

Energy Transition and Democracy in Taiwan

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August 26-31, 2018

Salzburg, Austria

Outline

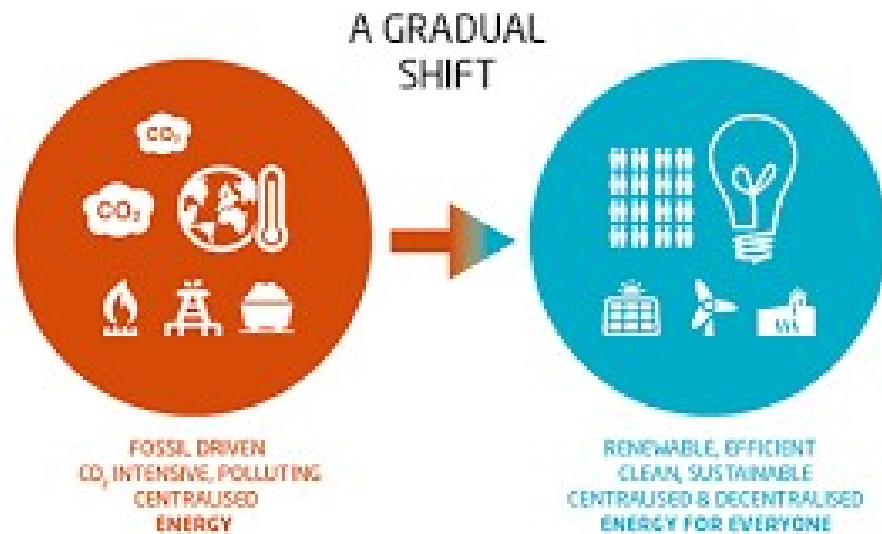
I. Key Energy Transition Policy and Strategy in Taiwan

II. Energy Transition and Democracy: 3 levels

III. Barriers and Challenges

Source: Ministry of Economic Affairs; Environmental Protection Administration, Taiwan

Global Energy Transition Trend



Energy Democracy

Workers' Rights

Just Transition

Responsive to
Communities'
Needs

Sustainable
Methods for
Energy Extraction,
Transport and Use

Control and
Reduce Emissions
and Pollution

Scale Up RE and
Low-Carbon
Energy Options

Promote Energy
Conservation

End Energy
Poverty

(Sweeney, 2012)

Energy Democracy

Democratization and Participation

Property

Surplus Value Production and
Employment

Ecology and Sufficiency

(Kunze and Becker, 2014)

Embarking on Energy Transition

《Inaugural Speech on May 20, 2016》

- ✦ We will regularly **review goals** for cutting greenhouse gas emissions in accordance with the agreement negotiated at the **COP21 meeting** in Paris. **Together with friendly nations**, we will safeguard a sustainable earth.
- ✦ We **will not be absent** in the efforts to prevent global warming and climate change. We will **create** within the Executive Yuan **an office for energy and carbon-reduction**.

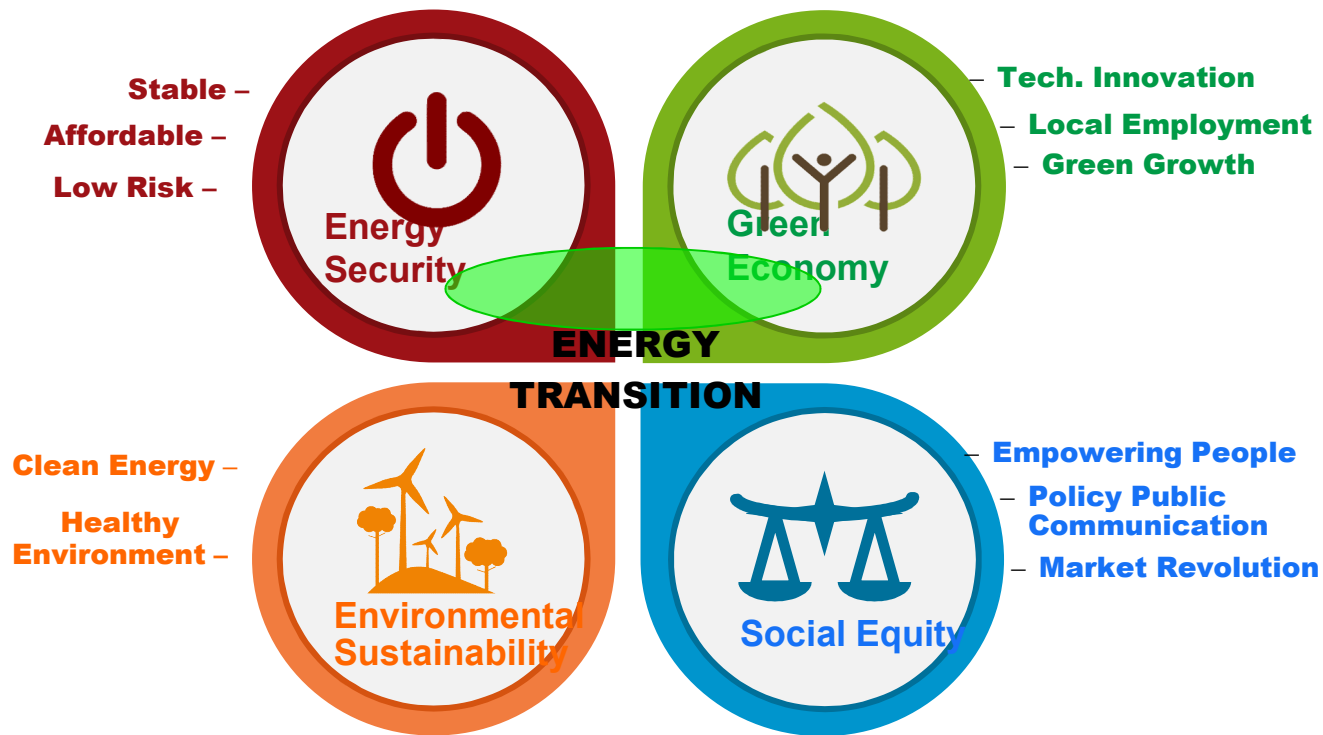


President **Tsai Ing-wen**

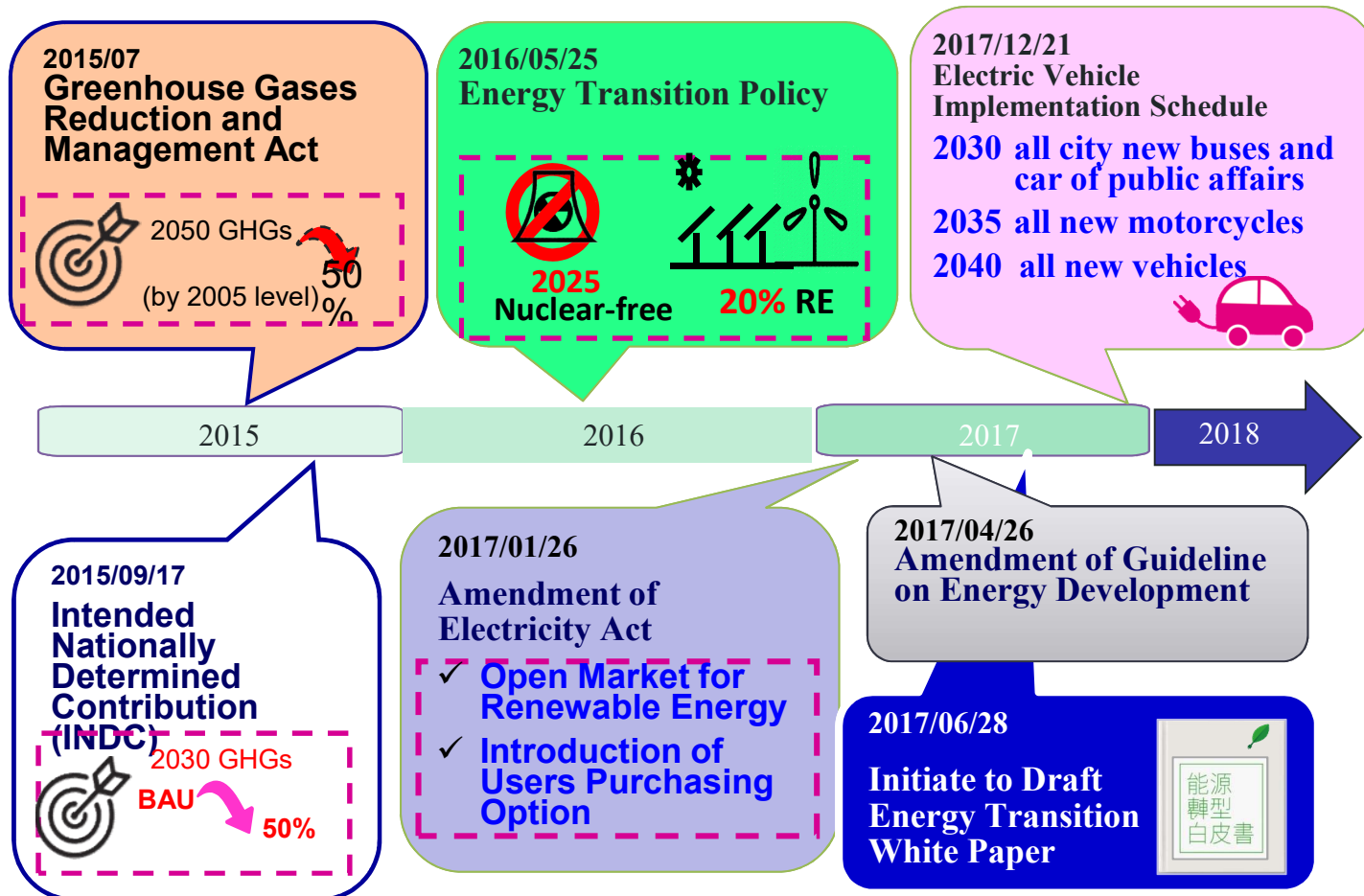
- ✦ The “**Greenhouse Gas Reduction and Management Act**” that came into force on 1 July 2015, laid down **greenhouse gas emission reduction targets by 2050** for Taiwan. We will adopt a stage-wise approach to formulate our deployment strategies, including periodic reduction goals (in 5-year stages) along with measures to reach them.

The Vision of Energy Transition Policy (1/2)

■ Core Value of Taiwan's Energy Transition



Taiwan's Energy Transition Policy



Operating Nuclear Reactors (npp1-npp3)

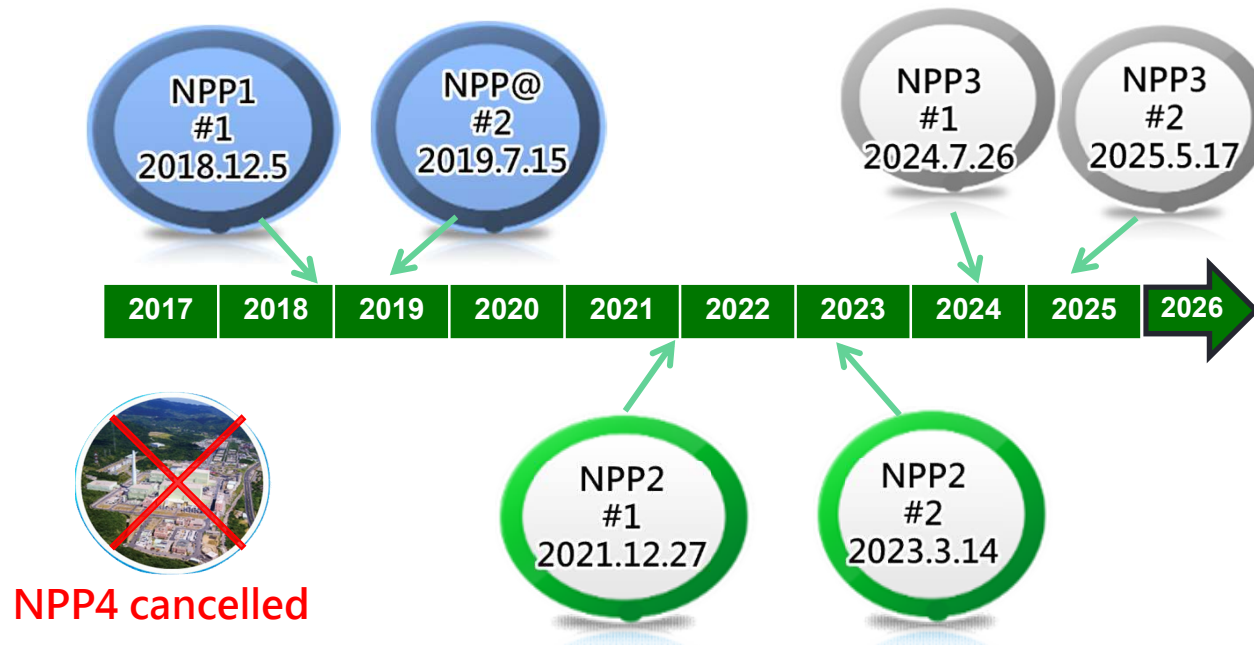


Unit	Type	MWe gross	MWe net	Start up	Licensed to
NPP1-1	BWR	636	604	1978	2018
NPP1-2	BWR	636	604	1979	2019
NPP2-1	BWR	985	948	1981	2021
NPP2-2	BWR	985	948	1983	2023
NPP3-1	PWR	951	900	1984	2024
NPP3-2	PWR	951	923	1985	2025

(Yeh. 2014)

Timeline of Nuclear Phase-out in Taiwan

- According to the newly amended Electricity Act (2017): All nuclear power plants should stop operation by 2015
- “No Nuclear Home-land Task Force” under the Executive Yuan (2017)



Energy Transition Development in Taiwan

Current Status

- Approximately 98 % Energy Import Dependency
- Approximately 5 % RE (2016) (/ total power generation)
- Centralized/ Quasi-monopolized Electricity Market



Policy Goal:

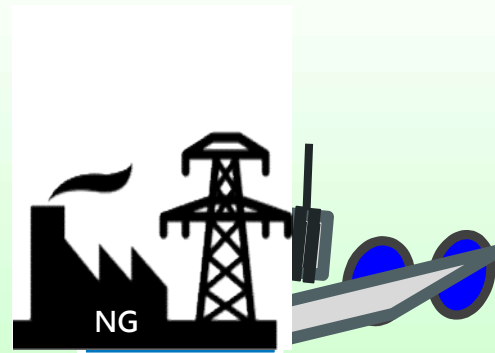
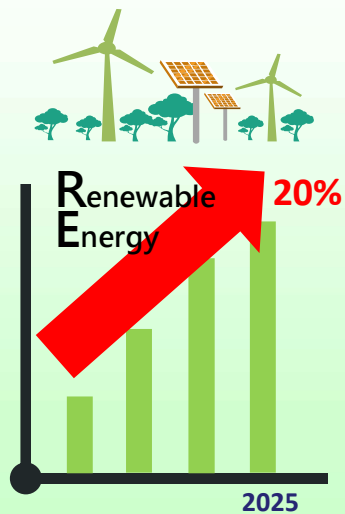
2025 Nuclear-Free Homeland

- 20 % RE (/ total power generation)
= installed capacity of 27 GW
- 50 % Natural Gas (/ total power generation)
- 30 % Coal Fire (/ total power generation)
- Electricity Market Reform

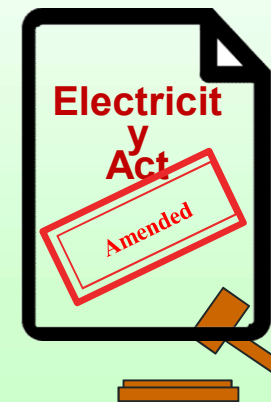
The Vision of Energy Transition Policy (2/2)

■ Launch Energy Transition and Power Market Reform in June, 2016

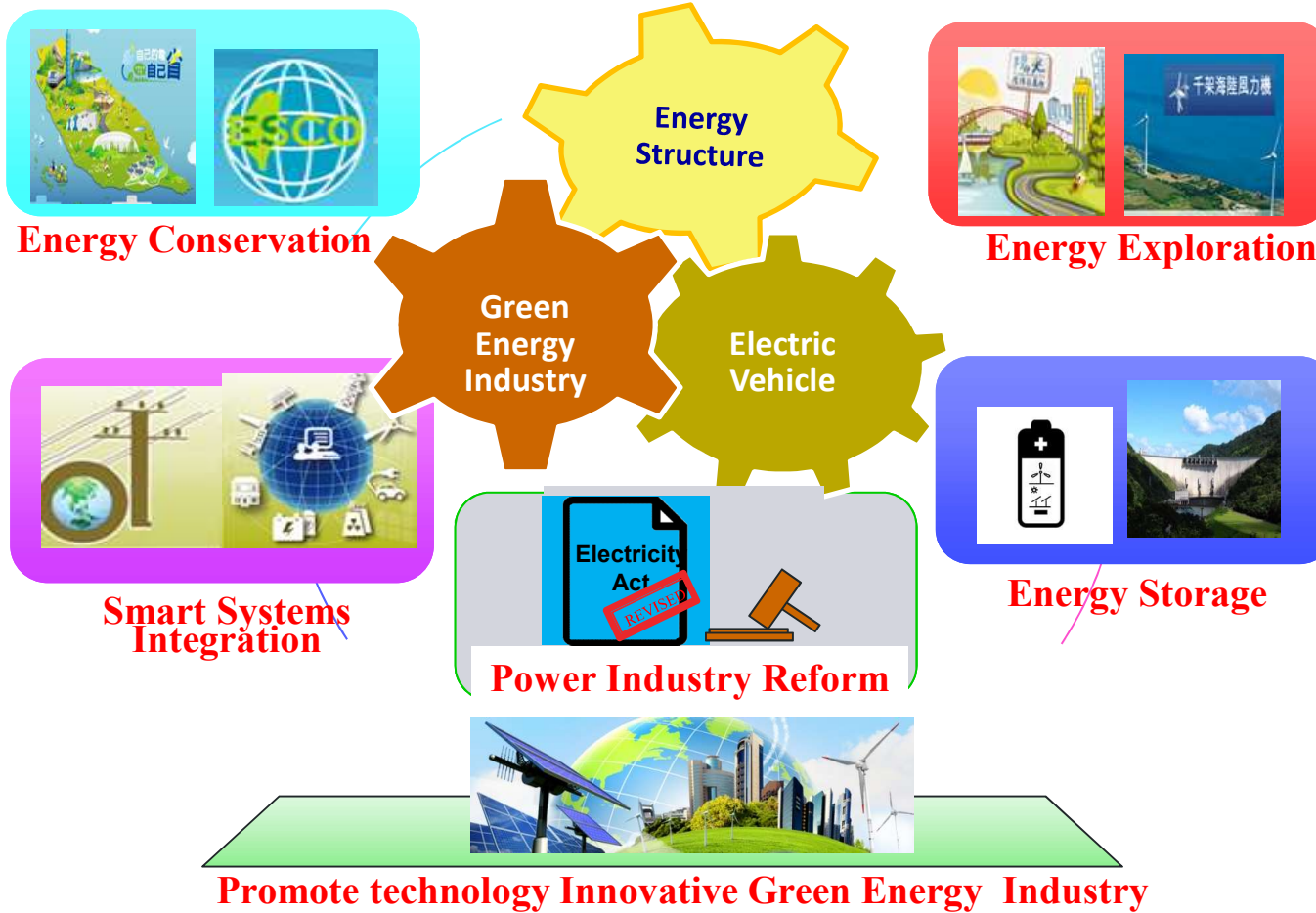
- ❌ Establish a low-carbon, sustainable, stable, high-quality and economically efficient energy system, and to achieve the “**Nuclear-Free Homeland**” vision by **2025**.



- Expansion NG Power Generation
- Building No.3 LNG Terminal

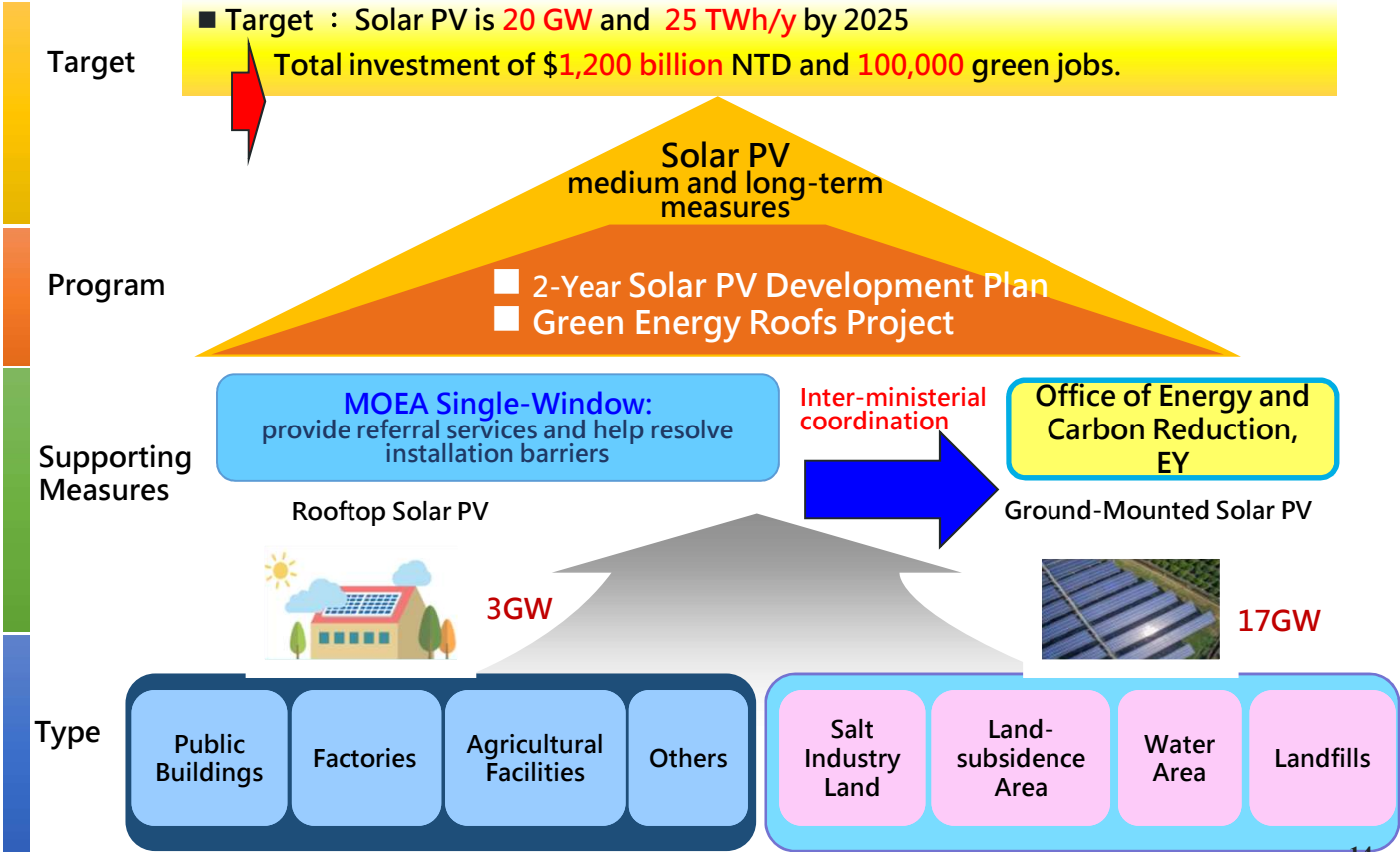


Key Strategy for Energy Transition



Energy Exploration (3/8)

■ Framework of Solar PV Development Plan



Energy Exploration (4/8)

◆ 2-Year Solar PV Development Plan

- Target: install **1.52 GW** from July, 2016 to **June, 2018**.
- Strategy:
 - ✓ **Single-window consultation:**
provide referral services and help resolve installation barriers.
 - ✓ **Expand land available for solar PV:**
gradually promote **large-scale ground mounted** solar PV systems.
 - ✓ **Strengthen power grid infrastructure**

◆ Green Energy Roofs Project

- Target: install **2GW** by 2020.
- Principle: **zero funding** from the public, **zero subsidy** from the government.
- Strategy:
 - ✓ Realize the economies of scale through the local governments.
 - ✓ The **service providers give rebate**.
 - ✓ Electricity generated by PV is **first consumed** by the building **occupants**, and any **surplus is wholesaled** by the service provider to the **public grid**.



Energy Exploration (5/8)

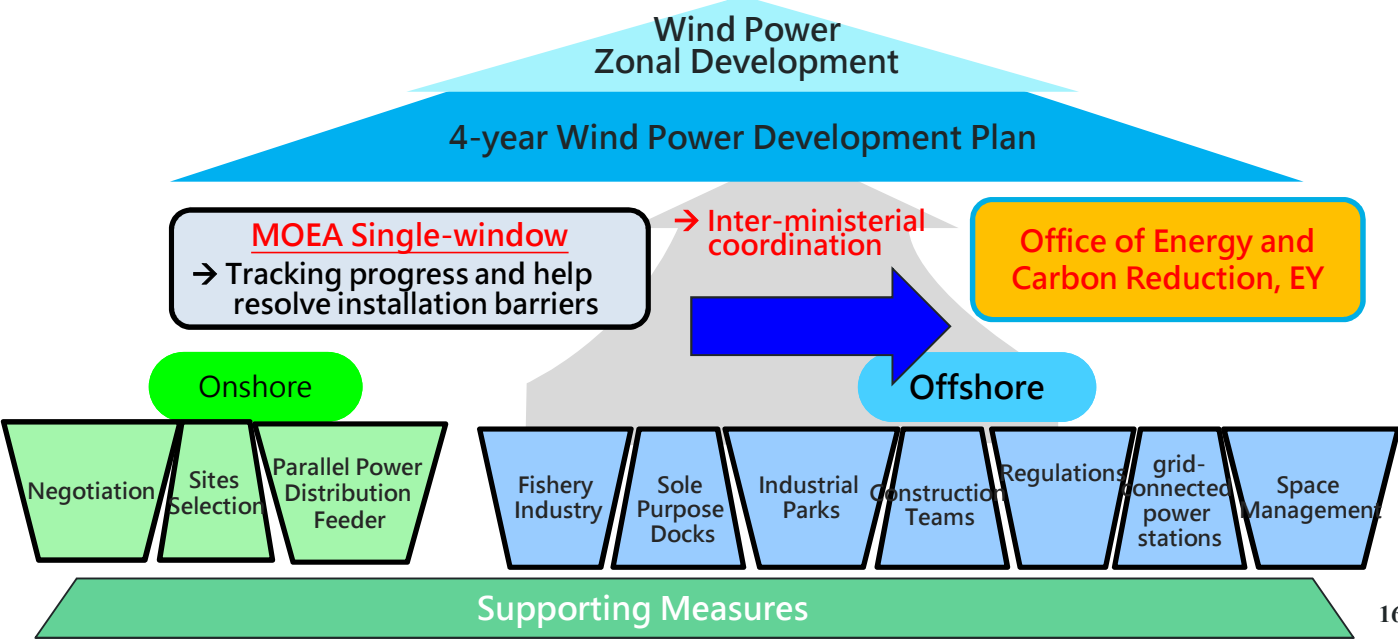
■ Framework of Wind Power Development Plan

Target : Wind power is to reached **6.7 GW** by 2025.

Onshore **1.2 GW**



Offshore **5.5 GW**



Energy Exploration (6/8)

4-Year Wind Power Development Plan - Onshore

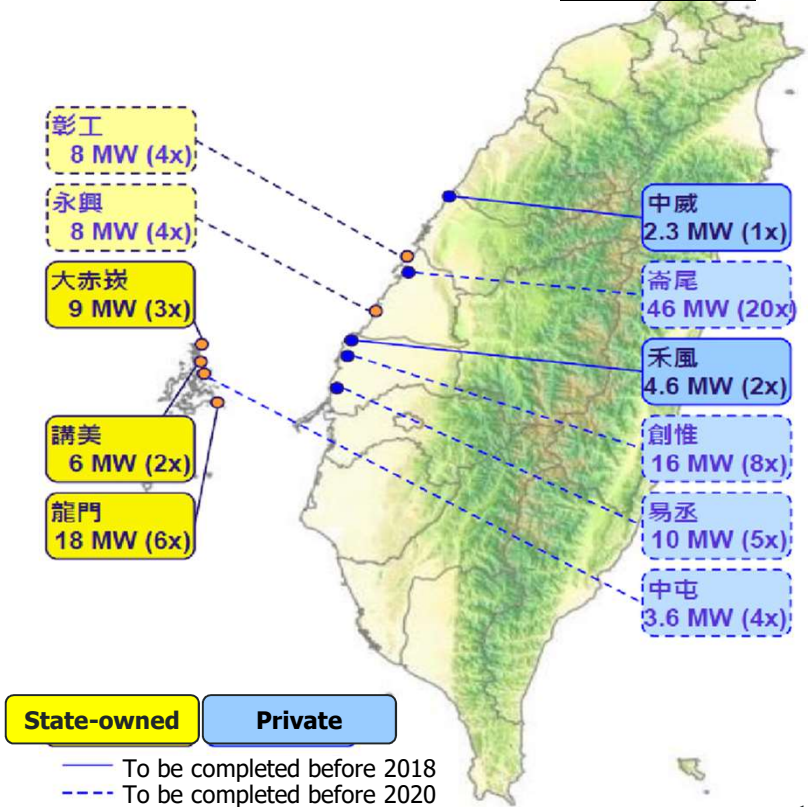


Onshore Target

● 2016	682 MW
● 2018	773 MW
● 2020	814 MW
● 2025	1,200 MW

Potential Sites for Onshore

● Taipower	49 MW
● IPPs	37 MW
● Lunwei, Changhua	46 MW
Total 132MW in 2020	



Transportation Sector : Electric Vehicles

- **2030:** All new buses and government vehicles should be electric
- **2035:** All new scooters sold should be electric
- **2040:** All new cars sold should be electric



Energy Democracy Transition in Taiwan

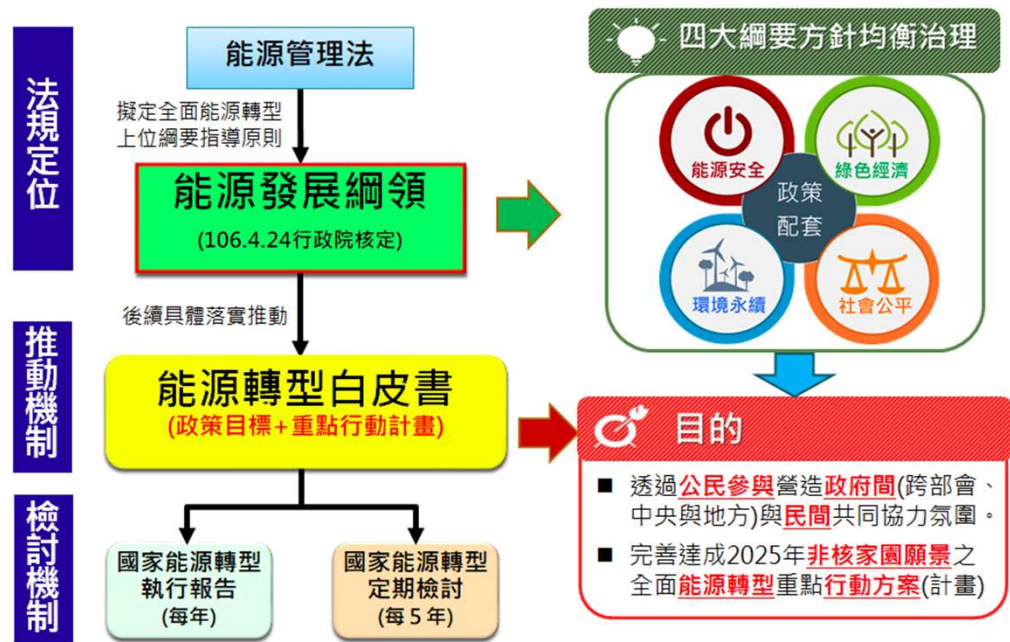
Level	Value	Cases
1 National Level	Deliberation	Energy Transition White Paper Meetings
2 Local Level	Decentralization	Smart Electricity-Saving Program Energy Governance Localization
3 Community Level	Self-Determination	Taromak Village Green Power Company Miaoli Sky No.1 Solar Power Cooperative Taixi Township Citizens' Power Plant

Energy Democracy
Development in Taiwan

National Level

Energy Democracy Development in Taiwan: National Level Energy Transition White Paper Meetings

- Energy Transition White Paper: The action policy based on the *Guidelines on Energy Development (2017)* in order to accomplish the national governmental goal of Nuclear-Free Homeland by 2025
- Governance Principles of the *Guidelines on Energy Development (2017)*:
 - Energy Safety
 - Green Economy
 - Environmental Sustainability
 - Social Justice



→ Democratic Energy Transition

Energy Democracy Development in Taiwan: National Level Energy Transition White Paper Meetings

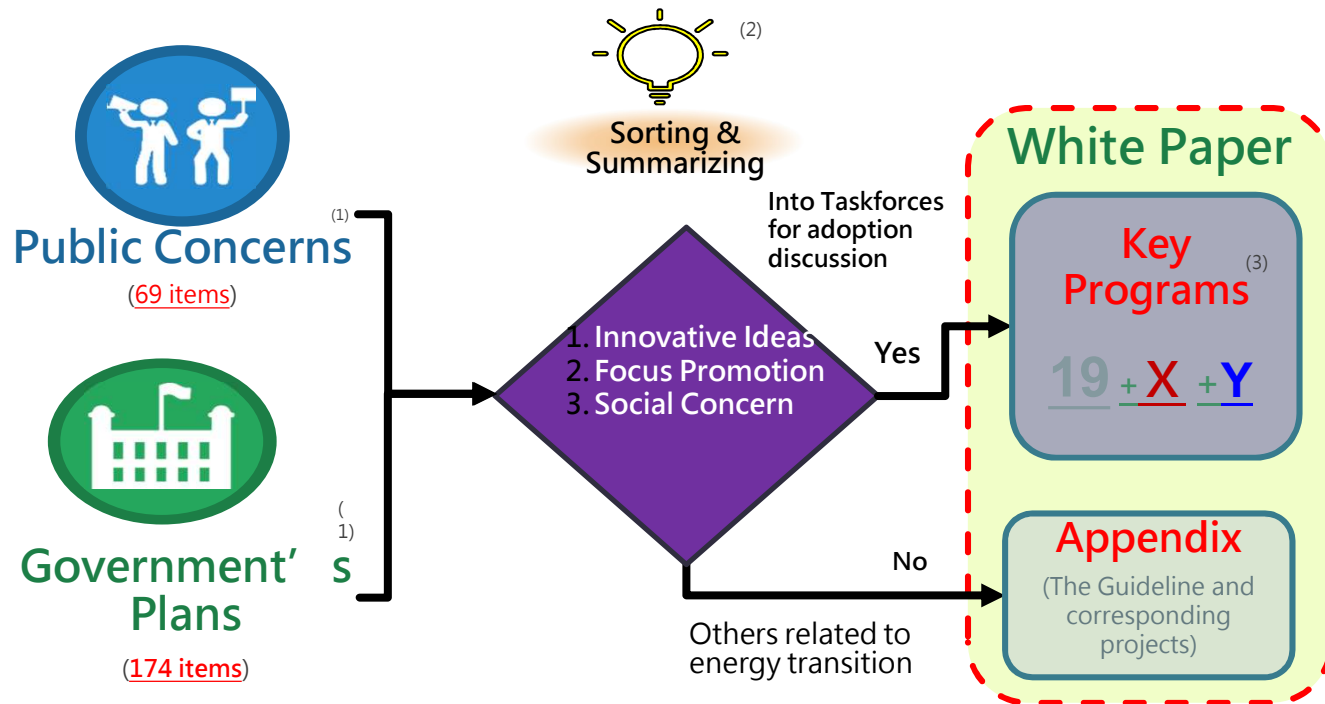
- Since energy transition requires monitoring and participation of the society, the government expanded citizen participation and cross-sectoral discussion for the drafting of the Energy Transition White Paper

- 1st Stage: *Preparation Meetings*
- 2nd Stage: *Collaboration*
- 3rd Stage: *Citizen Dialogue*



Phase I Preliminary Meeting

- Adopt public ideas and incorporate into the programs



1. Related information and procedures are available at <http://energywhitepaper.tw> .
2. 617 persons participated and more than 605 opinions were collected in the preliminary meeting.
3. **19+X+Y** 19 : key programs set by government **X** : project no. from the public opinions in phase 1
Y : project no. from taskforces in phase 2 .

Phase II Taskforce Collaboration

- **Establish Five Taskforces to Collaborate**

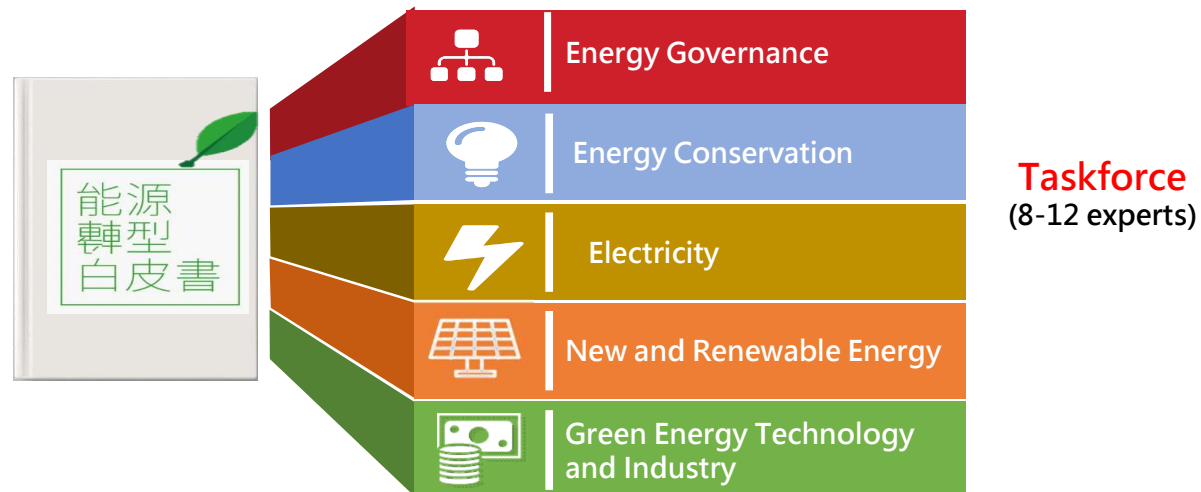
Five taskforces were established and experts collaborated to come up with concrete works of **key programs**.

- **Principle for Recruiting Experts**

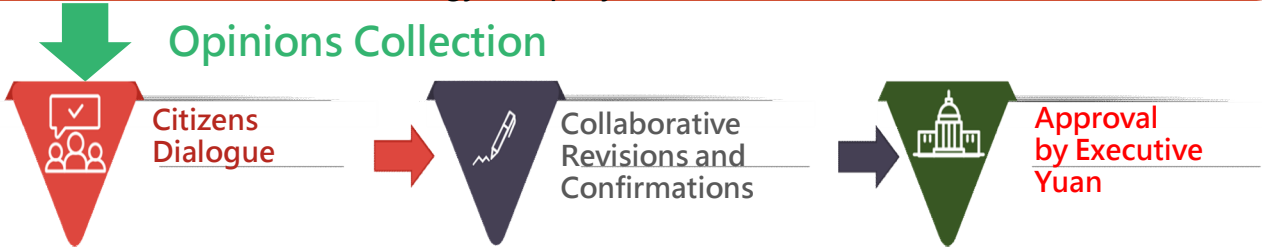
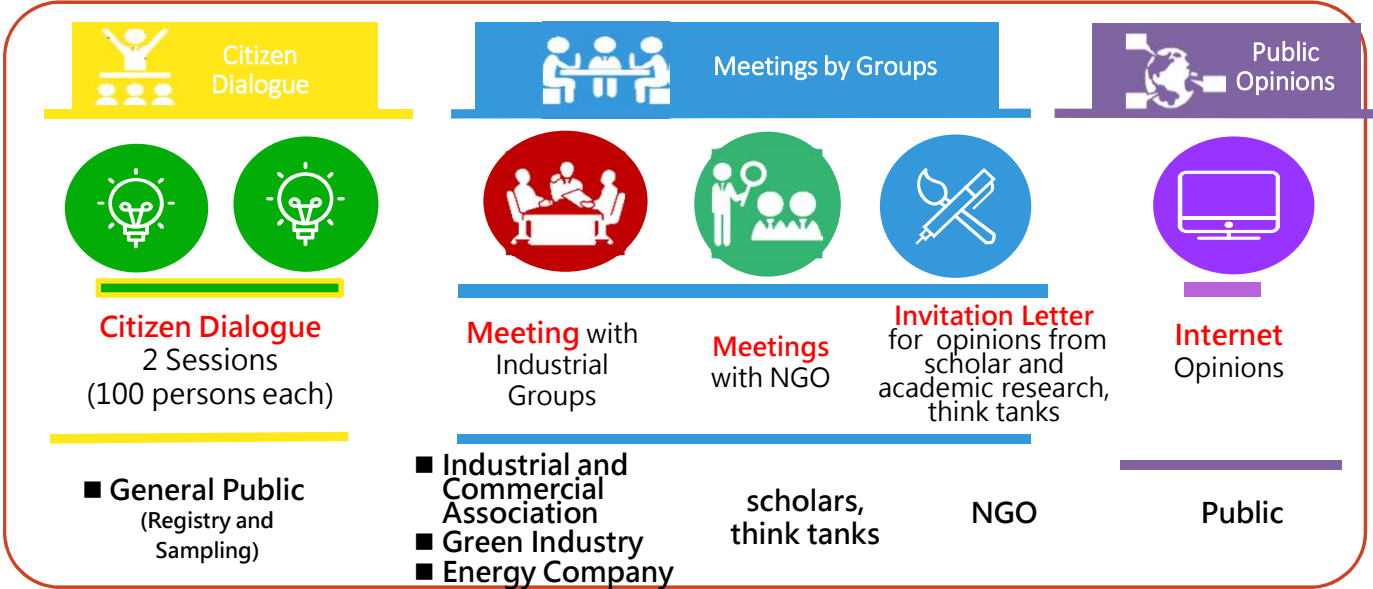
8-12 experts from **academia, industries, NGO** and **governments** were recruited to discuss key programs in each field.

- **Dispute resolution**

When running into difficulties, **Energy and Carbon Reduction Office** of the Executive Yuan will coordinate and integrate.



Phase III Citizen Dialogue



Energy Democracy
Development in Taiwan

Local/Municipal
Level

Energy Democracy Development in Taiwan: **Local/County Level** Smart Electricity-Saving Program



Goal	The expected rate of electricity saving set by the central government is 2% .
Timeline	Apr. 1 2015 - Mar. 31 2016

Energy Democracy Development in Taiwan: **Local/County Level** New Electricity-Saving Program(4-year program)



Energy Democracy
Development in Taiwan

Community Level

Energy Democracy Development in Taiwan: **Community Level** Taromak Village Green Power Company

Why did they build it?



Dongxing Power Plant:
The Oldest Hydroelectric Power Plant in Taiwan

- River restoration
- Significant cultural and touristic values
- Rich natural resources of the village

Energy Democracy Development in Taiwan: **Community Level** Taromak Village Green Power Company

- First **citizen power company** in Taiwan
- Goal of becoming RE100 Village in 2 years:
Solar + Hydraulic
- Energy autonomy equals **indigenous autonomy**
- Hopes to expand the scale in the future, and **return the profits for local welfare**



Energy Democracy Development in Taiwan: **Community Level**

Miaoli Sky No.1 Solar Power Cooperative

- First **energy cooperative** in Taiwan
- Solar PV combined to the grid in December 2017;
Estimated to produce 10,000 kWh of electricity annually
- Installed capacity: 10.03 kW
- Installed area: 18.5 Ping
- Payback: 10-12 years



Energy Democracy Development in Taiwan: **Community Level**

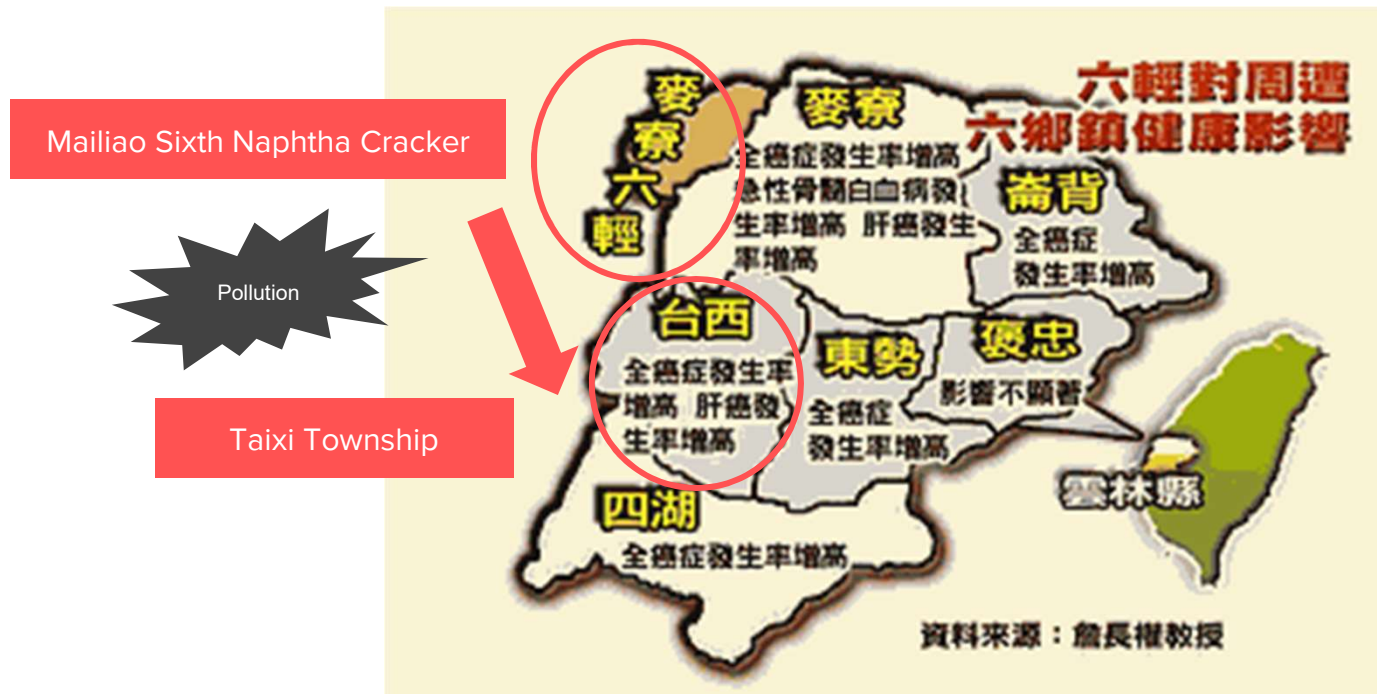
Miaoli Sky No.1 Cooperative (first community Power 2015)



- Challenges of Energy Cooperatives: Cooperatives value **information transparency** and **deliberative decision-making**, thus taking more time for cooperatives to be established: It took more than 1 year for Sky No.1 to be established
- Future Perspective: Establishments for **Kaohsiung Sky No.2** and **New Taipei Sky No.3** are ongoing
→ Bringing in more citizen power and voices from other organizations

Energy Democracy Development in Taiwan: **Community Level** Taixi Township Citizens' Power Plant

Why did they build it?



Energy Democracy Development in Taiwan: **Community Level** **Taixi Township Citizens' Power Plant**

- First **Green Energy Town** in Taiwan
- B-corp

- The profit of selling green energy can return to the community for medical care and elderly welfare, and can bring back youth workforce and promote the long-term development of the community



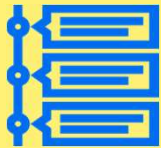
Energy Democracy Development in Taiwan: **Community Level** Taixi Township Citizens' Power Plant

- Combine with community planning to promote cultural revitalization

e.g. Taixi Township
Photography Museum



Energy Transition and Democracy in Taiwan: Barriers and Challenges



Goal?
Schedule?

Clear, specific and reasonable



Stakeholders?
Social Dialogue?

Stakeholder identification and inclusion
Communication mechanism between stakeholders



Ecological friendly?

Endangered habitat of White Dolphins



Is the System Ready?

The myth of traditional energy
Centralized vs decentralized energy system

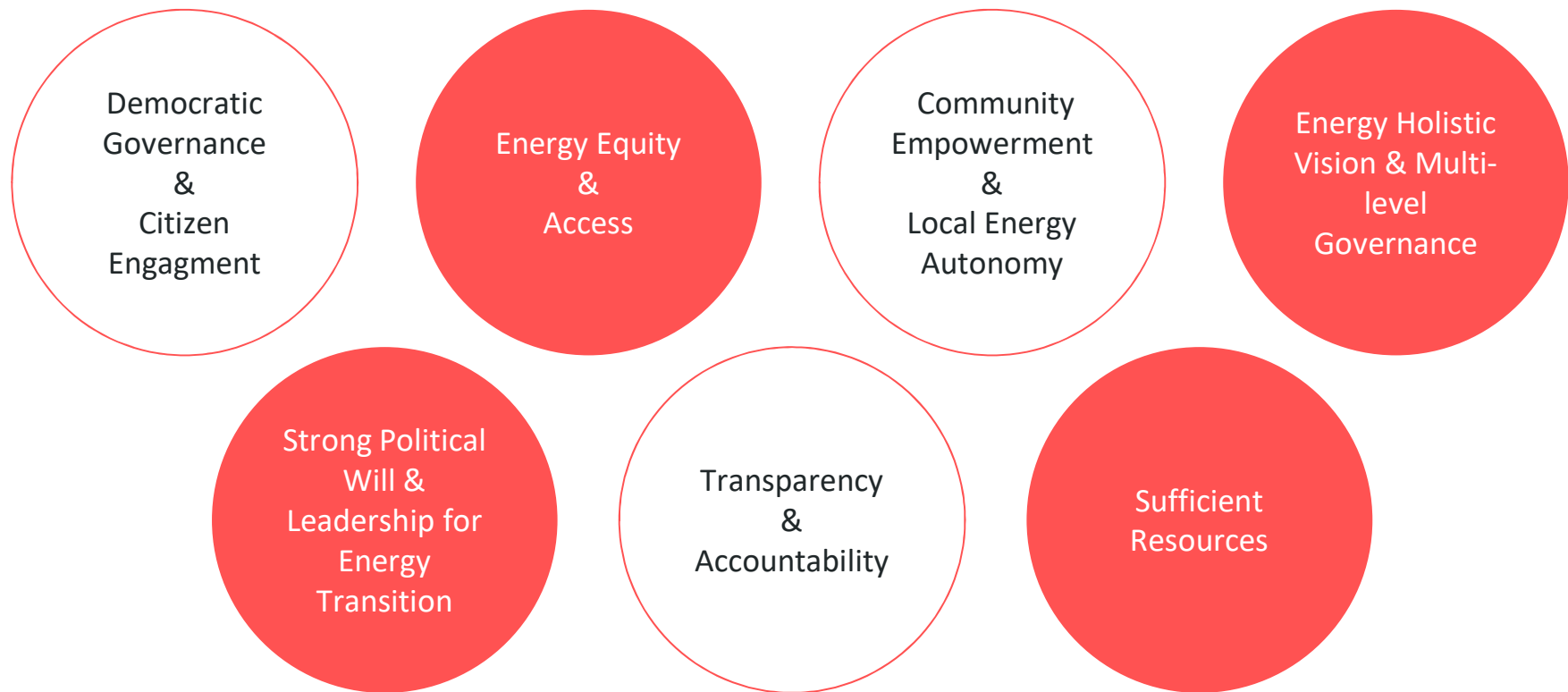


Challenges for Energy Transition in Taiwan

Taiwan:

- Political opportunity structure (Tsai Ing-Wen elected as President in 2016) (new energy transition strategy by 2025)
- Strong/long-standing environmental and anti-nuclear movements
- Energy-intensive industry dominates
- Anti-air/anti-coal pollution campaign
- Low energy(electricity; oil) prices

Future Perspectives of Energy Transition in Taiwan



Thanks for your attention

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