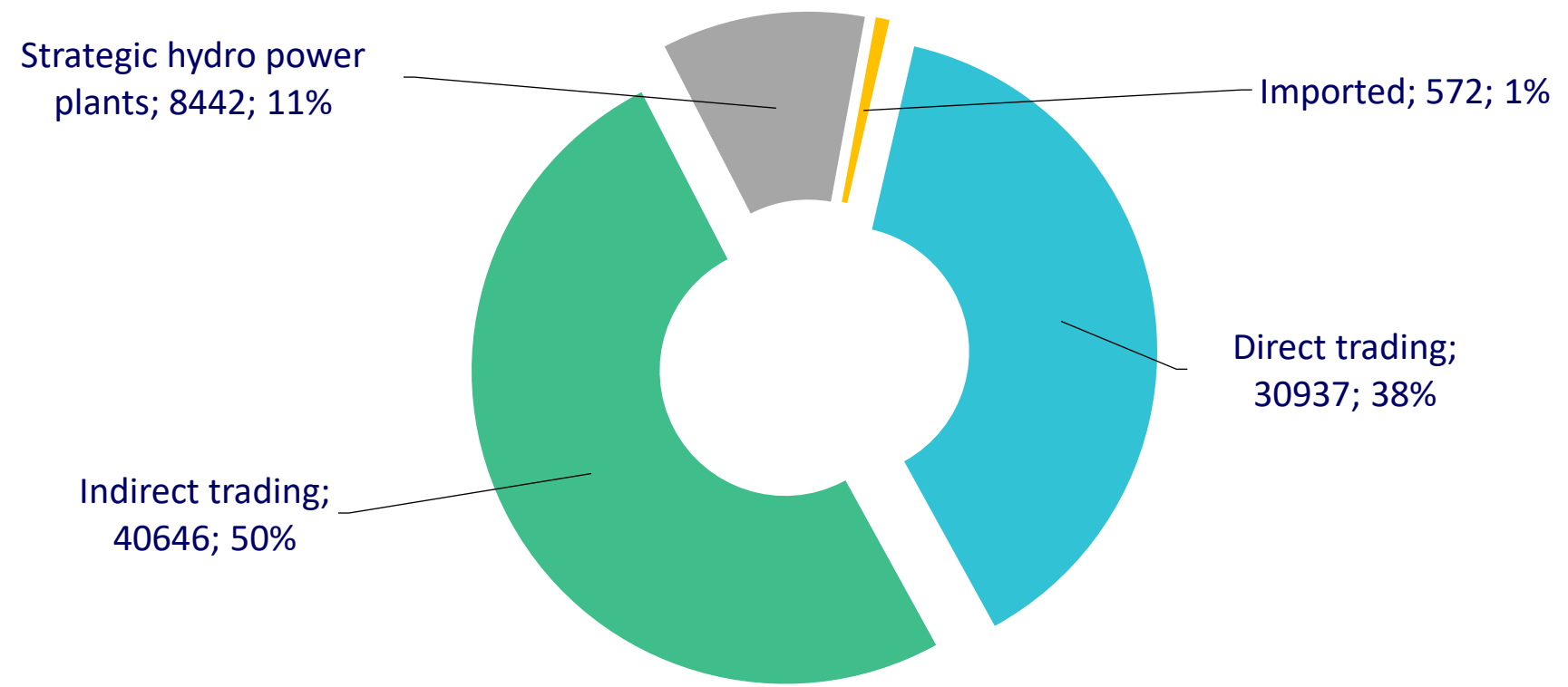


Vietnam Competitive Generation Market - **VCGM**
(since 2012)





Generation Installed Capacity by Market Participation Status (MW; %0)





VWEM (2023)

- **Gross Pool**
- **Settlement:** Ex-post
- **Bid:** Cost based – 10 Blocks
- **Day ahead Scheduling:** Every 6 hour
- **Price:** SMP
- **Trading interval:** 30 minutes
- **Dispatch interval:** 30 minutes
- **Ancillary service:** Co-optimize for Frequency Control and Spinning Reserve, signing contract for other services.

VWEM (Longterm)

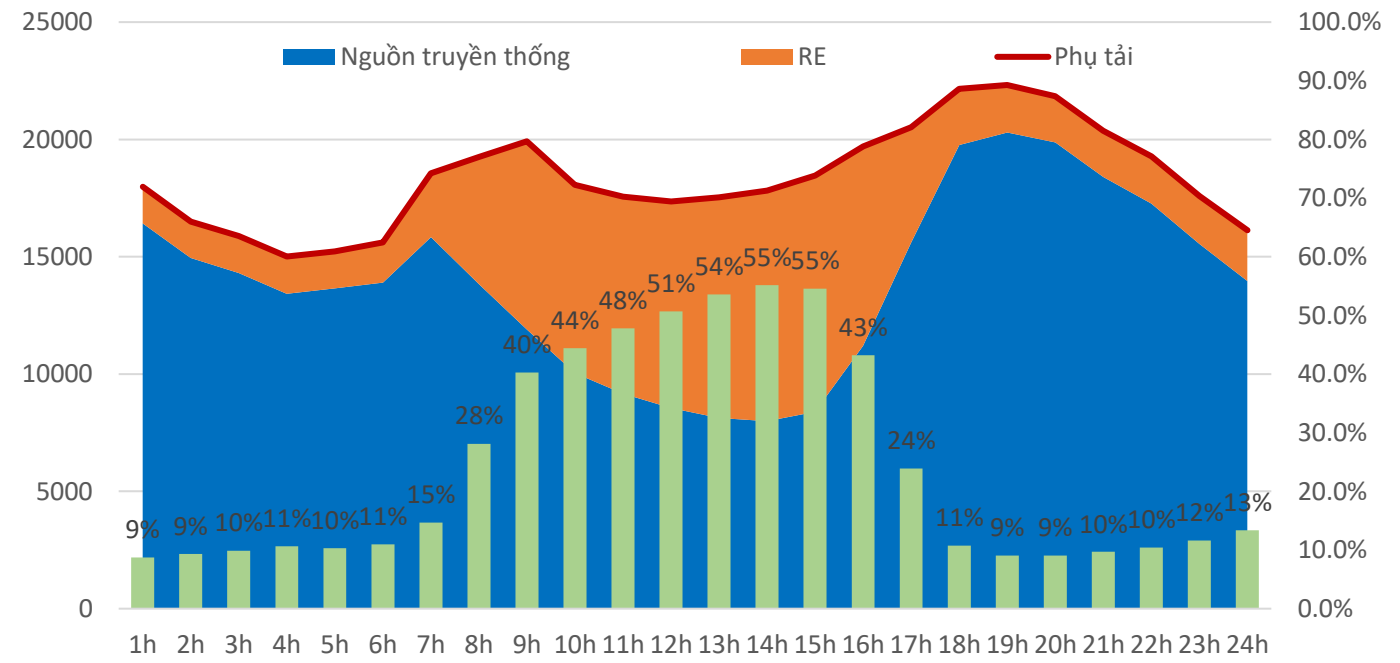
- **Gross Pool**
- **Settlement:** Ex-ante
- **Bid:** Price based – 10 Blocks
- **Day ahead Scheduling:** Every 6/N hour ($N \leq 6$)
- **Price:** LMP
- **Trading interval:** 30 minutes
- **Dispatch interval:** 30/N minutes ($N \leq 6$)
- **Ancillary service:** Co-optimize for Frequency Control and Spinning Reserve, signing contract for other services.



VWEM: CHALLENGES



- ❖ The retail price of electricity does not accurately and fully reflect the costs of all stages of the electricity sector.
- ❖ The restructuring of the electricity industry has not achieved
- ❖ Information technology infrastructure serving VWEM is still weak.
- ❖ Installed capacity of power plants directly participating in the market is low
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- ❖ The load growth rate is always high.
- ❖ Difficulty in operating and mobilizing power sources when the share of renewable energy increases.
- ❖ Lack of legal framework for flexible power sources: BESS, pumped storage hydroelectricity, EV, etc





Legal framework

- **Decision 2068/QD-TTg** issued in Nov. 2015 by the PM on National strategy on Renewable energy to 2030, with vision to 2050
- **Resolution 55-NQ/TW** issued in Feb. 2020 by Politburo on Orientation of the national energy development strategy to 2030 with a vision to 2045
- **Decision 1658/QD-TTg** issued in Oct. 2021 by the PM on National green growth strategy for the period of 2021-2030, with vision to 2050
 - Ensure national energy security
 - Energy is the foundation for economic development
 - Minimize environmental impact through RE and EE promotion
 - Reduce portion of coal-fired power plants
 - Strongly promote RE resources (Wind onshore and offshore, Solar, Biomass, Waste,...)



Goals for Energy Transition in PDP8

- Strongly developing RE for electricity production: Proportion reaching 30.9 - 39.2% by 2030; towards 47% of production, provided that the commitments in the JETP Political Declaration with Vietnam are fully and substantively implemented by international partners. Orientation to 2050: reaching a share of 67.5 - 71.5%.
- Ensuring the national target of net zero emissions: According to PDP8, the greenhouse gas (GHG) emissions from electricity generation in 2030 will be 204-254 million tons, reducing to 27-31 million tons by 2050, which is lower than the emission cap of 35 million tons in the “National Strategy on Climate Change to 2050” approved by the Prime Minister in July 2022. Aiming for peak emissions not exceeding 170 million tons by 2030, provided that the commitments in the JETP are fully and substantively implemented by international partners.
- Building a smart grid system capable of integrating, operating safely and effectively a large proportion of renewable energy sources.

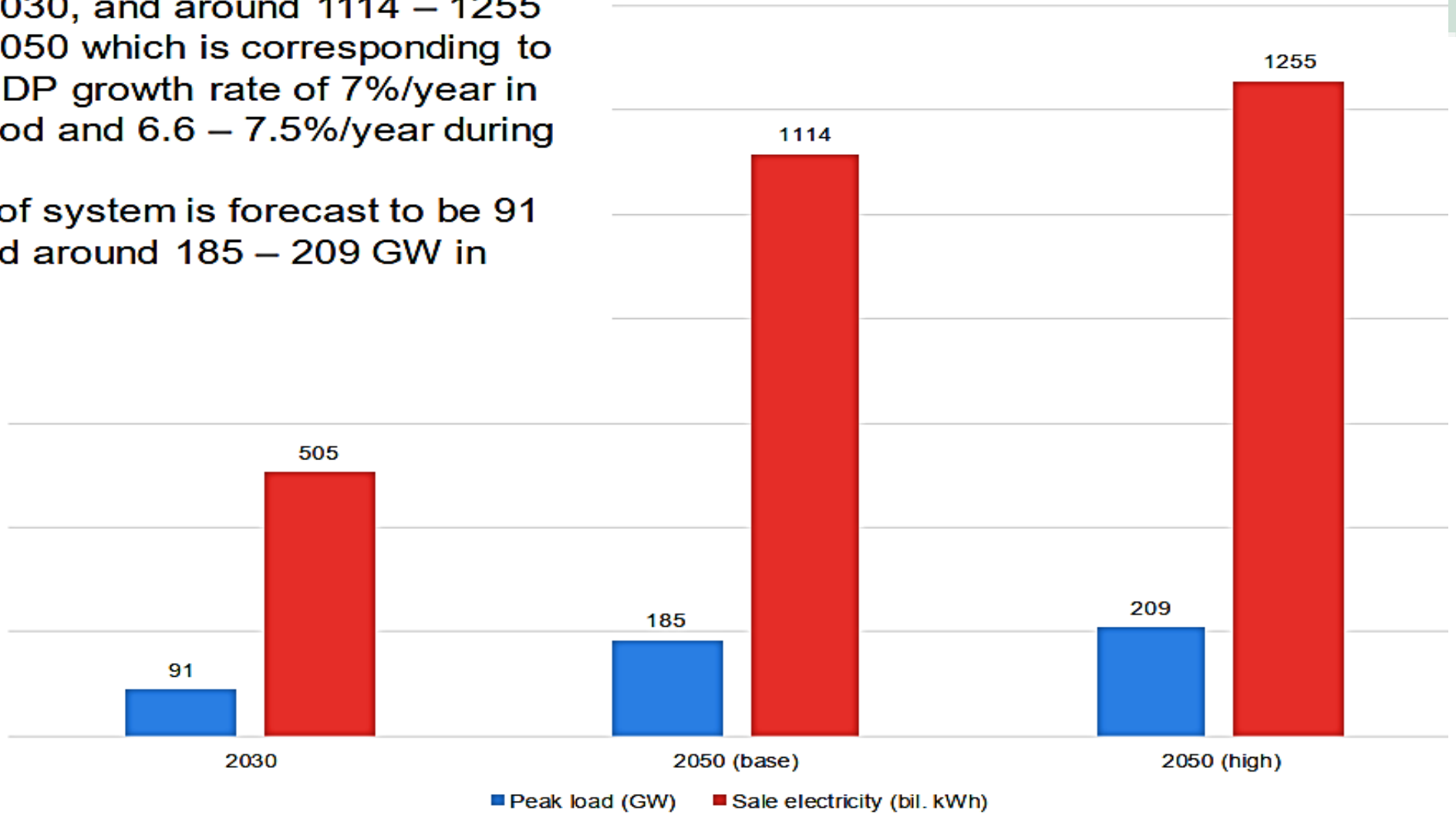
Source: PDP8



POWER DEVELOPMENT PLAN - PDP VIII – PM DECISION 500/QD-TTg



- Sale electricity is expected to reach about 505 billion kWh in 2030, and around 1114 – 1255 billion kWh in 2050 which is corresponding to the expected GDP growth rate of 7%/year in 2021-2030 period and 6.6 – 7.5%/year during 2031-2050.
- The peak load of system is forecast to be 91 GW in 2030 and around 185 – 209 GW in 2050.

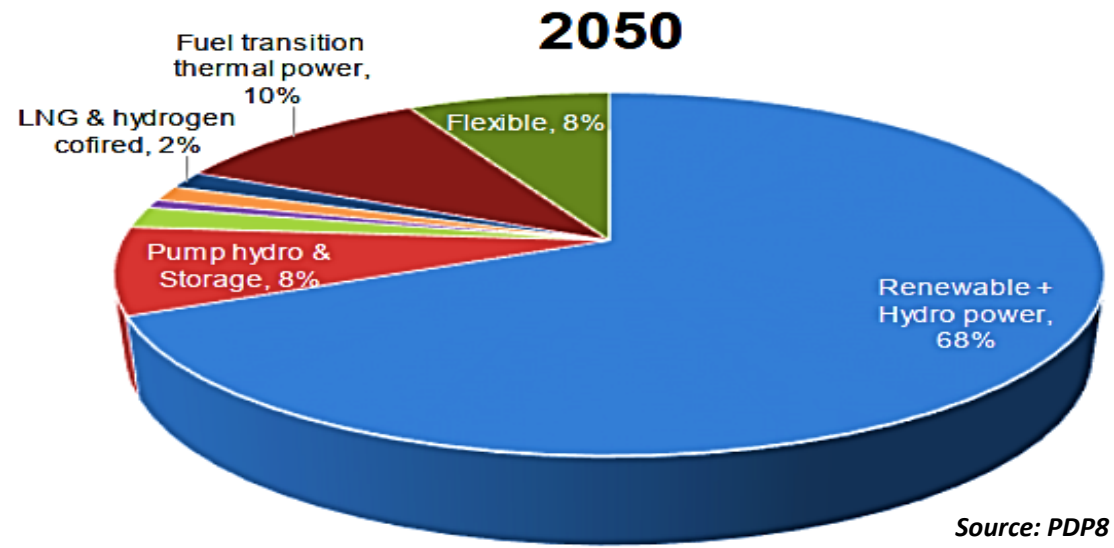
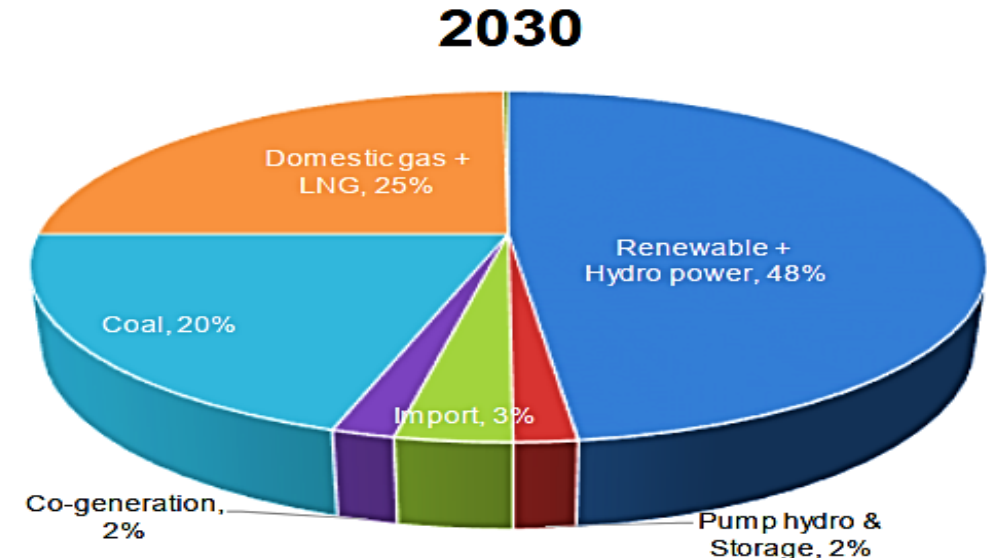


Source: PDP8



POWER DEVELOPMENT PLAN - PDP VIII – PM DECISION 500/QD-TTg

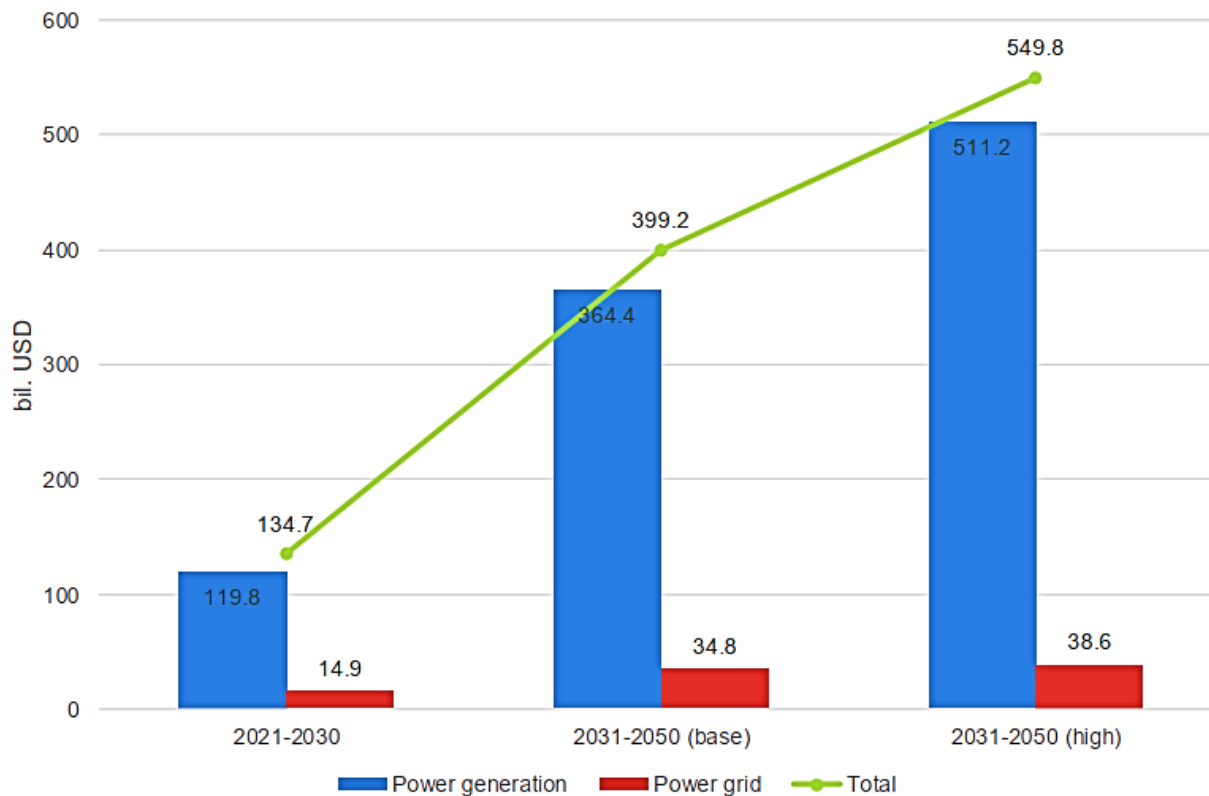
Generation type	2030	2050
Total installed capacity	150,489	490,529-573,129
Hydro power	29,346	36,016
Onshore wind	21,880	60,050-77,050
Offshore wind	6,000	70,000-91,500
Solar	12,836	168,594-189,294
Biomass & other RE	2,270	6,015
Pump hydro & Storage	2,700	30,650-45,550
Import	5,000	11,042
Co-generation	2,700	4,500
Coal	3,0127	-
Coal to biomass/amonia	-	25,632-32,432
Domestic gas	1,4930	7,900
Domestic gas to hydrogen	-	7,030
LNG	22,400	-
LNG & hydrogen cofired	-	4,500-9,000
LNG to hydrogen	-	16,400-20,900
Flexible	300	30,900-46,200



Source: PDP8



POWER DEVELOPMENT PLAN - PDP VIII – PM DECISION 500/QD-TTg



- Period 2021 - 2030: total investment in development of power source and transmission grid is about 134.7 billion USD.
- Period 2031 - 2050: total investment in development of power source and transmission grid is about 399.2 - 523.1 billion USD.



Source: PDP8



SPECIFIC OBJECTIVES

2019 - 2025

Achieve energy saving rate of 5-7% in total national energy consumption

01



02

2025 - 2030

Achieve energy saving rate of 8-10% in total national energy consumption



ENERGY EFFICIENCY - DIRECTIVE 20/CC-TTg dated 8/6/2023



1. From now to 2025, save a minimum of 2 percent of total electricity consumption each year
2. Reduce electricity losses on the entire power system to below 6% by 2025
3. Decrease the peak load capacity of the national power system through the implementation of the DSM and Demand Response (DR) programs, by at least 1,500 MW by 2025.
4. By 2030, have 50% of office buildings and 50% of residential buildings equipped with rooftop solar systems for self-consumption, without selling electricity back to the national power grid.
5. By the end of 2025, all street lighting systems will use LED lights.





PDP 8 & ENERGY TRANSITION - CHALLENGES

1. Requirements on firmly ensuring national energy security, supplying enough electricity to meet socio-economic development with high growth rate
2. Many difficulties (technology, finance, governance, ..) in implementing energy transition and commitments at COP 26.
3. Traditional primary energy resources are rapidly declining.
4. Geopolitical conflicts in the world have a great impact on energy supply and prices.
5. The capital demand for electricity development is large, the ability to raise capital is difficult.
6. The issue of social security for workers in the field of fossil fuel production in the energy transition.





1. Solutions to ensure the security of power supply
2. Solutions to create capital and mobilize investment capital to develop the power industry
3. Legal and policy solutions
4. Solutions for environmental protection, natural disaster prevention and control
5. Science and technology solutions
6. Solutions for economical and efficient use of electricity
7. Solutions for human resource development
8. Solutions for international cooperation
9. Solutions on strengthening domestic capacity, localizing electrical equipment, building and developing the electromechanical industry
10. Solutions for organization and management, improving the efficiency of electricity activities
11. Solutions for organizing, implementing and monitoring the implementation of the plan



*Thank
you*

