

A decorative graphic on the left side of the slide, composed of several overlapping triangles in various shades of blue. Some of these triangles contain images: a wind turbine, a solar panel array, and a large dam. The overall shape is a large, abstract triangle pointing downwards.

Overview of the global fossil fuel market and its impacts on the domestic market in Vietnam

Dr. Minh Ha-Duong

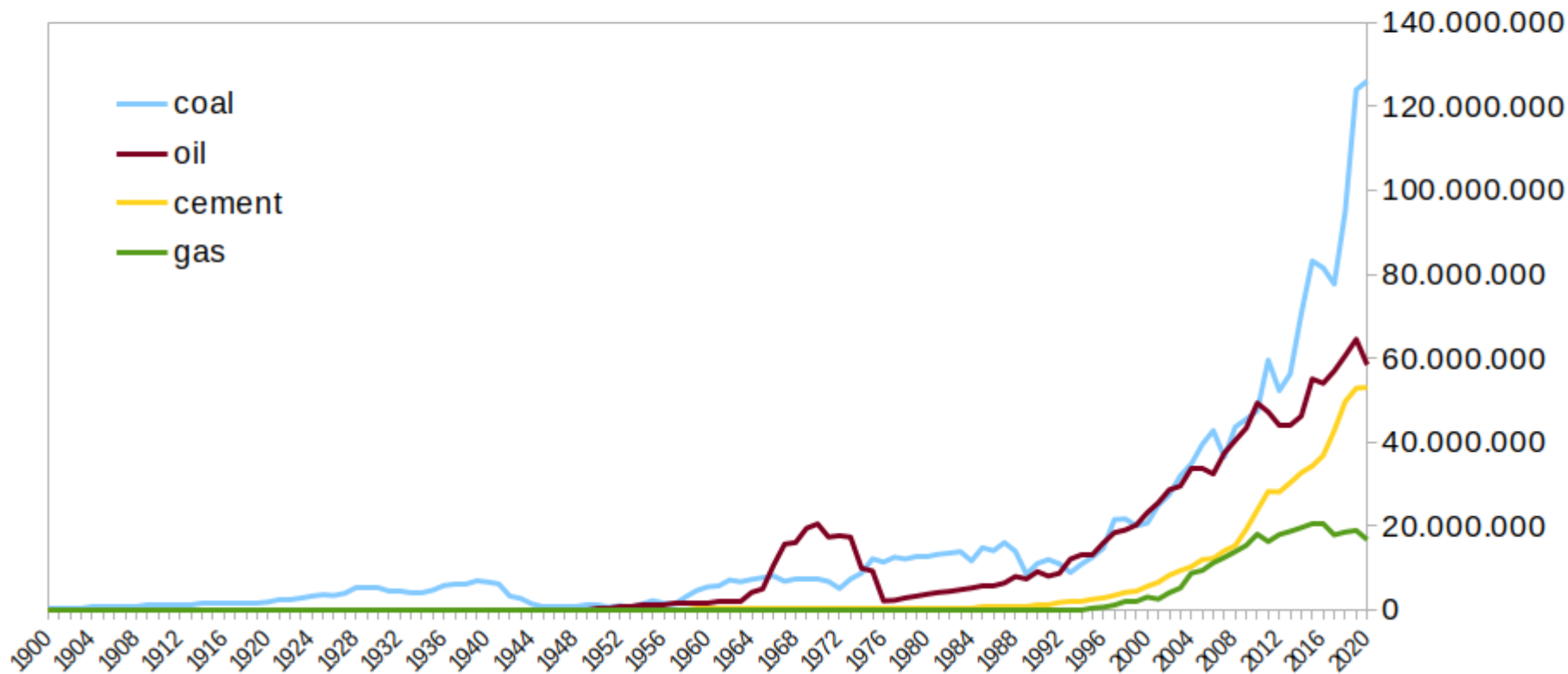
Hanoi, October 14, 2022

1. Introduction

- 1) Introduction: Why we are here
- 2) The fourth global energy crisis
- 3) Impacts in Vietnam
- 4) Looking forward
- 5) Conclusion: Pressing issues

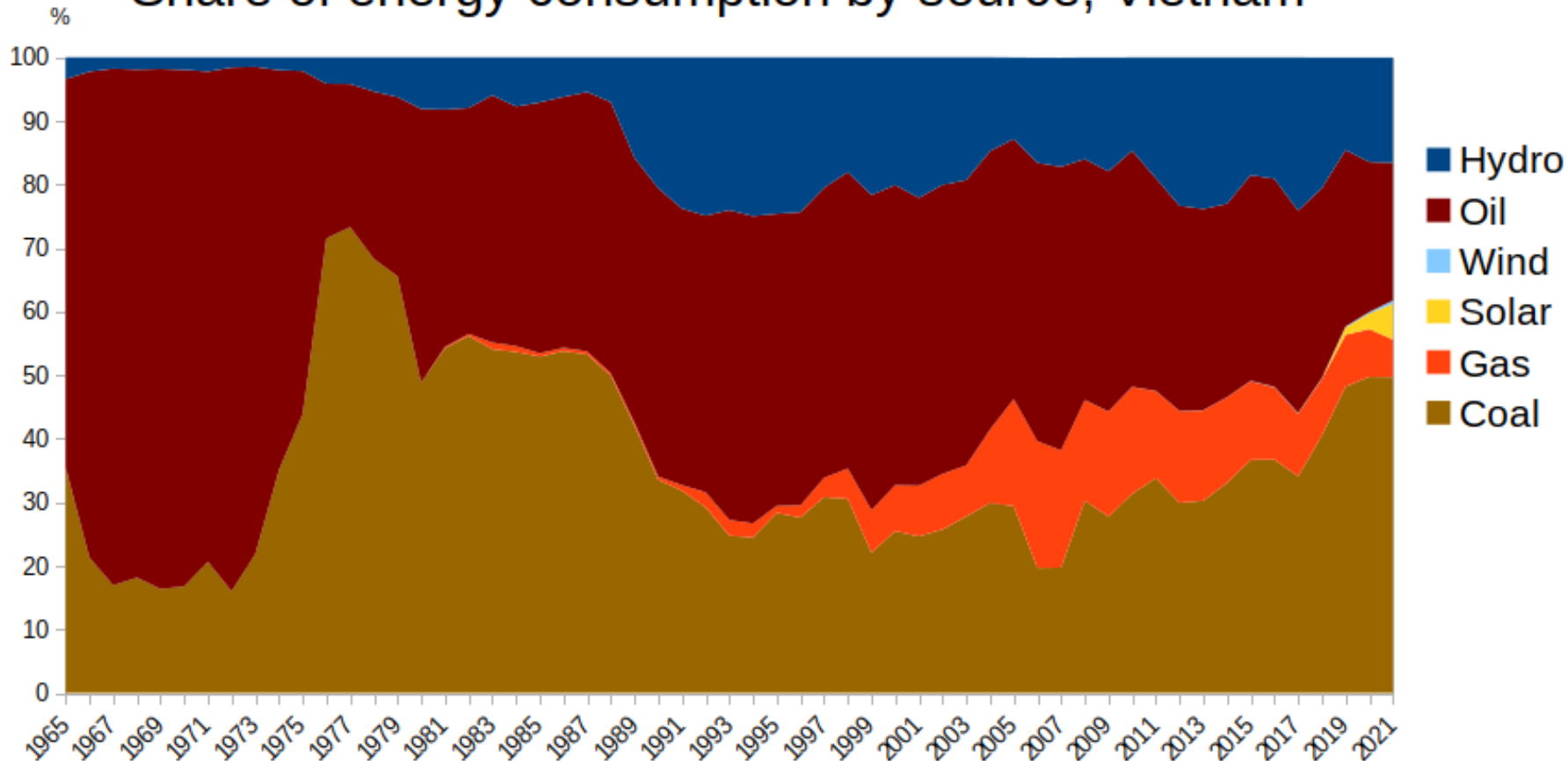
CO2 emissions of Vietnam by source

Annual carbon dioxide (CO₂) emissions from different fuel types, measured in t per year.





Share of energy consumption by source, Vietnam



Source: Author, ourworldindata.org

% equivalent primary energy, substitution method used to convert for fossil fuels.

2. The fourth global energy crisis

1973, 1979, 2008, 2021

LNG only affordable for rich countries

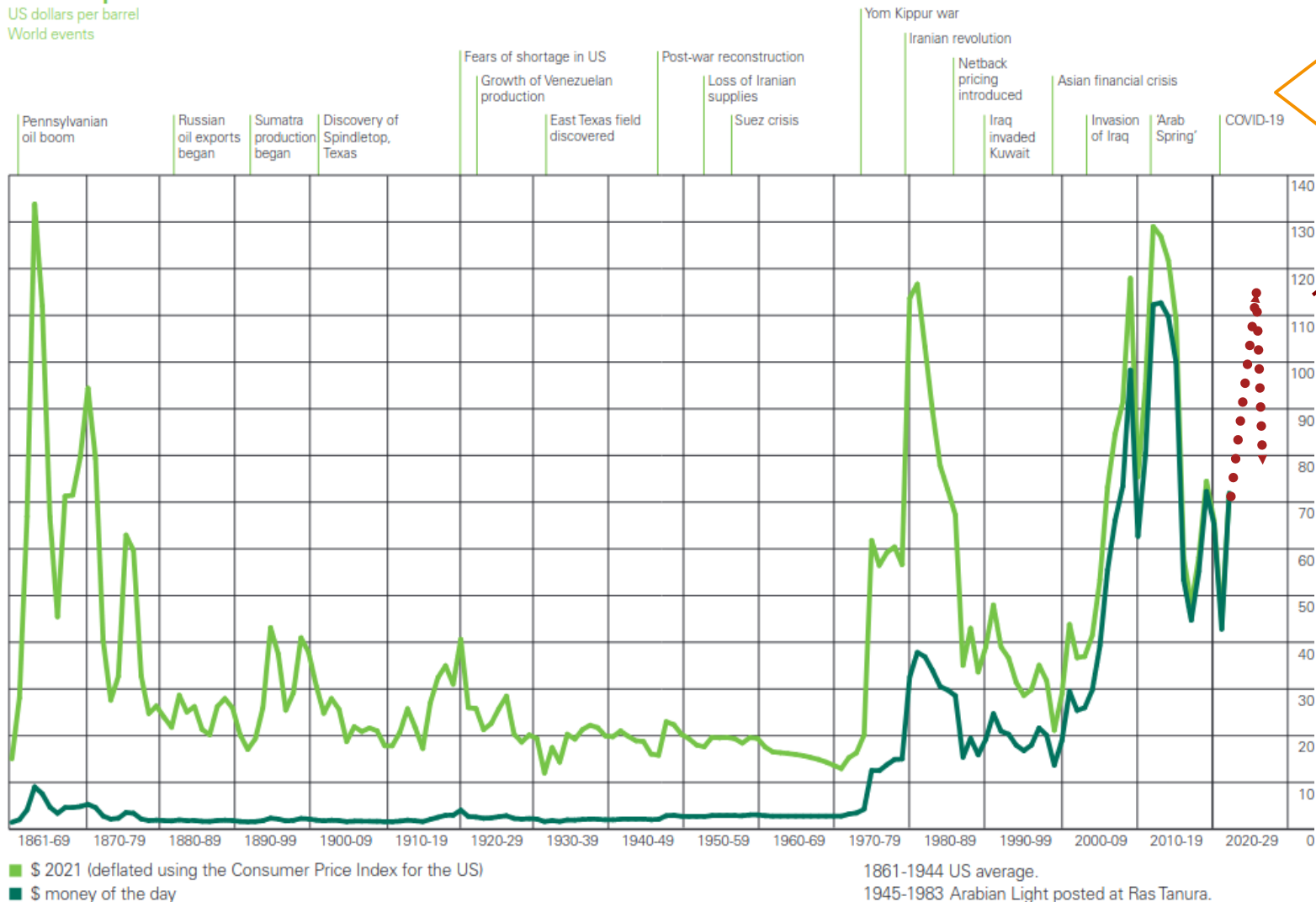
Coal prices x4





Crude oil prices 1861-2021

US dollars per barrel
World events



mostly
wars

115 \$/barrel

bp Statistical Review of
World Energy June 2022,
p. 24

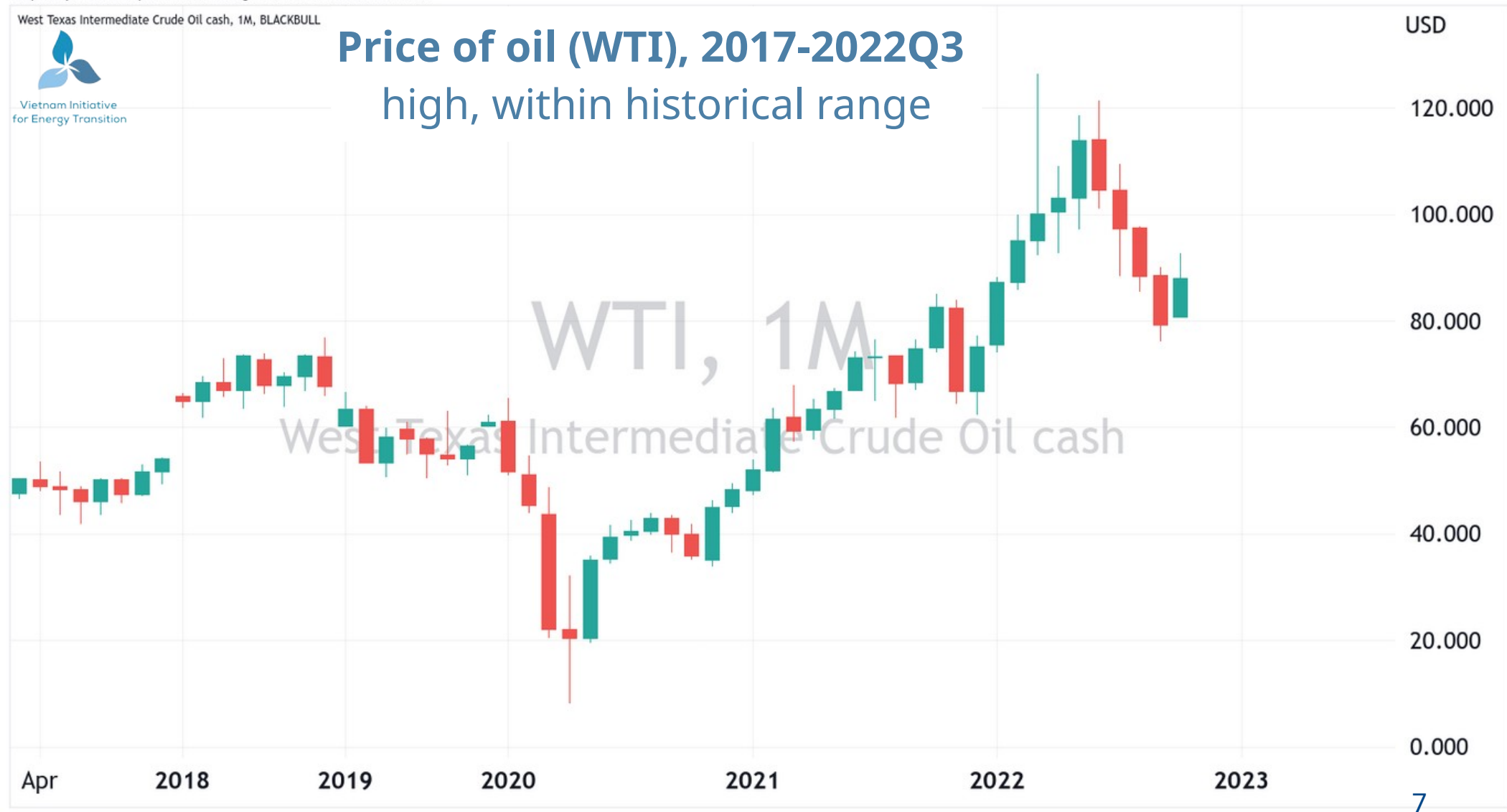
West Texas Intermediate Crude Oil cash, 1M, BLACKBULL



Vietnam Initiative
for Energy Transition

Price of oil (WTI), 2017-2022Q3

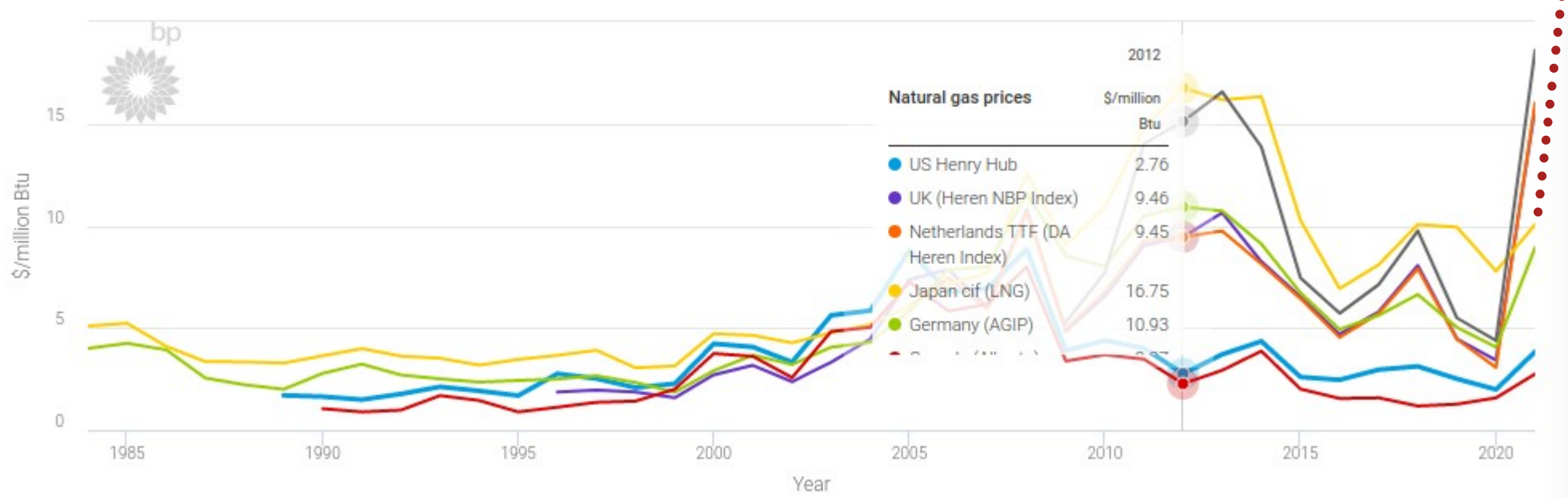
high, within historical range



Prices of natural gas, 1984-2021

LNG was 4 - 16 \$/Mbtu

to 50
\$/Mbtu



Undeclared prices. *bp* Statistical Review of World Energy June 2022 charting tool.



Price of Liquefied Natural Gas in Asia, 2015-2022Q3

Europe buying all LNG it can

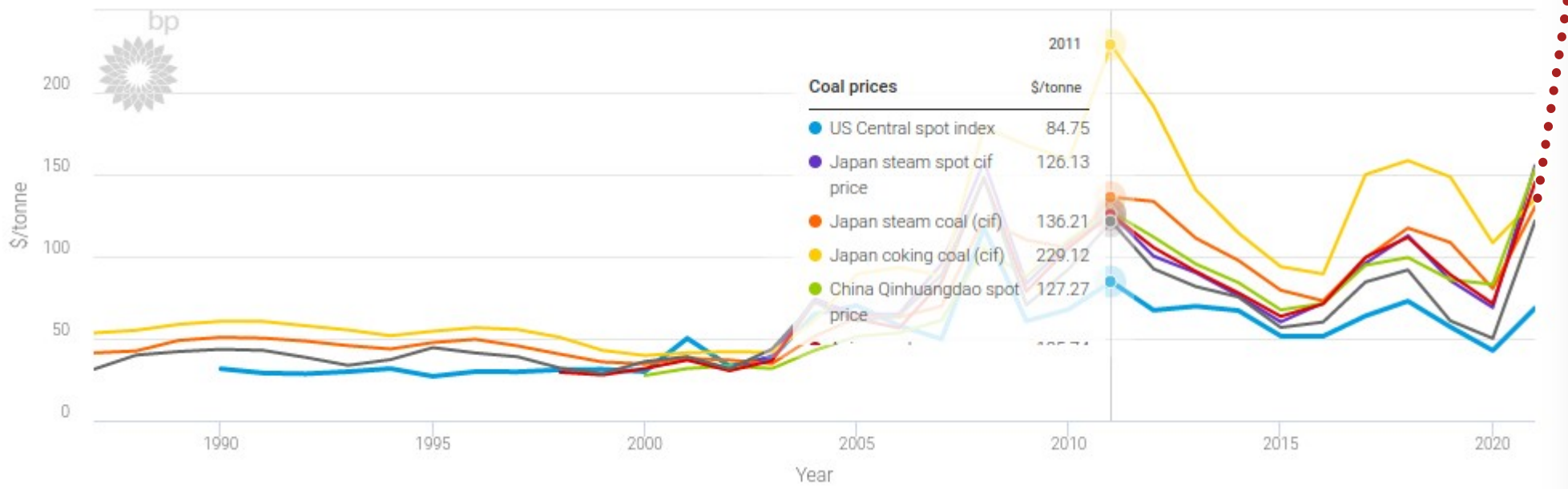
Published on TradingView.com, Oct 05, 2022 10:20 UTC



Prices of coal, 1985-2021

Steam coal was 50-150 \$/t

to 400 \$/t



Undeclared prices. *bp* Statistical Review of World Energy June 2022 charting tool.

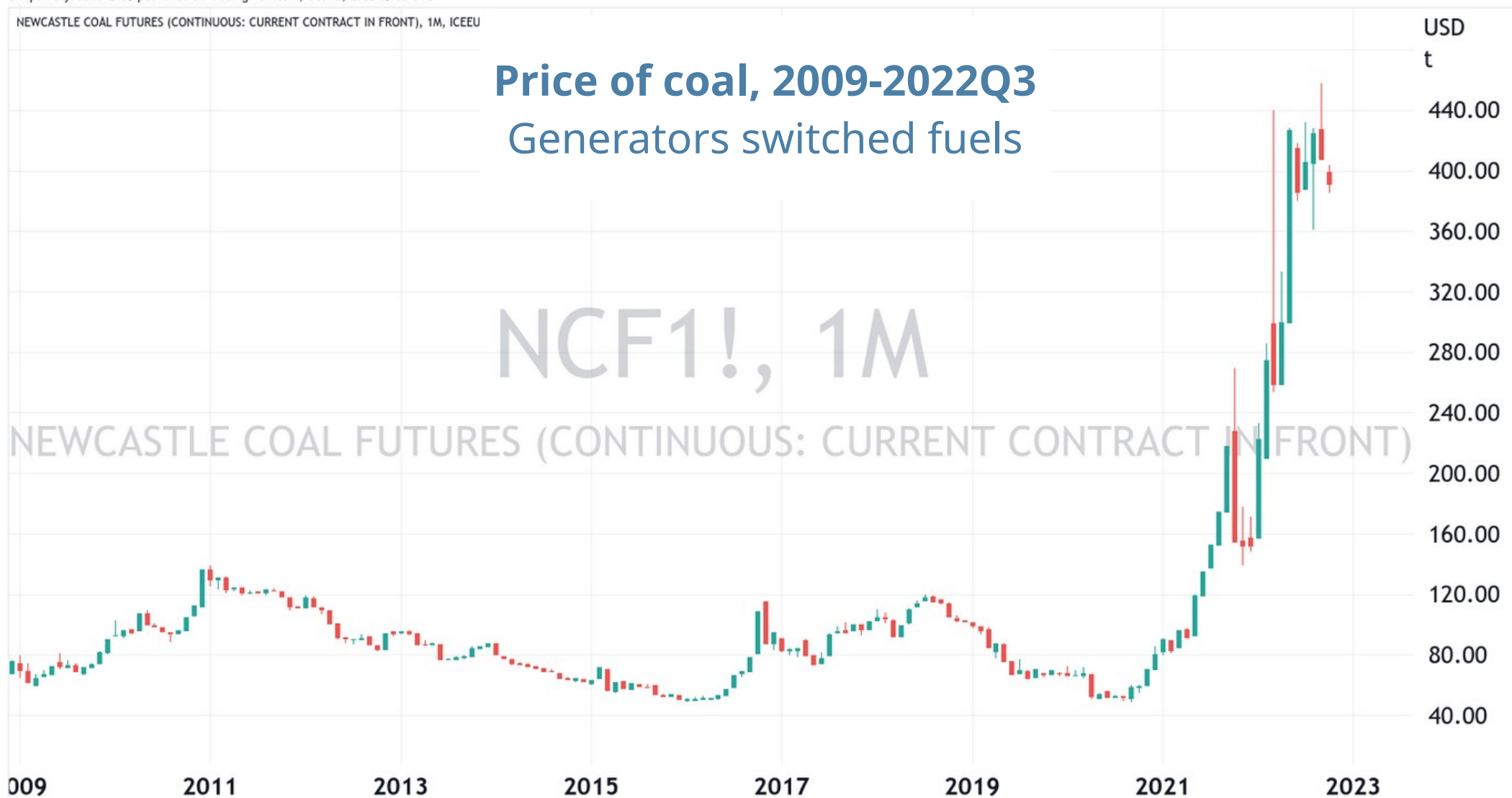
NEWCASTLE COAL FUTURES (CONTINUOUS: CURRENT CONTRACT IN FRONT), 1M, ICEEU

Price of coal, 2009-2022Q3

Generators switched fuels

NCF1!, 1M

NEWCASTLE COAL FUTURES (CONTINUOUS: CURRENT CONTRACT IN FRONT)



3. Impacts in Vietnam

Are felt because the domestic production of...

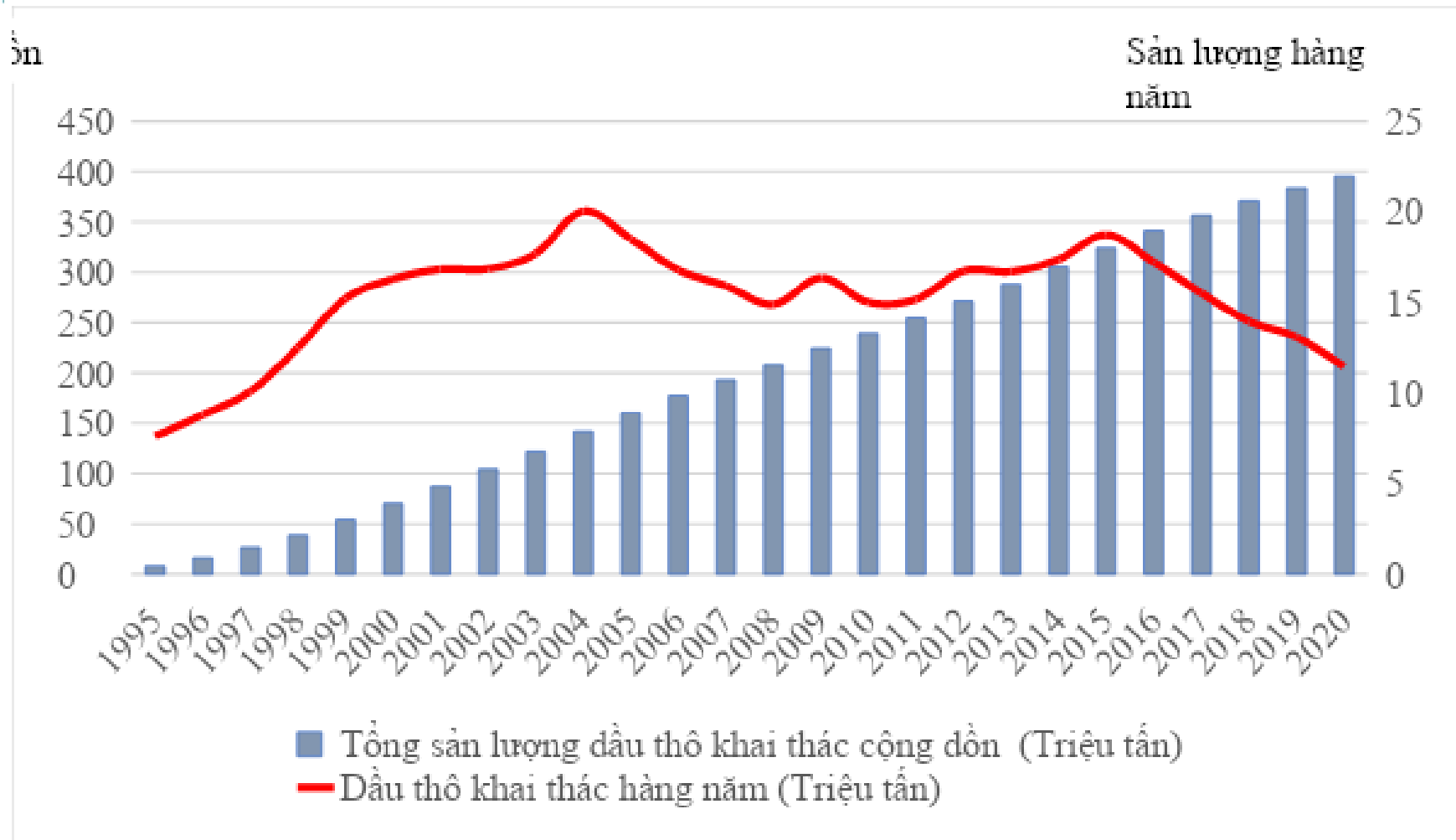
Oil has peaked

Coal is at its peak

***Gas might not* defer the peak**



Crude oil production peaked 15 years ago



Ho Chi Minh City residents compete to buy gasoline as filling stations shut down over supply shortage

Monday, October 10, 2022, 11:50 GMT+7



People flock to a filling station to have their motorcycles refilled after several other stations were closed down over short supply in District 12, Ho Chi Minh City, October 9, 2022. Photo: Ngoc Hien / Tuoi Tre

Residents struggle to buy gasoline in Hanoi as filling stations out of stock

Tuesday, October 11, 2022, 16:33 GMT+7



A filling station is closed after running out of stock in Cau Giay District, Hanoi, October 11, 2022. Photo: Nguyen Bao / Tuoi Tre



Many filling stations in Hanoi shut down after running out of stock while those that remained open were packed with people as of Tuesday morning.



At major filling stations in the capital city, customers had to wait for 15-30 minutes for their turn to buy gasoline.



Highlights

Vietnam's ethnic minority girls 'empowered' leaders at 'Girls Takeover' event

Man fined for attacking

Gasoline purchases easier in Ho Chi Minh City after price increase

Wednesday, October 12, 2022, 14:55 GMT+7



People have their motorcycles refilled at a gas station on No Trang Long Street in Binh Thanh District, Ho Chi Minh City, October 12, 2022. Photo: Cong Trung / Tuoi Tre



Residents found it easier to buy gasoline on Wednesday morning in Ho Chi Minh City as many closed filling stations resumed operations while some others remained inactive after the Ministry of Industry and Trade and the Ministry of Finance adjusted petrol prices upward on the previous afternoon.



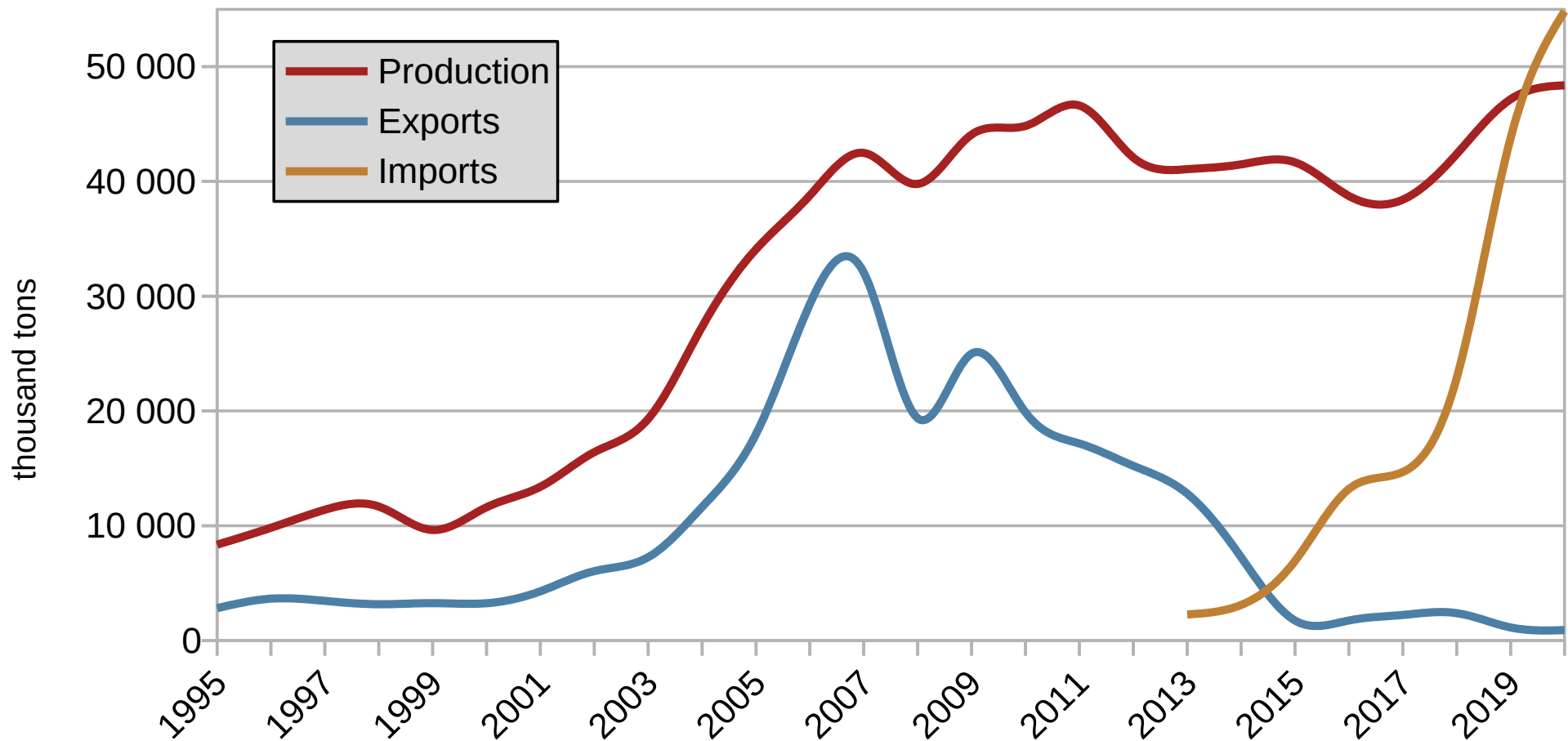
Highlights

Gasoline purchases easier in Ho Chi Minh City after price increase

Envisioning the near future of becoming a



Vietnam coal production and trade




Vietnam canceling new imported coal power plant projects

Example: Vinh Tan 3 power project in Binh Thuan.



„Since the beginning of the year, EVN’s production costs have increased very high, leading to many financial difficulties.“

**EVN** TẬP ĐOÀN ĐIỆN LỰC VIỆT NAM
VIETNAM ELECTRICITY

[Home](#) [Introduction](#) [Cooperation Information](#) [Media](#) [EVN and Customers](#)

Press Releases

Operation situation in August and work goals and tasks for September 2022

In August 2022, Vietnam Electricity (EVN) will continue to ensure a safe and uninterrupted power supply, serving socio-economic development, meeting the daily needs of the people, especially ensuring power supply for the National Day holiday of September 2.

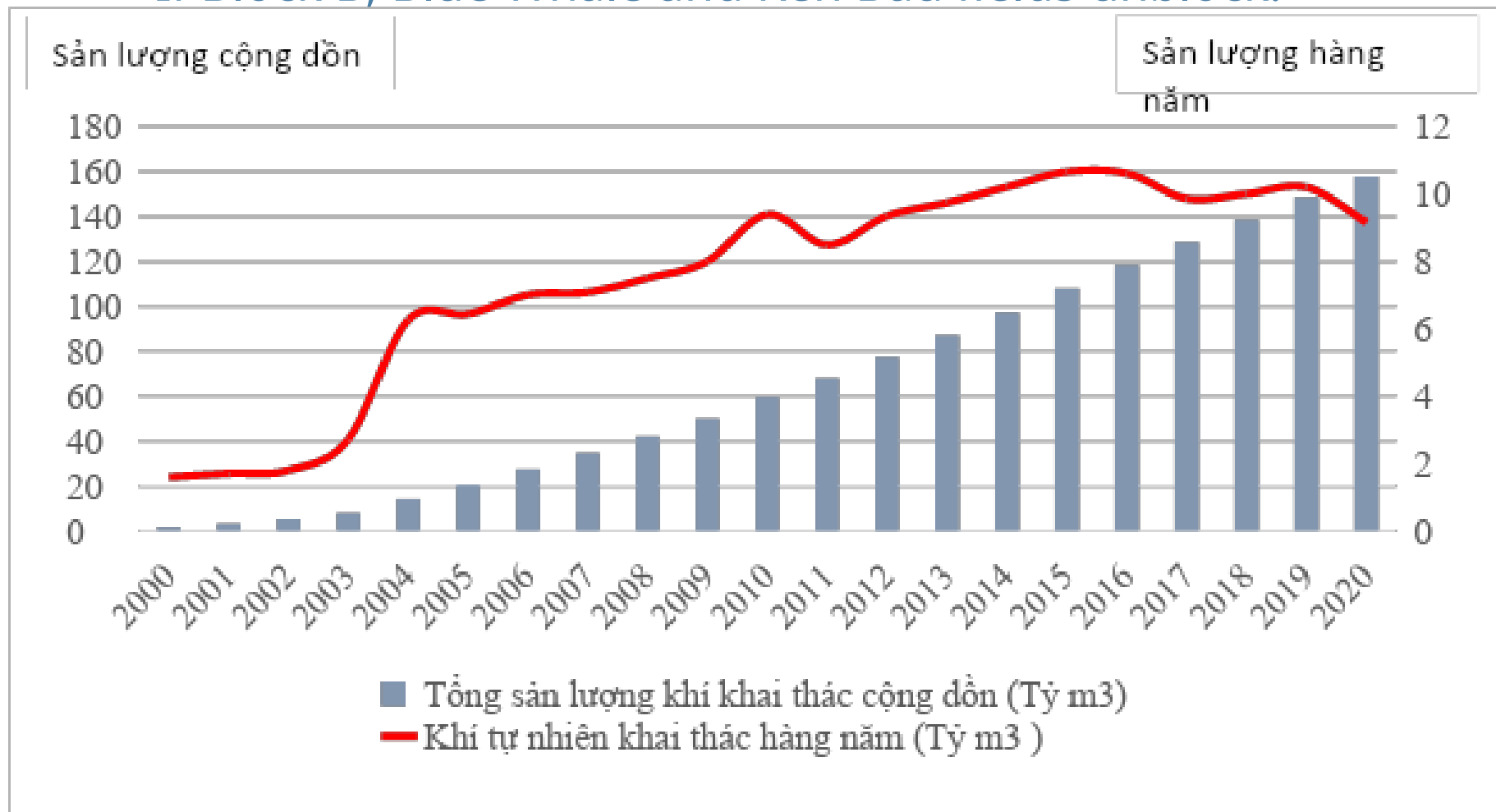
Power production of the whole system in August 2022 reached 23.9 billion kWh. The accumulated for 8 months reached 181.92 billion kWh, increasing by 5% over the same period, in which the ratio of mobilizing some types of power sources per total power production of the whole system is as follows:

- + Hydropower output reached 63.25 billion kWh, accounting for 34.8%.
- + Coal thermal power reached 71.67 billion kWh, accounting for 39.4%.
- + Gas turbines reached 19.67 billion kWh, accounting for 10.8%.
- + Renewable energy reached 24.95 billion kWh, accounting for 13.7% (of which solar power reached 18.82 billion kWh, wind power reached 5.84 billion kWh).
- + Imported power reached 1.91 billion kWh, accounting for 1%.

In the first 8 months of 2022, the power produced by EVN and Power Generation Corporations (including joint stock companies) reached 84.57 billion kWh, accounting for 46.49% of the power production of the whole system. Notably, due to the sudden increase in the price of input fuels for power production (such as coal, oil, gas) since the beginning of the year, EVN's power production costs have increased very high, leading to many financial difficulties.

Reserves may allow to defer the natural gas peak

If Block B, Blue Whale and Ken Bau fields unblock.



How to supply PVN's Thi Vai Liquefied Natural Gas terminal when long term LNG contracts are only affordable for delivery after 2026?



4. Looking forward

The global energy/economy crisis:

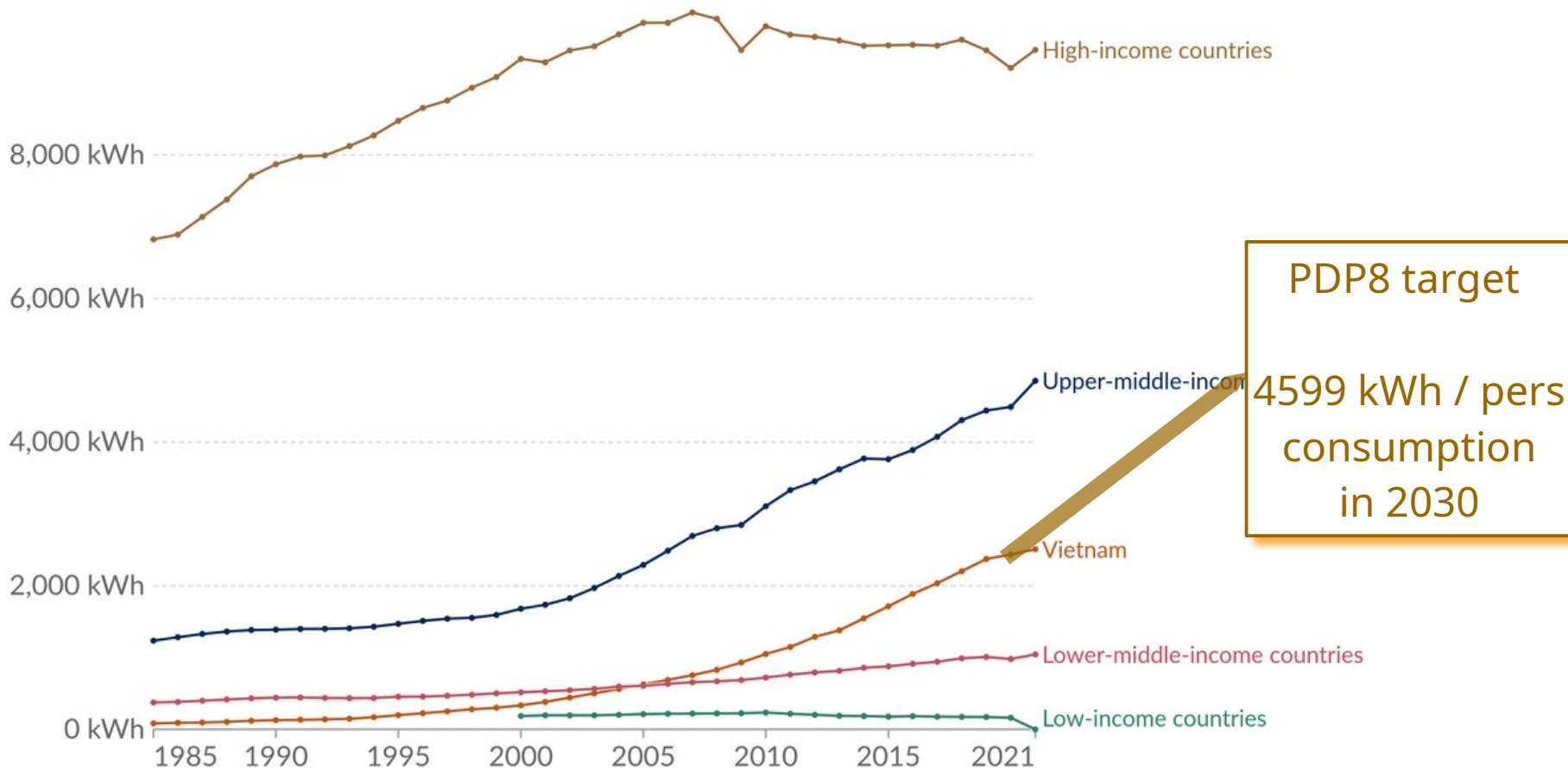
Moderates the demand expansion

Reinforces the Net-zero goal relevance



Per capita electricity generation

This is annual average electricity generation per person, measured in kilowatt-hours.



Source: Our World in Data based on BP Statistical Review of World Energy (2022); Our World in Data based on Ember's Global Electricity Review (2022); Our World in Data based on Ember's European Electricity Review (2022)

OurWorldInData.org/energy • CC BY

<div> <div>PDP8</div> <div>Draft 6328</div> </div> <div> <div>Source: table 8</div> <div>P = 45.528 MW on 2022-06-21</div> </div>	MW	2020	2030 recommended
	PMax	38.617	93.343
	Hydro	20.993	28.946
	Coal	21.383	30.127
	Gas	7.422	38.830
	Oil & flexible engines	1.603	300
	Wind (incl. offshore)	538	28.480 (7.000)
	Solar, existing + building	8.751	8.736 + 2.428
	Solar rooftop, <i>at least</i>	7.755	7.755 + 3.000
	Biomass + cogeneration	325	2.470 + 2.700
22	Interconnectors + storage	572	5.000 + 2.700
	Total installed capacity	69.342	159.044



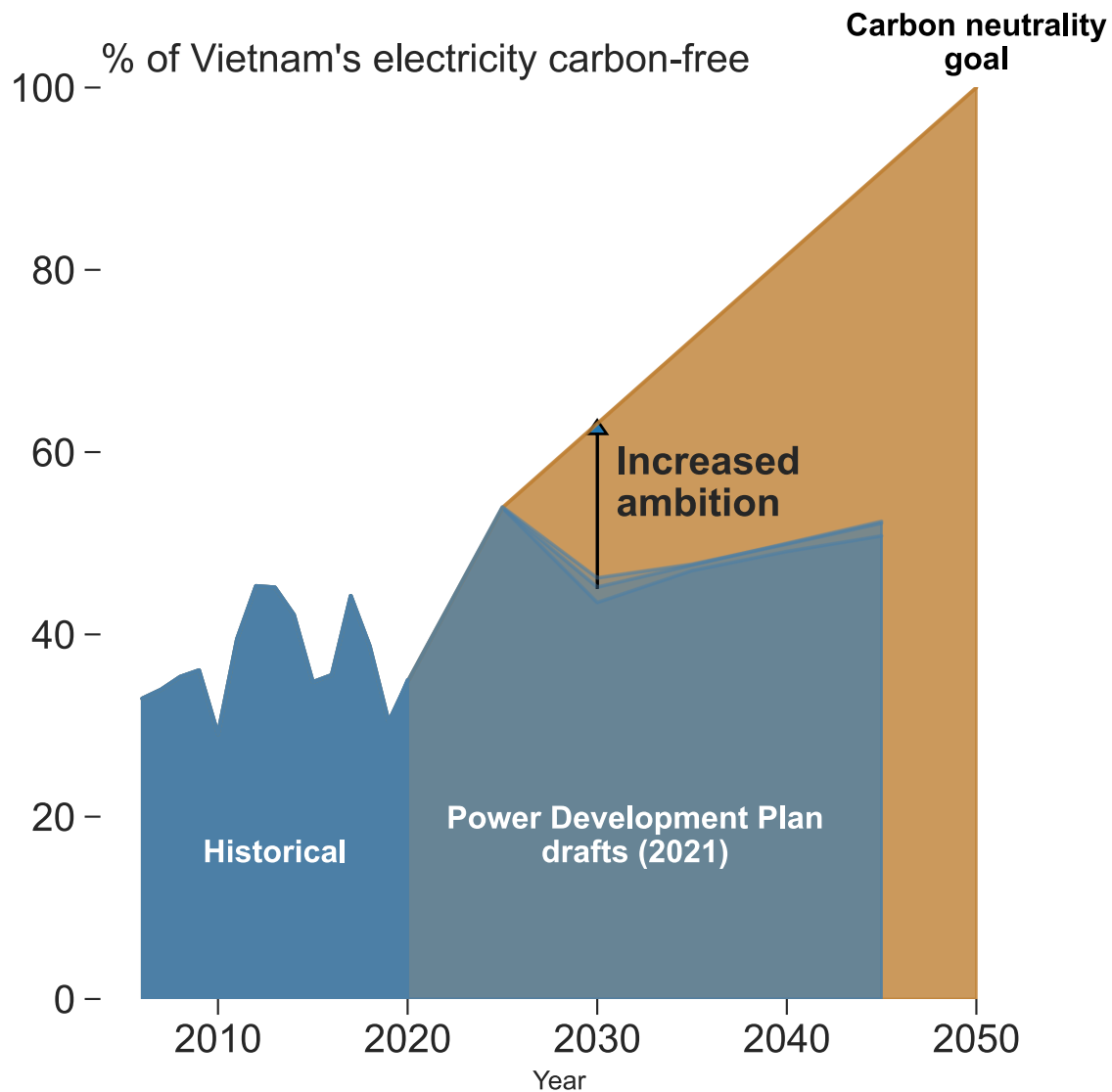
COP26 climate policy ambition

No new coal after 2030

Carbon neutrality by 2050

Imply

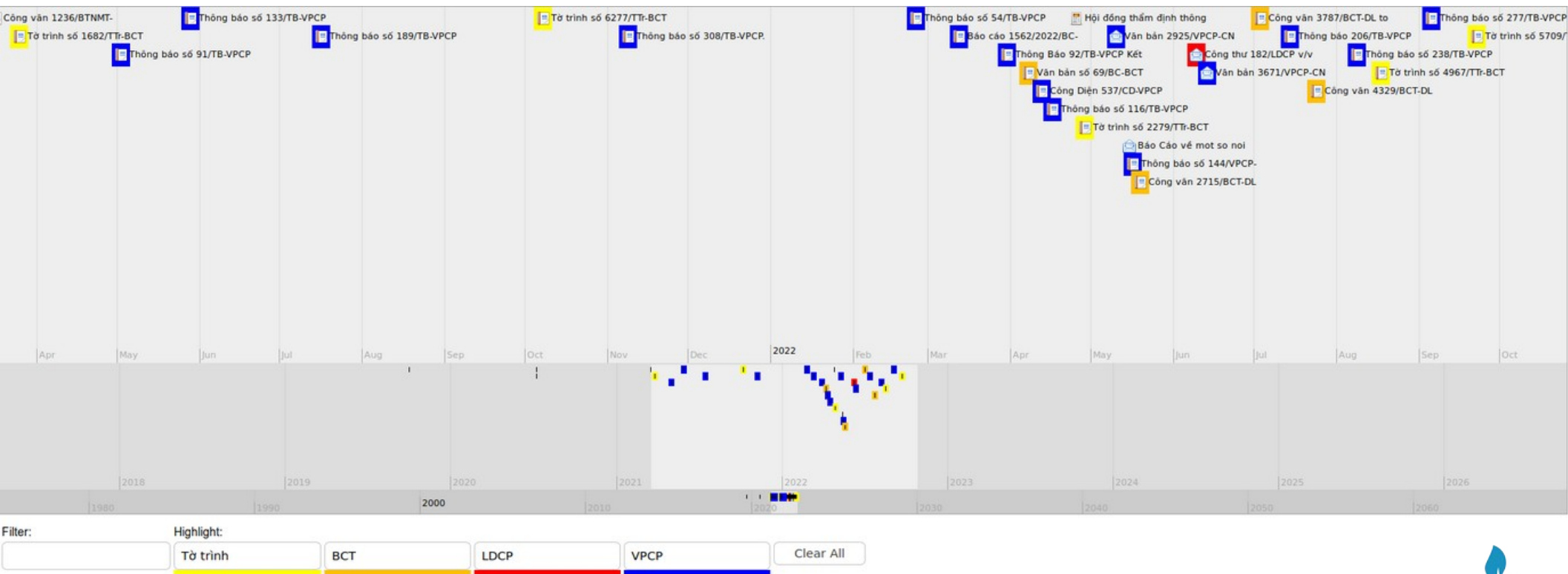
Energy sector CO₂ emissions peak before 2035



5. Conclusion

Think about next summer

PDP8 discussion, 2021/03 - present





EVN

**TẬP ĐOÀN ĐIỆN LỰC VIỆT NAM
VIETNAM ELECTRICITY**



Introduction

Cooperation Information

Media

EVN and Customers

Press Releases

Information about failures of some substations in the North on 4 July 2022

According to information from the National Load Dispatch Center, at 13:00 on 4 July 2022, voltage fluctuations appeared on the Northern power system, affecting some customers' power supply in the North.

The initial cause was determined hot weather, which increased power consumption and some generator units failed causing voltage fluctuations, then power supply interruption resulted in some customers in the North.

Immediately after the failure occurred, the National Load Dispatch Center actively coordinated with power generation and grid operating units to troubleshoot the problem and restore power supply to customers as quickly as possible.

By 15:00 on the same day, all customers who were affected by power disruption had been restored to the power supply and the Northern power system have returned to stable operation.

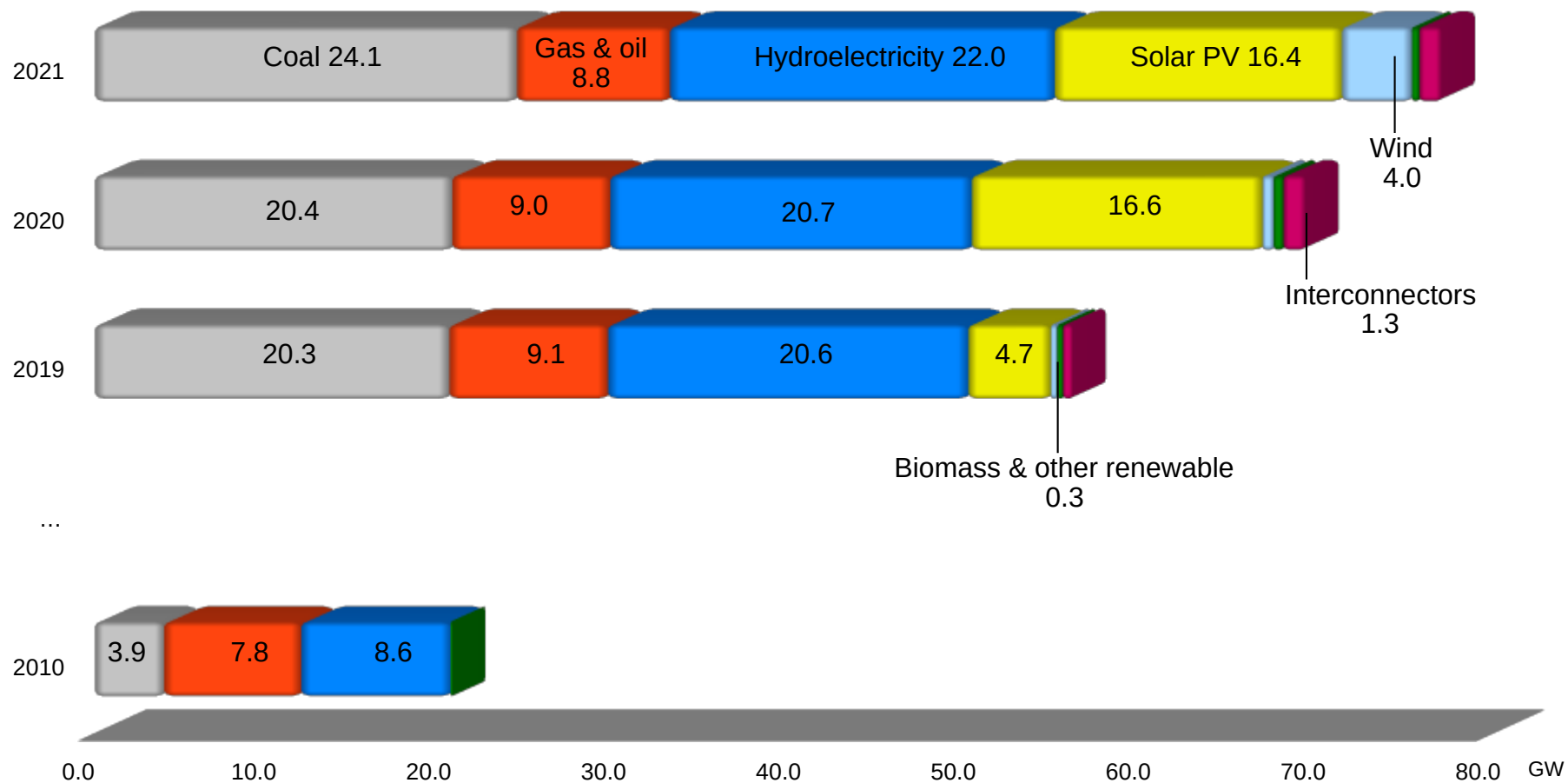
Discussion groups

- Global energy crisis
- Energy supply chain
- Appropriate policies for the domestic market

Extra slides

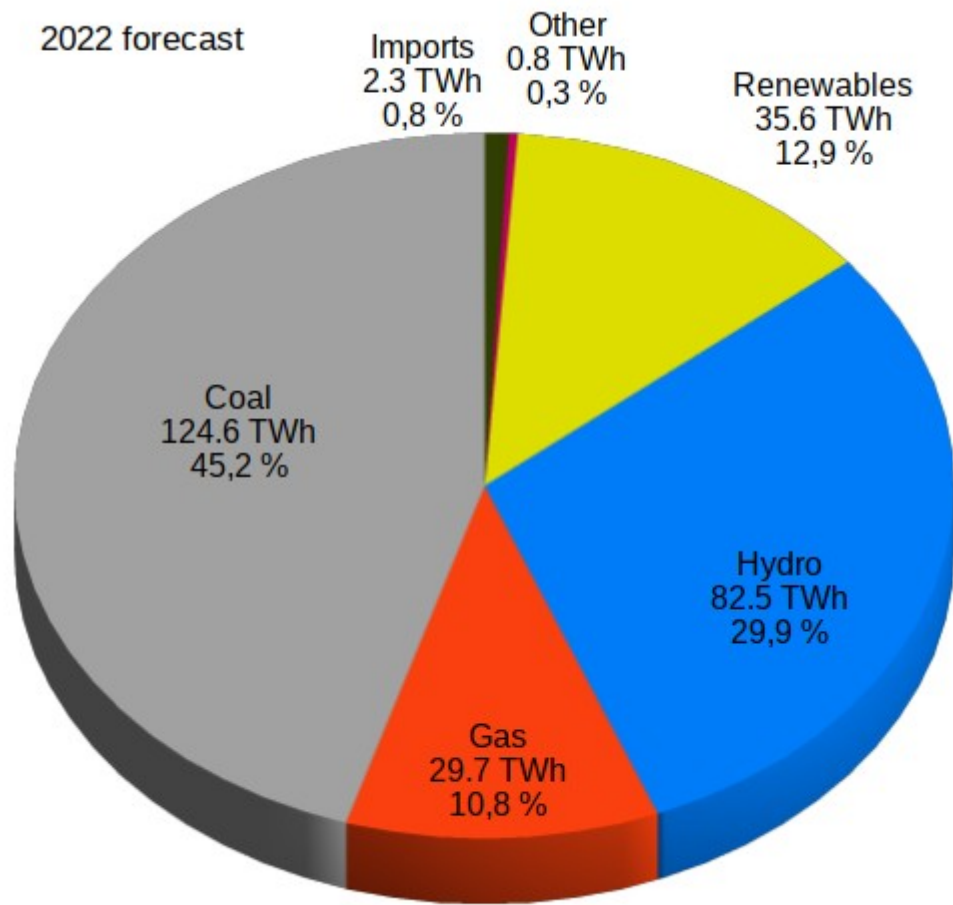
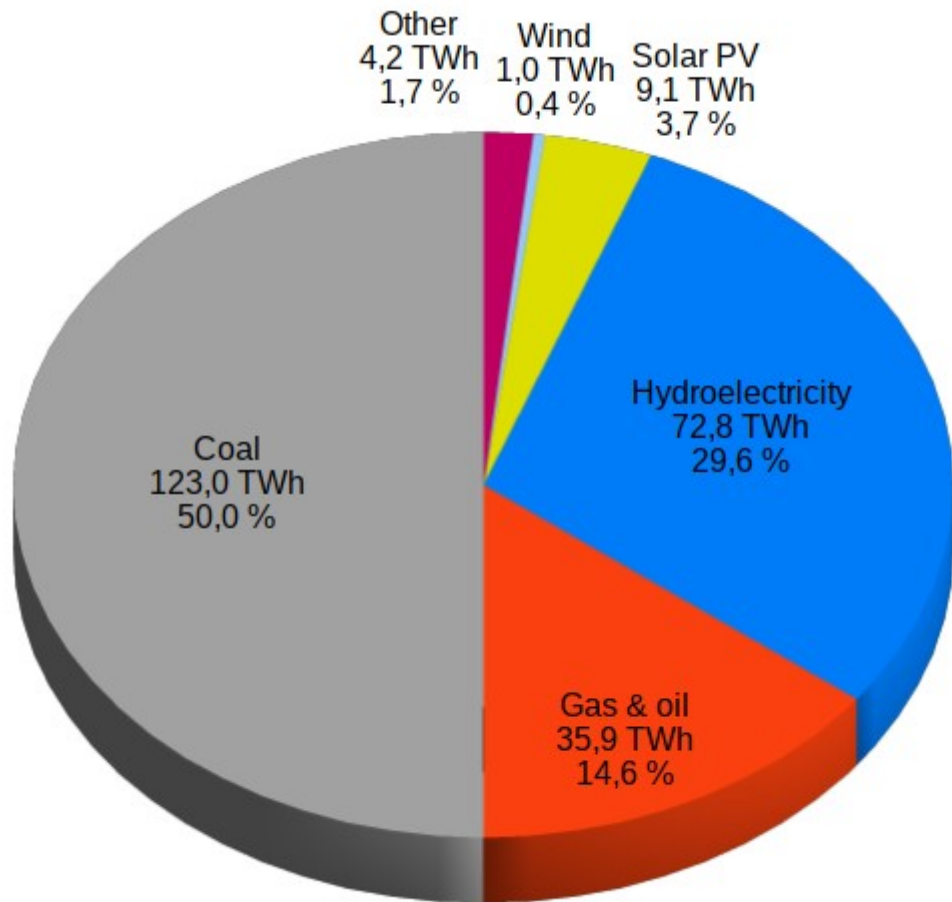
Extra slides

Vietnam installed 40GW of power generation capacity in 2010-2021





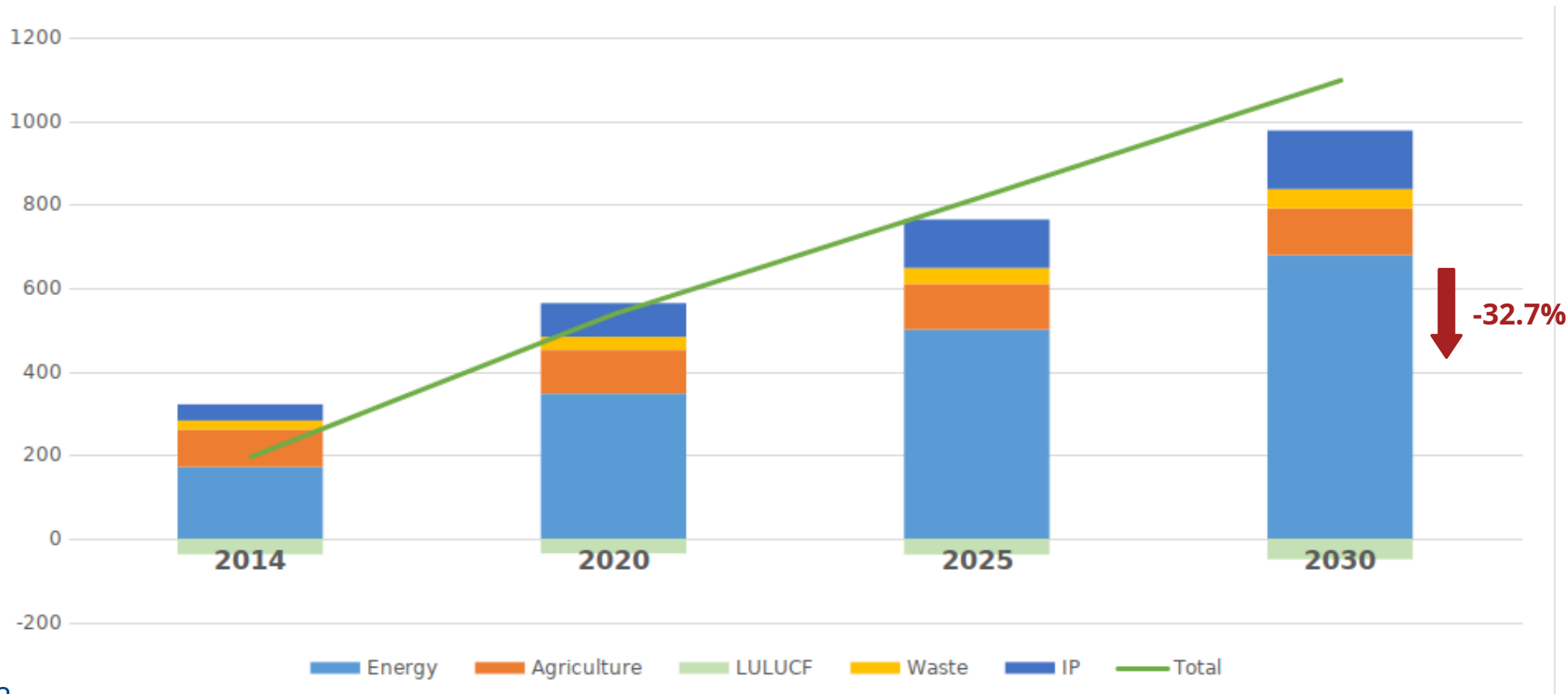
Vietnam power output, 2020 and 2022 forecast



Source: author, data from MOIT news and 3063/QD-BCT

Energy sector 2030 goal = 460 MtCO₂eq

Decision 896/QD-TTg 2022-07-26. *National climate change strategy to 2050*



Vietnam's electricity sector needs

9.1 - 12.8 billion USD for generation sources

+

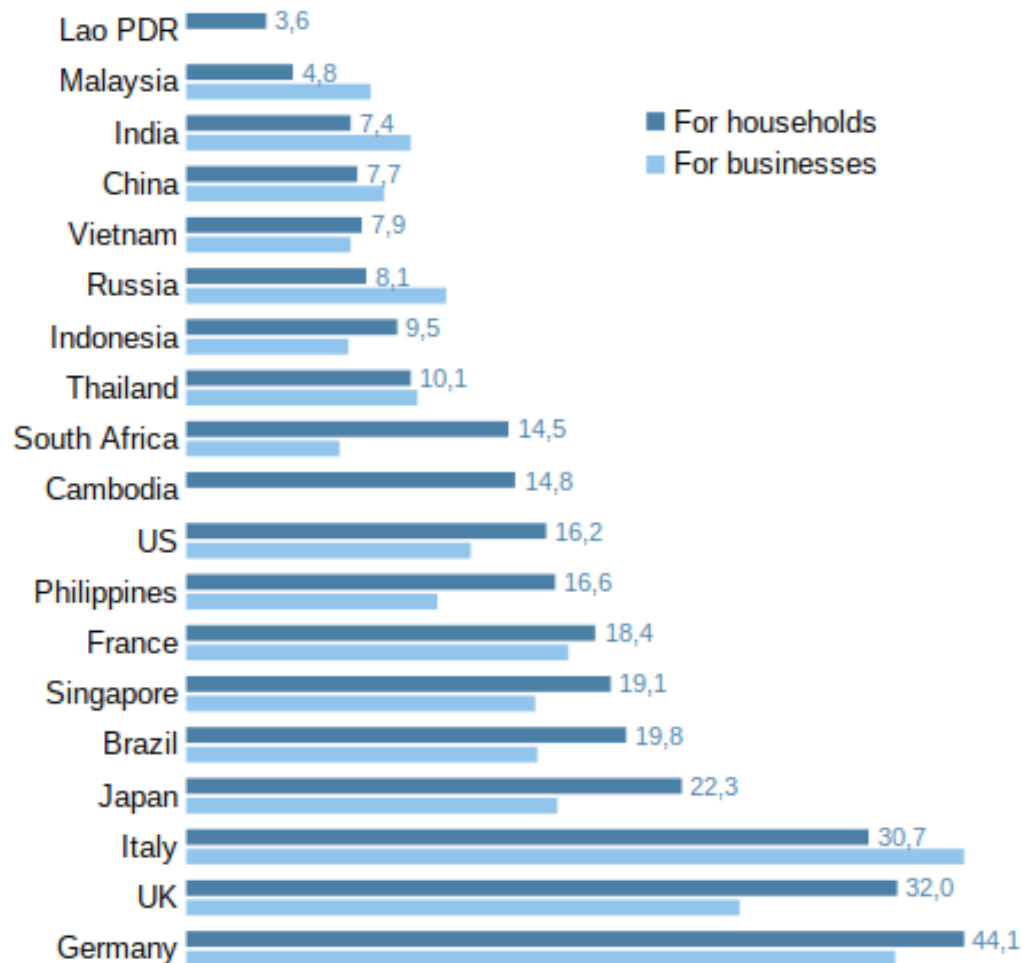
1.5 - 1.6 billion USD for the grid

per year, over 2021-2030



Electricity prices in different countries

UScent / kWh, March 2022



Source: author, using globaloilprices.com data.

Policy messages - Engineering

- Peak load shaving
 - Demand side management
 - Energy Efficiency, District cooling...
 - Decentralized PV+Storage
- Gas-to-power
 - For flexibility and reserve capacity not for base load
- Offshore wind
 - Domestic power supply and global supply chain
- Hydrogen
 - Industry before transport or electricity



Policy messages - Economics

- Electricity prices
 - A just increase
- Auctions and Direct Power Purchase Agreements
 - Finalize, orient North
- Green finance, green bonds, green taxonomy
 - Catch up
- The carbon market
 - Give MONRE political clout
- Planning process
 - More agile

