



Vietnam Initiative  
for Energy Transition

# Adoption of renewable energies, solar in the city and the efficiency of the use of energy

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BREVES workshop  
Hanoi 5 Nov 2019

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1. Research
2. Expertise
3. Consultancy
4. Training



**Vietnam Initiative for Energy Transition** is an independent think tank, acting as a bridge between research and policy, with a mission to accelerate the transition of Vietnamese energy system in a sustainable and reliable manner.

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**01 Research**  
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**03 Consultancy**  
We provide consultancy, analysis and prediction related to energy and climate protection.

**02 Expertise**  
VIET brings together leading experts in government and academia who provide quality research, policy recommendations and analysis.

**04 Training**  
We receive interns and PhD students on energy and climate protection subjects.

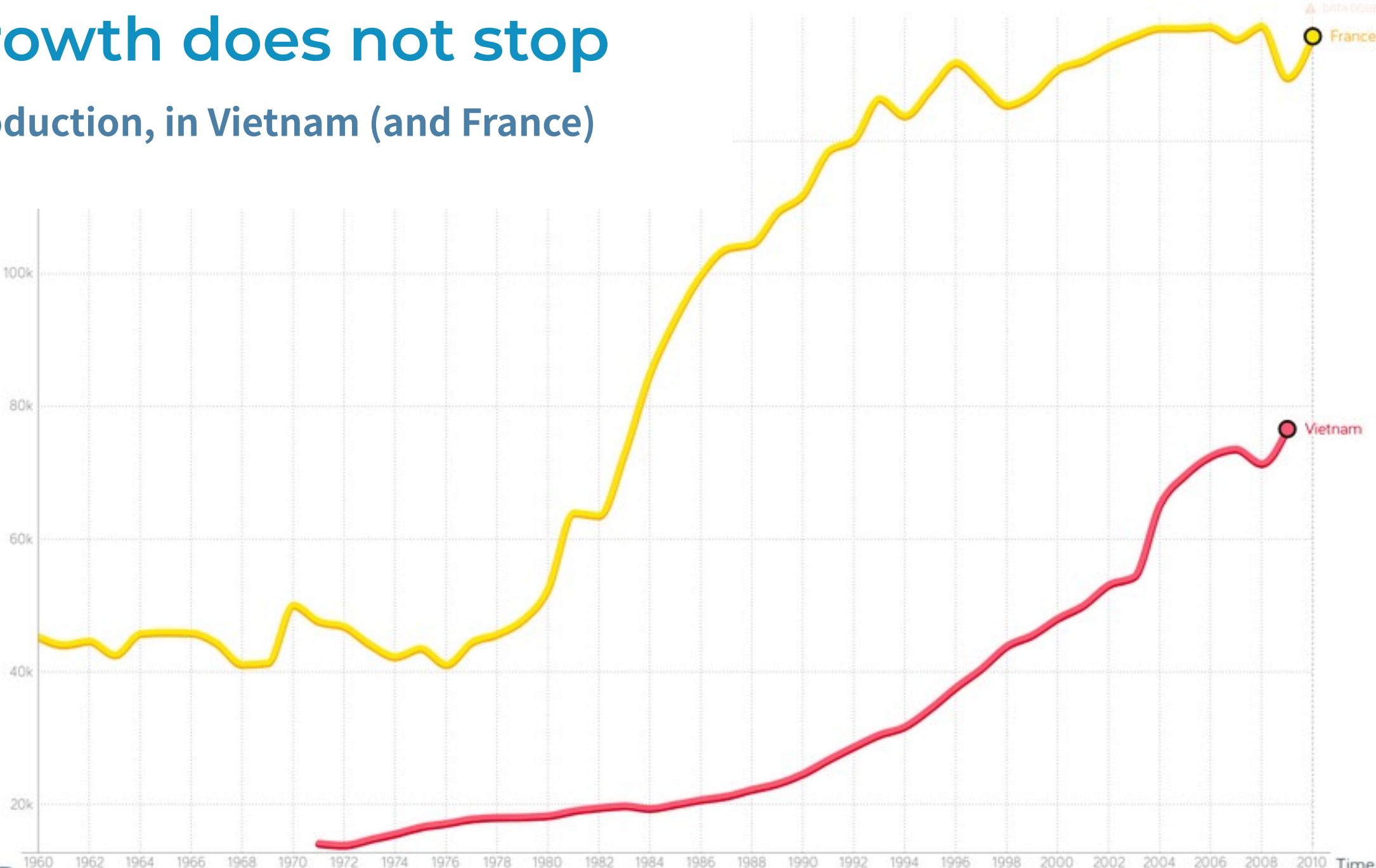
# 1. Adoption of renewable energies

## Market hot as Vietnam leapfrogs to RE

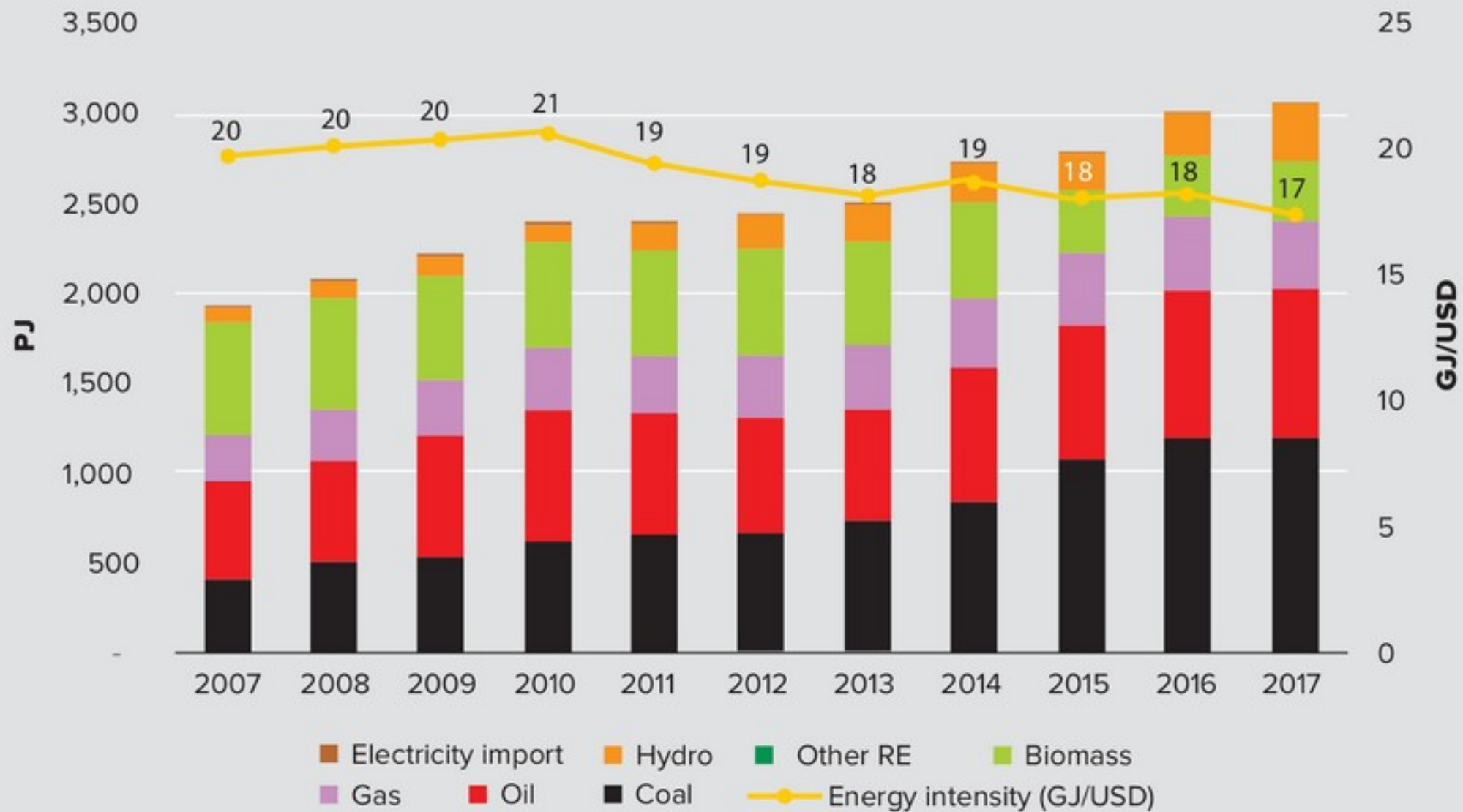


# The growth does not stop

Energy production, in Vietnam (and France)  
1960-2010





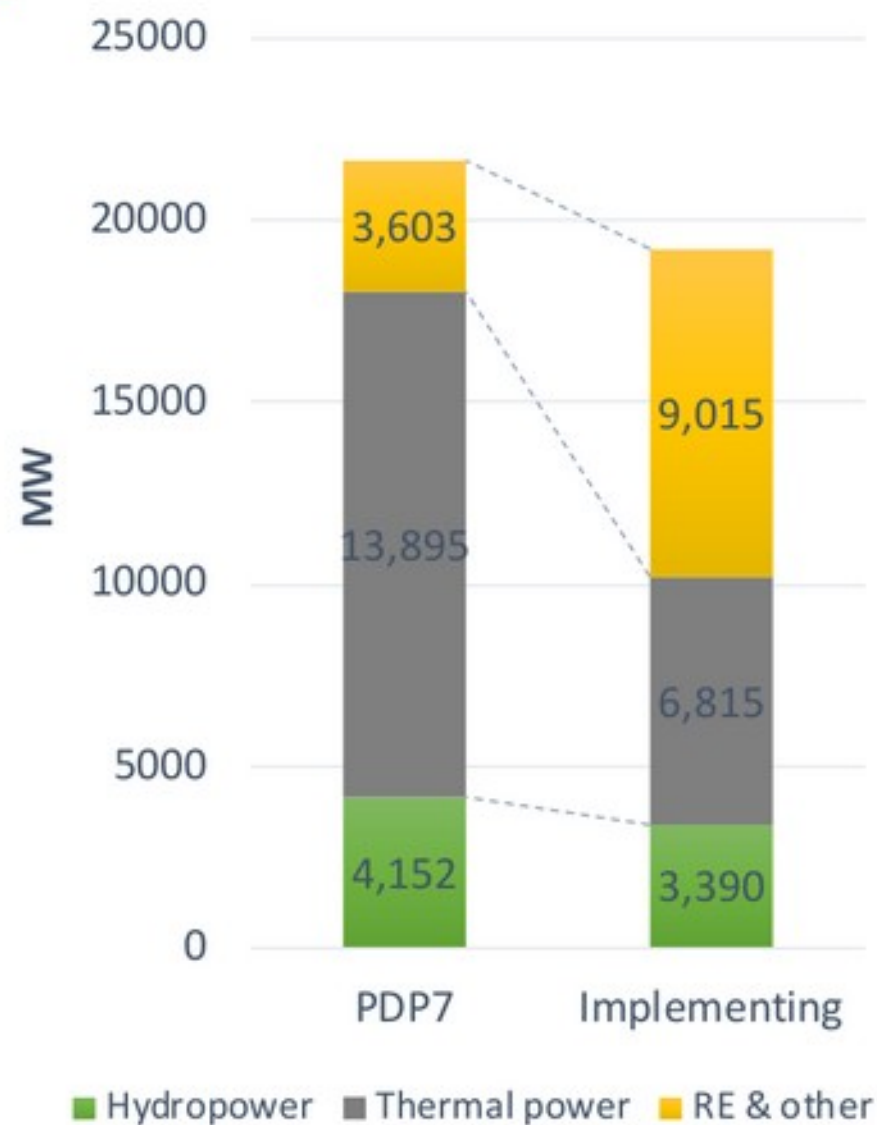


**Figure 9: Historical Vietnamese TPES from 2007-2017 by fuel type. The relatively stable energy intensity implies a coupling between TPES and GDP. TPES (2007-2014) is based on (IE, 2017). TPES (2015-2017) is based on (GSO, 2019).**

# Recent changes in VN energy policy and global trends shifted VN power sector away from the original plan

- PDP7A implementation is behind schedule with big delay from thermal power plant. The MOIT report expect lack of supply (<17 GW) from 2020 on.
- Recent dramatic increase of solar has partially compensated for thermal delay
- Globally, new coal power plants are less economic attractive as Renewables becoming cheaper
- (generous) FiT rate in Vietnam → ~ 130 solar projects (**12,700 MWp**) and **7200 MW** of wind registered by 2019

**The development of electricity supply sector in Vietnam is more and more characterized by growing Renewables.**

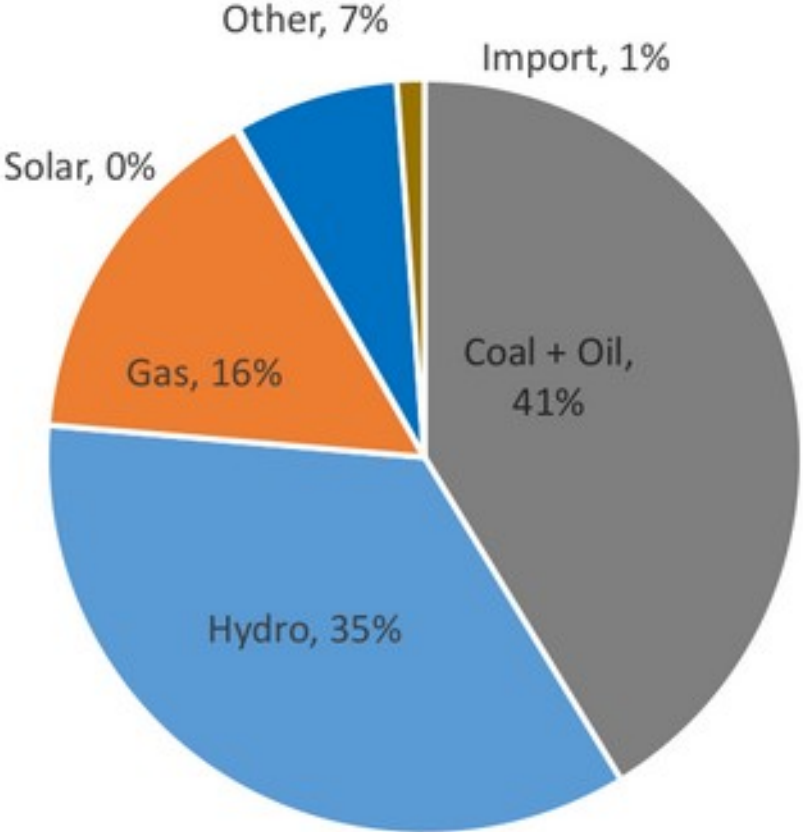


Source: MOIT report 3/2019

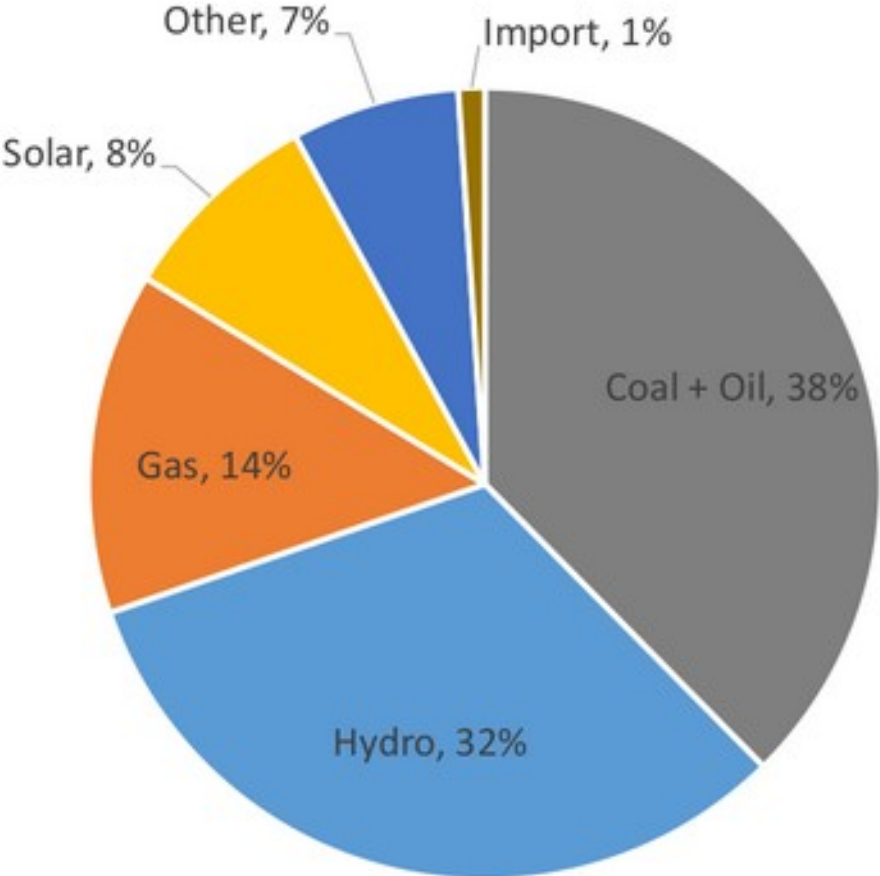
# Installed capacity by source

4.5 GW of solar capacity added in 6 months

2018 – 48.6 GW



Jan to June 2019 – 53.3 GW



Source: EVN, Aug. 2019

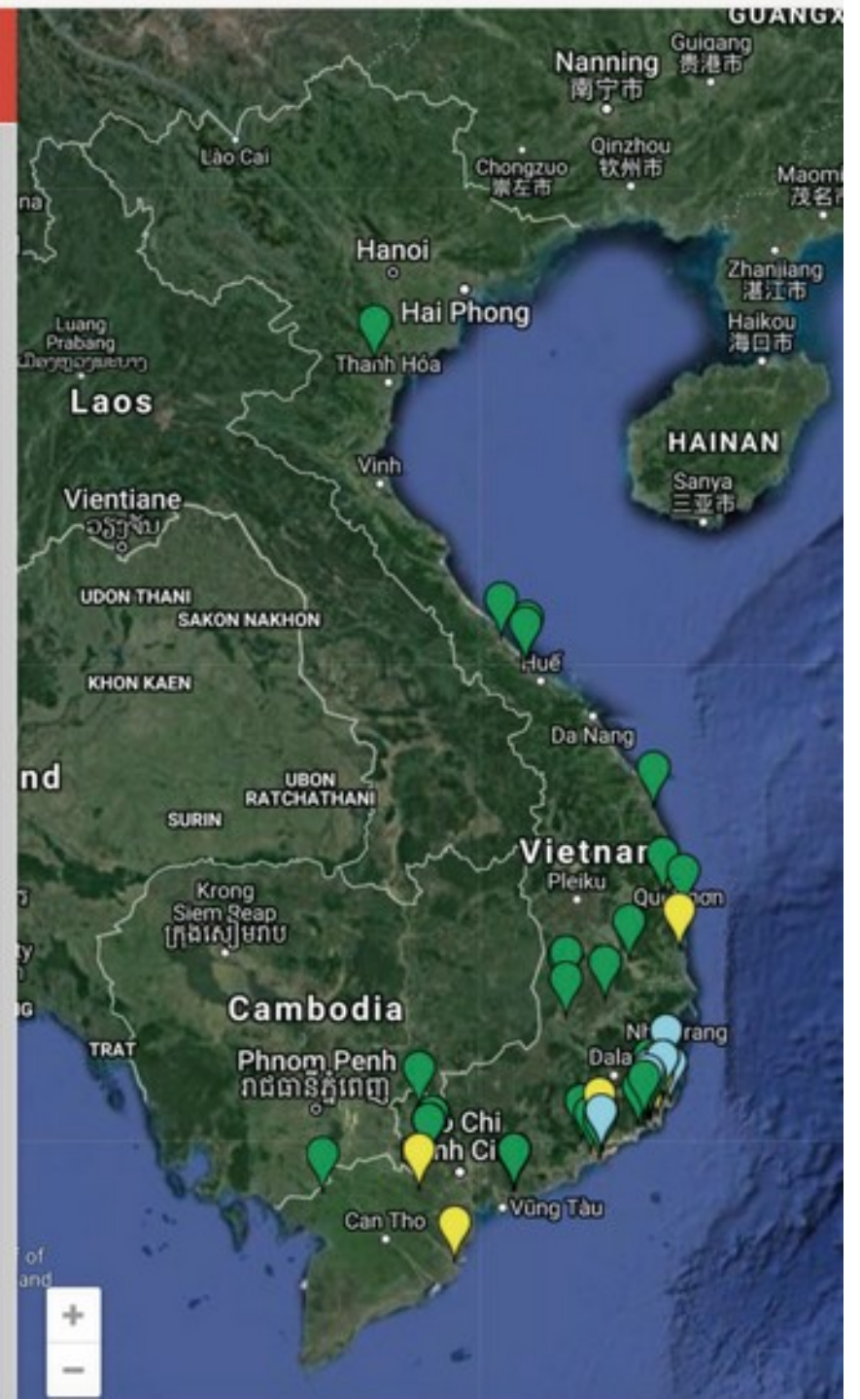


# Solar projects

Status	Capacity (MW)
Operational (OP)	5404
Under Construction (UC)	5787
Approved (AP)	812.8
Ground Break (GB)	

Wind and Solar farms i... 🔍 ⋮

- Locations of wind and solar farms in Vietnam (updated June 3, 2019) 61,849 views [SHARE](#)
- List of solar projects in Vietnam
  - OP
  - OP
  - AP
  - GB
- VN Transmission Line
- VN Substation
- List of wind projects in Vietnam
- Wind Farms (GIZ data)
- Provincial Wind Power Development Pl...





## Wind projects pipeline in Vietnam, 2019/8

Status	Total capacity (MWp)	Number of projects	Average project size (MWp)
Canceled	792	4	198
Operating	346	11	31
Construction	990	17	58
Groundbreaking	160	3	53
Approved	3645	51	71
Announced	4052	24	169
Planned	1251	22	57
<b>Total</b>	<b>11236</b>	<b>132</b>	<b>85</b>

## 2. Solar in the city

2020 will be year of the 1MW rooftop PV





**420MW  
Tay Ninh  
Open  
Sep 7, 2019**



## Rooftop PV answers

- curtailment
- missing generation capacity
- public investment constraints



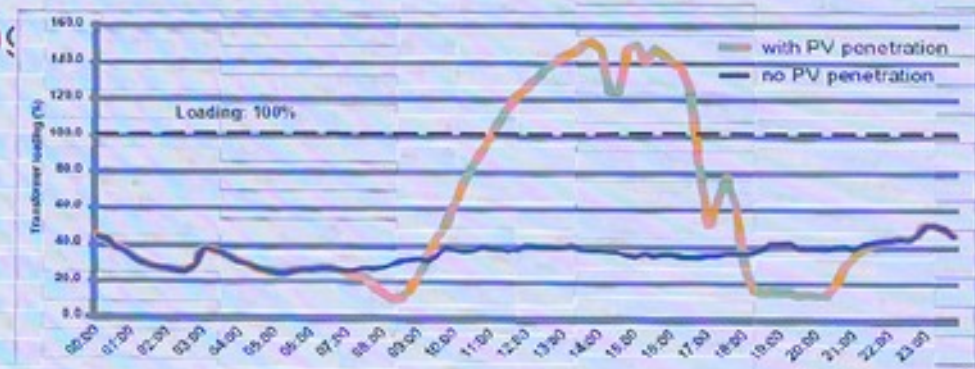


## VI. DIFFICULTIES AND CHALLENGES



### Overload network

- **Full/ overload of power transformers :**
  - 500kV Di Linh; 500kV Vĩnh Tân
  - 220kV Tháp Chàm 2, Đại Ninh, Phan Rí.
- **220kV, 110kV full/ overload of transmission lines :**
  - 220kV Đa Nhim – Đức Trọng, Đức Trọng – Di Linh
  - 220kV Tháp Chàm – Vĩnh Tân
  - 110kV Đa Nhim – Đơn Dương





# Đánh giá tiềm năng NLMT áp mái tại HCMC và Đà Nẵng

## Solar Global Atlas:

<https://globalsolaratlas.info/?c=11.609193,8.4375,3>

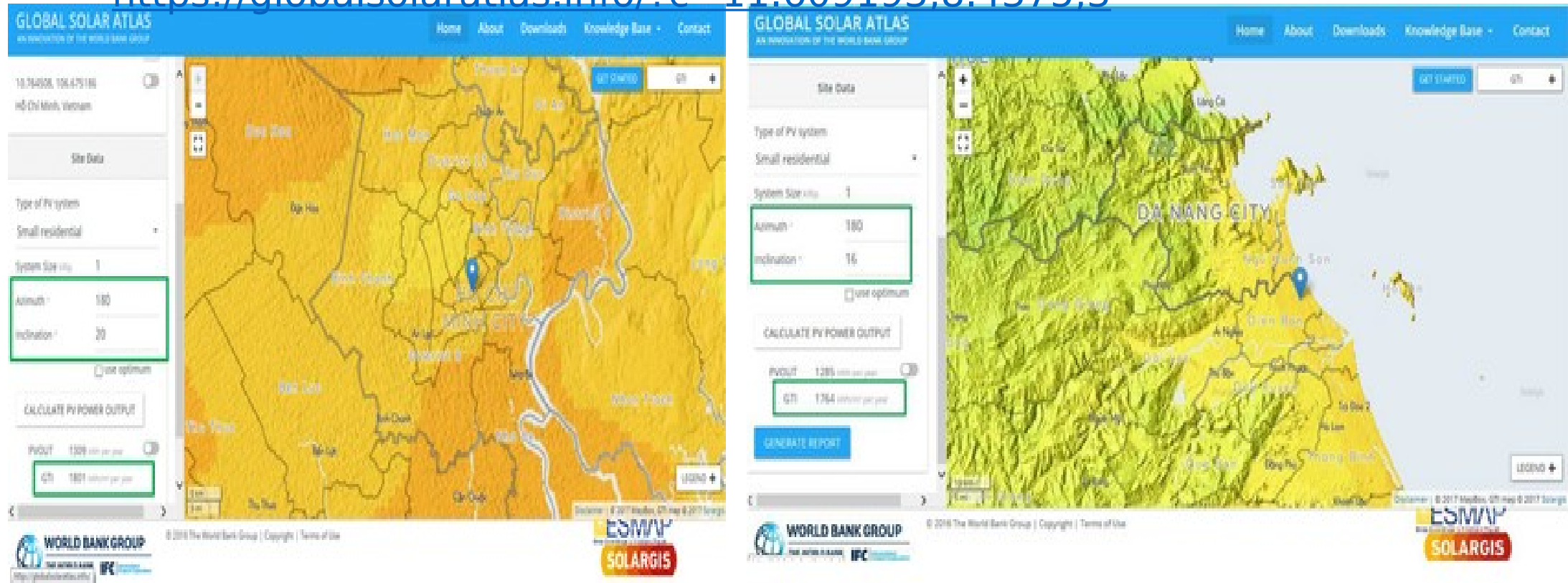


Figure 4: Global Solar Atlas and GTI data extraction for HCMC

Figure 4: Global Solar Atlas and GTI data extraction for Da Nang



# Potential assessment for rooftop solar in HCMC and Đà Nẵng

Parameter	HCMC	Danang
Total area	2,096 km <sup>2</sup>	1,285 km <sup>2</sup>
Studied area	366 km <sup>2</sup>	175 km <sup>2</sup>
Total number of roofs	955,411	646,958
Suitable roofs	316,535 (33%)	148,88 (23%)
Total area of suitable roofs	50,391,567 m <sup>2</sup>	9,145,406 m <sup>2</sup>
<b>Total capacity of rooftop solar</b>	<b>6,379 MW</b>	<b>1,140 MW</b>
<b>Potential total generation</b>	<b>17,889,006 MWh</b>	<b>3,088,135 MWh</b>

### 3. Energy efficiency

No-regrets options are in: cooking, process heat, individual mobility, cooling,

# Vietnam has large untapped energy efficiency potential, especially in public sector

	Thailand	China	Korea	Japan	Germany	Viet Nam
Energy intensity kgOE/1000USD	199	231	238	154	164	264
Power intensity kWh/1000 USD	560	650	350	350	200	740

VNEEP III targets an efficiency gain of 8 – 10% by 2030



## II. VIETNAM POWER SECTOR

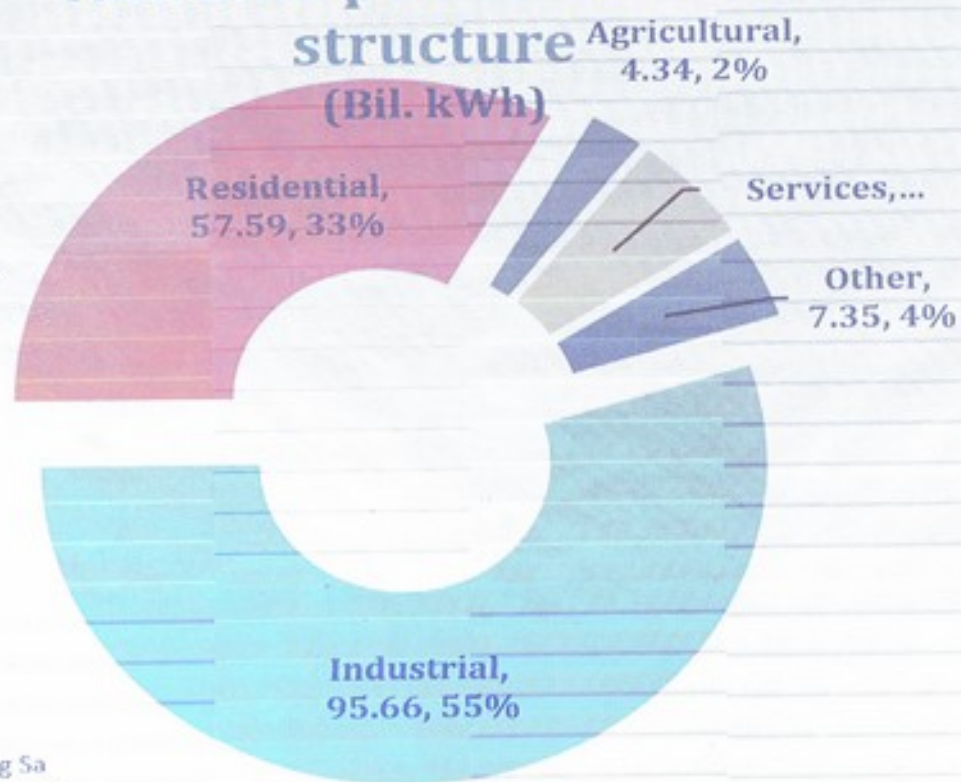


**EVNGENCO 1**  
POWER GENERATION CORPORATION

### Demand 2018



### National power demand structure (Bil. kWh)



### Power demand structure by area (Bil. kWh)

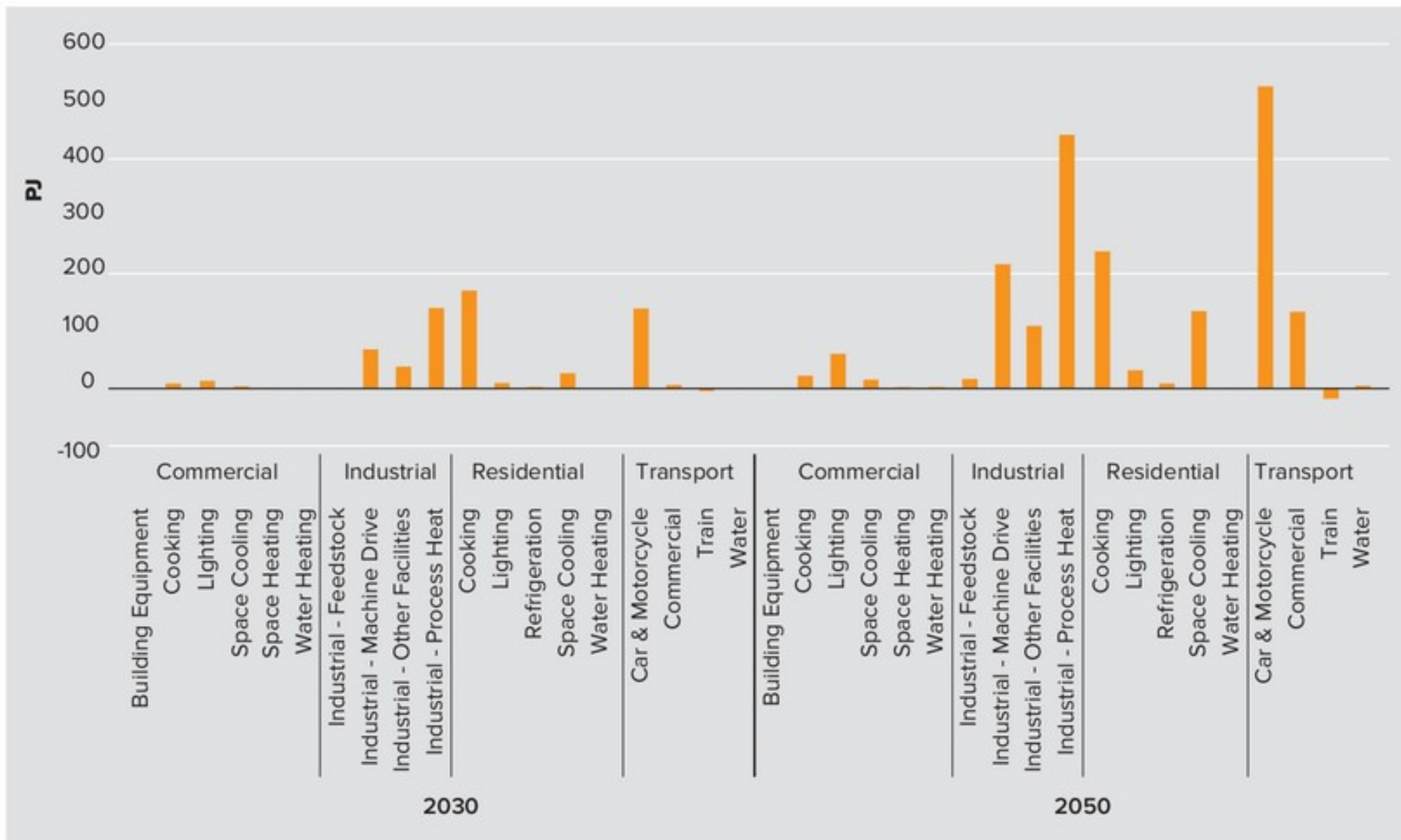


Figure 20: Economic energy saving potential by end-use and by sector in the *C3 Energy Efficiency scenario*, compared to the *C1 RE target scenario*



# Conclusion



# Toward a new energy narrative.. urgently



***Coal***



***Centralized***



***Renewables***



***Decentralized***

# References

EREA and DEA (2019) Vietnam Energy Outlook Report 2019

Ha-Duong and Truong (2019) Seven insights on the electricity transition in Vietnam. VIET.

Ky Hong Tran, World Bank and Shuvendu Bose, IFC (2019)  
Phát Triển Bền Vững Năng Lượng Mặt Trời Áp Mái Tại Việt Nam