# Promises and Discontents of Energy Transition in Taiwan

Dr. Chia-Wei Chao Research Director, Taiwan Climate Action Network March 23rd @ Taiwan-Nordic Forum 2023

## Taiwan Climate Action Network









Citizen of the Earth, Taiwan

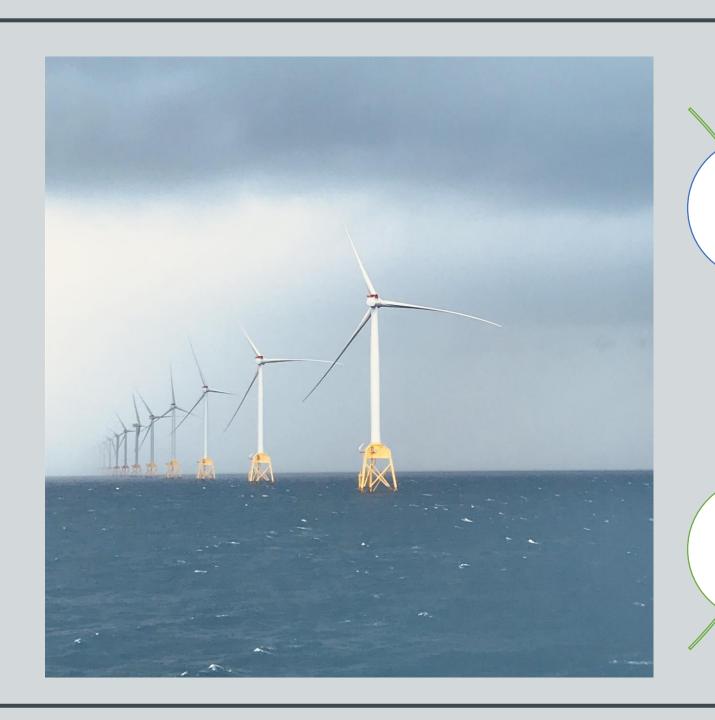


**Environmental Rights Foundation** 



**Homemakers United Foundation** 





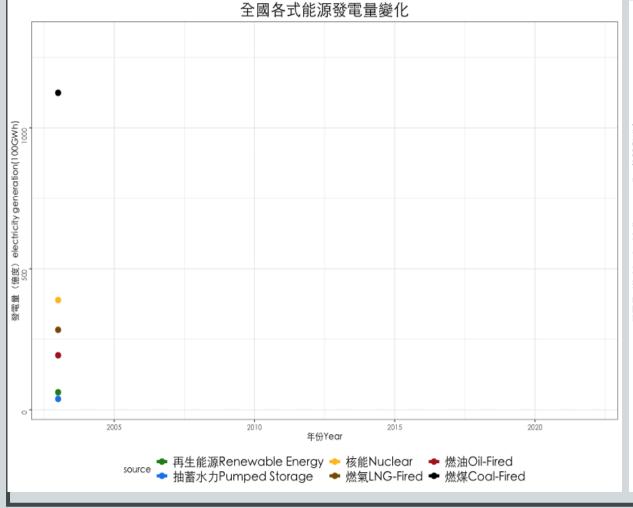
Progress

Outlook

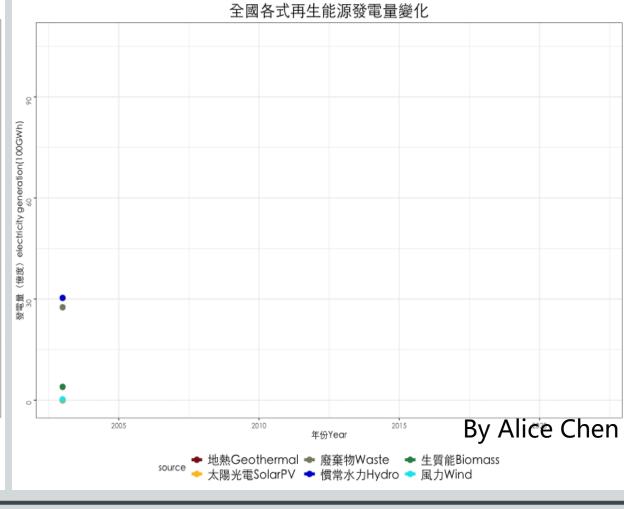
Challenges

# Progress of Energy Transition in Taiwan (1/2)

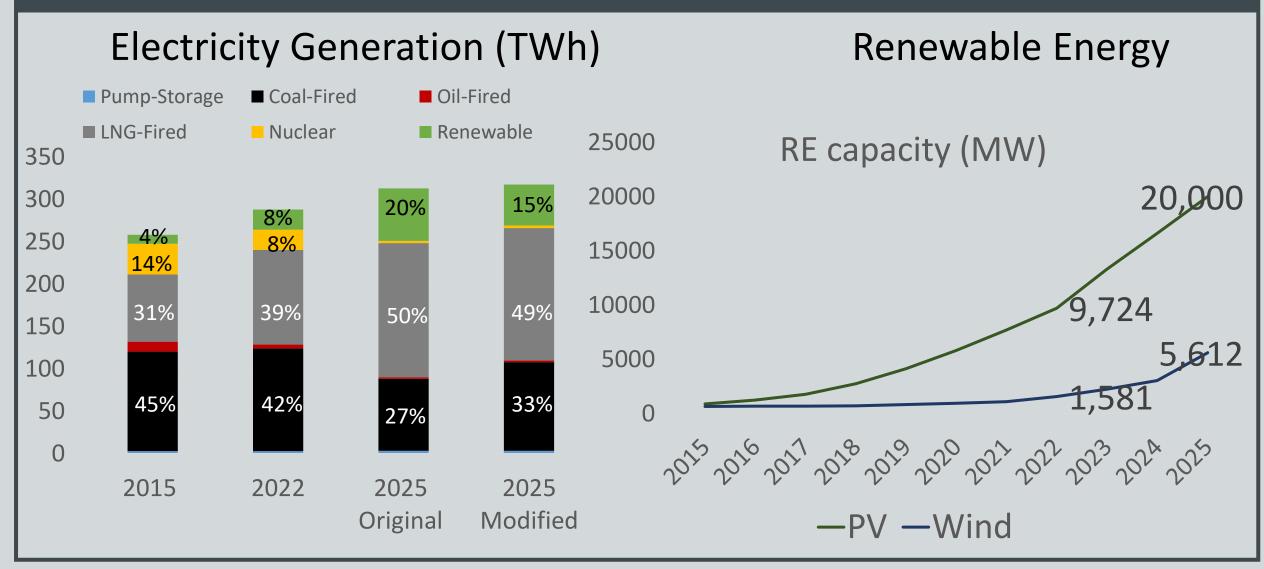
### **Electricity Generation**



### Renewable Energy



# Progress of Energy Transition in Taiwan (2/2)



## Promises and Discontents of RE in TW

ESG investment

**Lower Public Trust** 

**Job Opportunity** 



New NIMBY

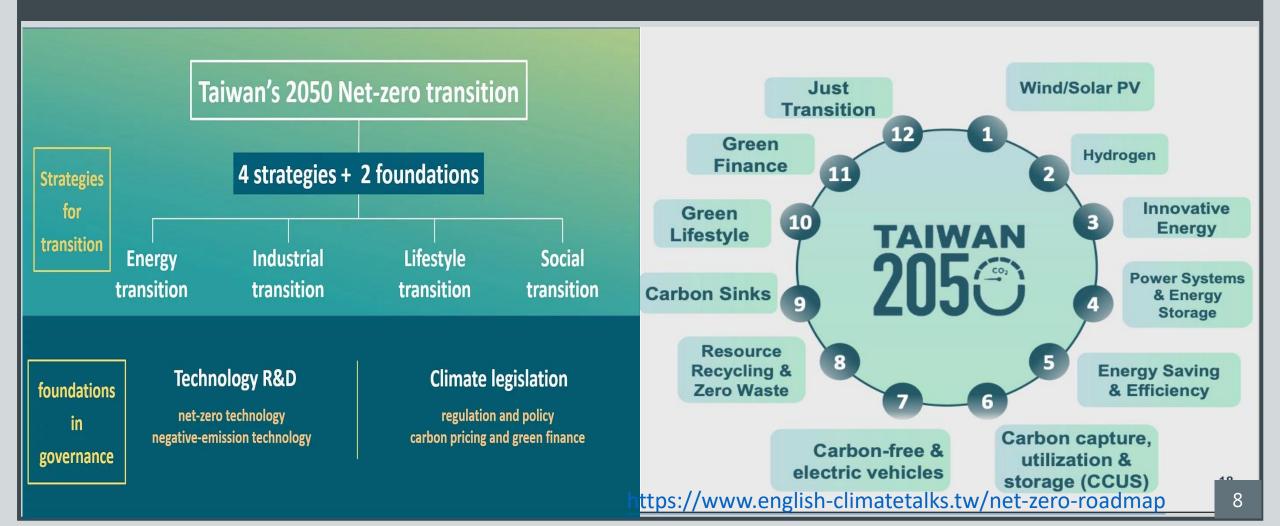
Offshore Wind hub

Not Citizen-Oriented



From "Energy Transition" to "Net-Zero Transition"

### Net-Zero Transition in TW



### 2050 Net-Zero Pathway (Key Milestones)

#### **Buildings**

Improving in exterior design, energy efficiency and appliance energy efficiency standards.

#### **Transportation**

Changing in travel behavior, reducing demand for transportation, and electro-mobility.

#### Industry

Improving in energy efficiency, fuel switching, circular economy, and innovative technologies. CO<sub>2</sub> equivalent)

Emissions (million metric tons of

200

100

#### Electricity

Scaling up renewable energy, developing new energy technologies, energy storage, and power grid upgrade.

#### **Negative emissions** technologies

Demonstration by 2030. At scale by 2050.

New public buildings are energy efficiency class 1 or nearly zero-emission.

All urban public buses and official cars are electric. 30% of car sales are electric 35% of scooter sales are electric

35% of Urban public

No new coal-fired

power plants.

buses are electric

The manufacturing industry gradually replaces the equipment.

15% of electricity consumption in the industry is green.

40GW of wind and

solar power capacity.

upgraded to building energy efficiency class 1 or nearly zeroemission.

50% of existing buildings are

100% of car sales are electric 100% of scooter sales are electric

Introduce low-carbon process into industrial demonstration. (Ironmaking using hydrogen energy,

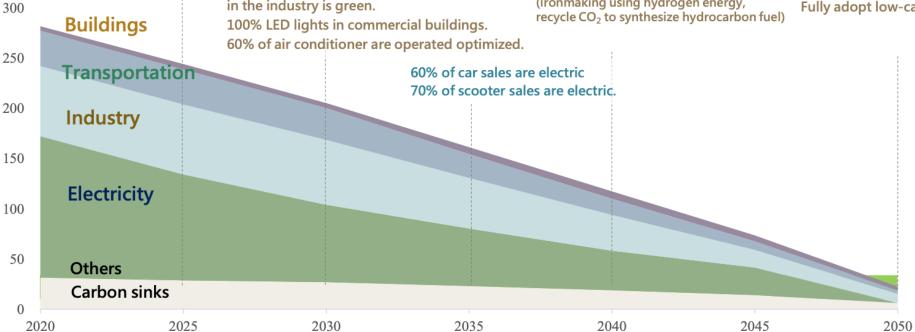
Installation of CCUS in coal

and gas-fired power plants.

100% of new buildings and over 85% of existing buildings are nearly zero-emission.

Widely replace equipment in Industry (80-90% in steel industry. 100% in textile industry)

Fully adopt low-carbon process



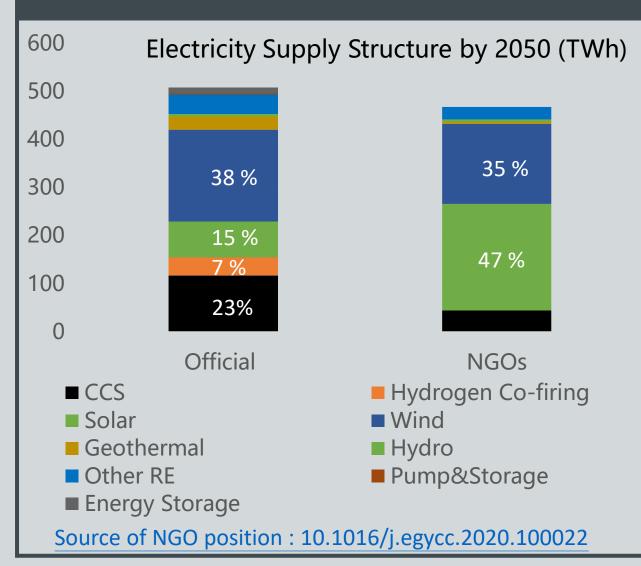
Installation of smart

meters reaches 100%.

Renewable electricity accounts more than 60%.

Installation of smart substations reaches 100%.

# Official Net-Zero Roadmap = Delayed Transition



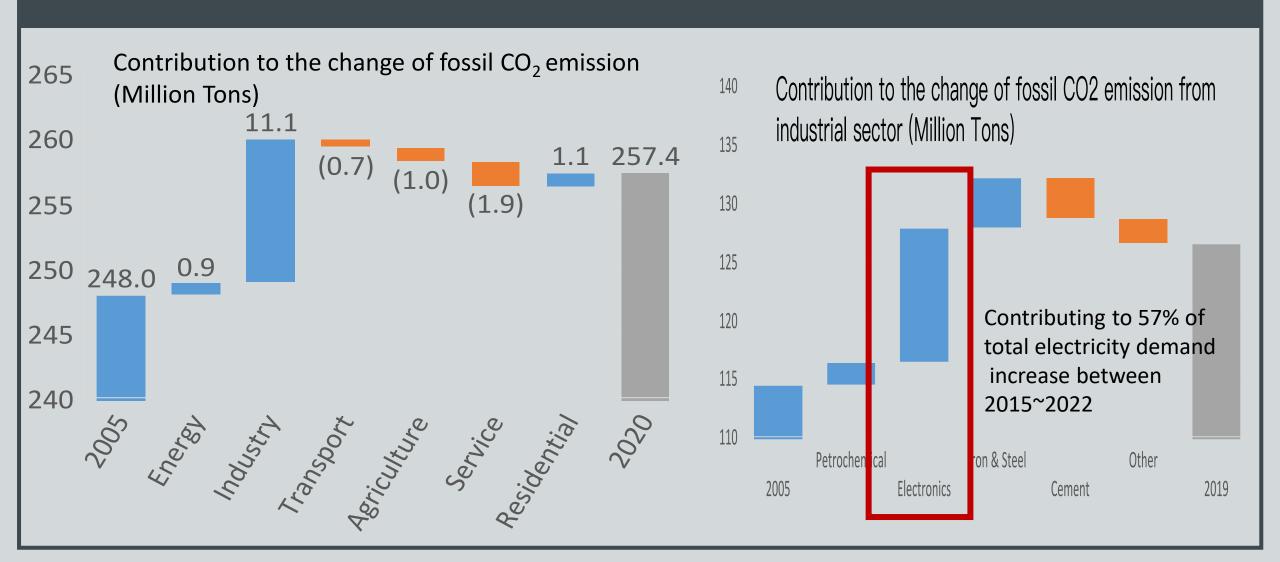
Delayed decarbonization

Too much CCS

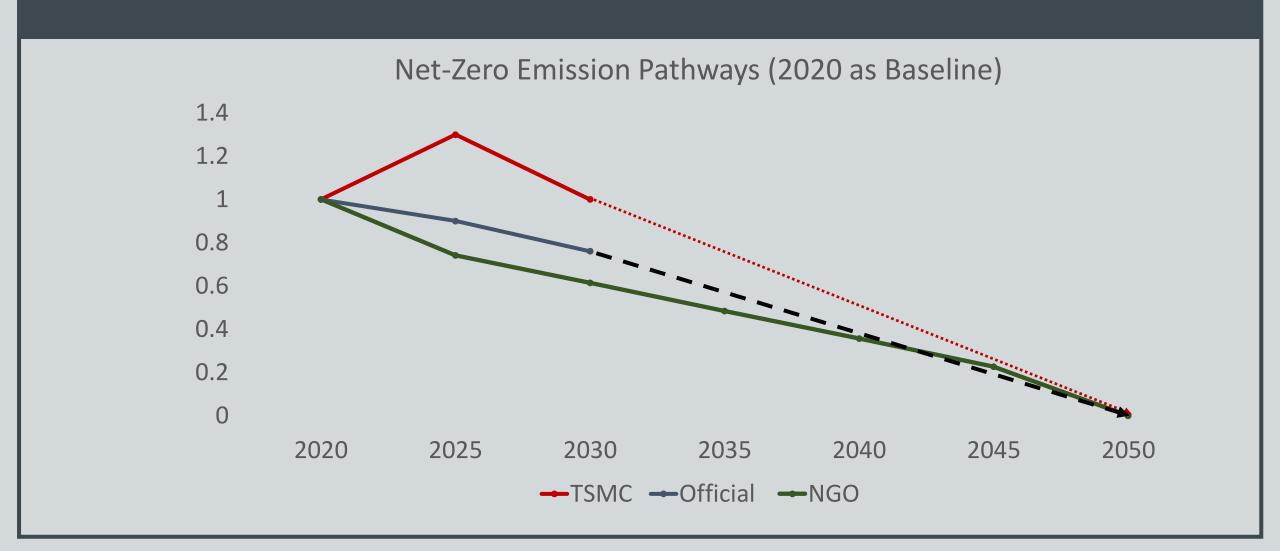
Too Much Hydrogen Cofiring

Insufficient planning for long duration storage

# Dual Effect of Silicon Shield (1/2)



# Dual Effect of Silicon Shield (2/2)



## Conclusion & Reflection

#### Energy justice **↑**

(High degrees of equitable outcomes, fair procedures, and social legitimacy)

(Low degrees of equitable outcomes, fair procedures, and social legitimacy)

Just, but slow: strong participatory processes but marginal impact on policy

Effective but inequitable: working with incumbents to secure resources, capabilities, and momentum from the top-down

(Slow changes in technology adoption, emissions reduction, or policy change)

(Rapid changes in technology adoption, emissions reduction, or policy change)

Accelerated decarbonization

Defending Freedom via Energy Transition

Industrial Decarbonization

Nordic Governance

Newell et al. 2022