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TSAR & TSAI LAW FIRM

Taiwan's Energy Policy Transition: The Development and Challenges in Attracting Foreign Investment

The 1st Denmark-Taiwan Joint Business Council Meeting

Speaker: Janice Lin, Equity Partner

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- * Janice Lin is a partner with Tsar & Tsai Law Firm
- * Janice has led a team to assist a leading global developer of offshore wind farms in its investment in a groundbreaking, first-of-its-kind Formosa I offshore wind farm project in Taiwan.
- * T&T is one of the very few law firms in Taiwan with the necessary expertise and experience to provide comprehensive and strategic advice with respect to all aspects of renewable energy, including offshore wind farm projects in Taiwan.

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* **AWARDS**

Asialaw Leading Lawyers- 2015-2017 Leading lawyer in the field of Banking & Finance; Corporate and M&A

The Certified M&A Expert by China Merger & Acquisition Association

* **EDUCATION**

Research Fellow, Eastern Asia Legal Studies, Harvard Law School

Harvard Law School (LL.M.)

* National Taiwan University (LL.B)

* **ADMITTED**

Taiwan

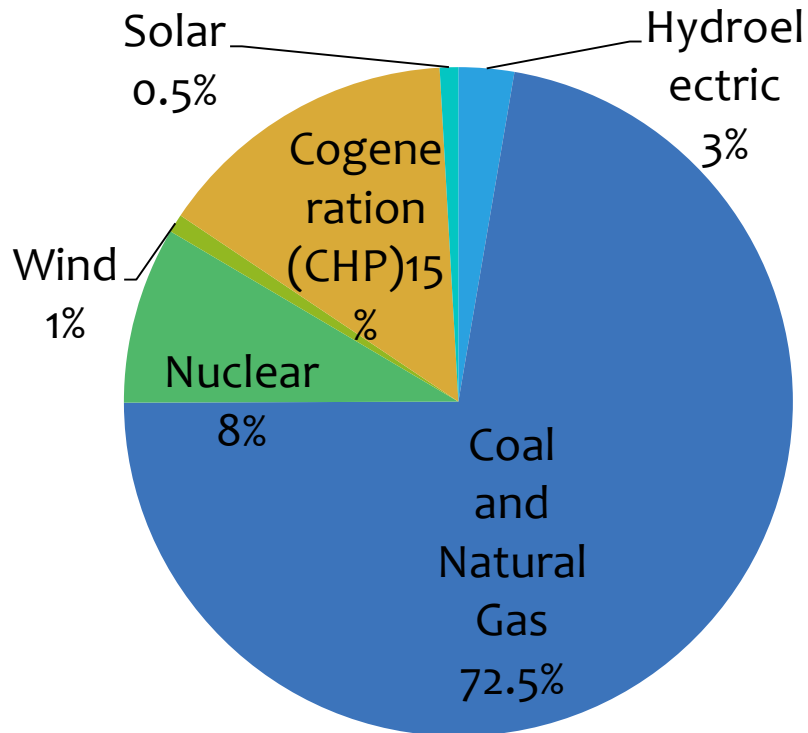
New York (non-practicing)

Outline

- * Current Electricity Market in Taiwan
- * Energy Policy of Taiwan Government
- * Recent Amendments of Taiwan Energy Laws
- * Four-Year Plan of Taiwan Offshore Wind Farm
- * Taiwan's Advantage and Challenges

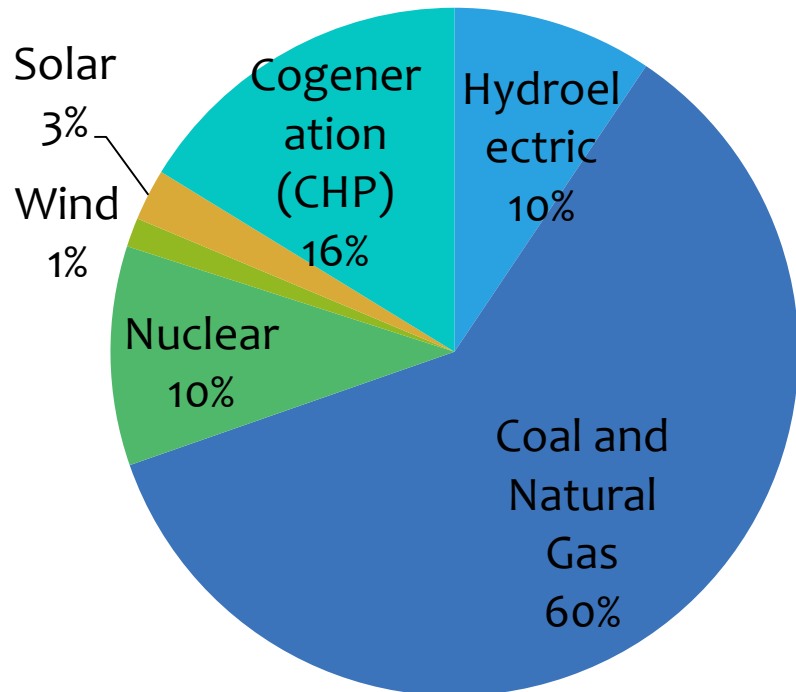
Source of Electricity

Electricity Generation By Type



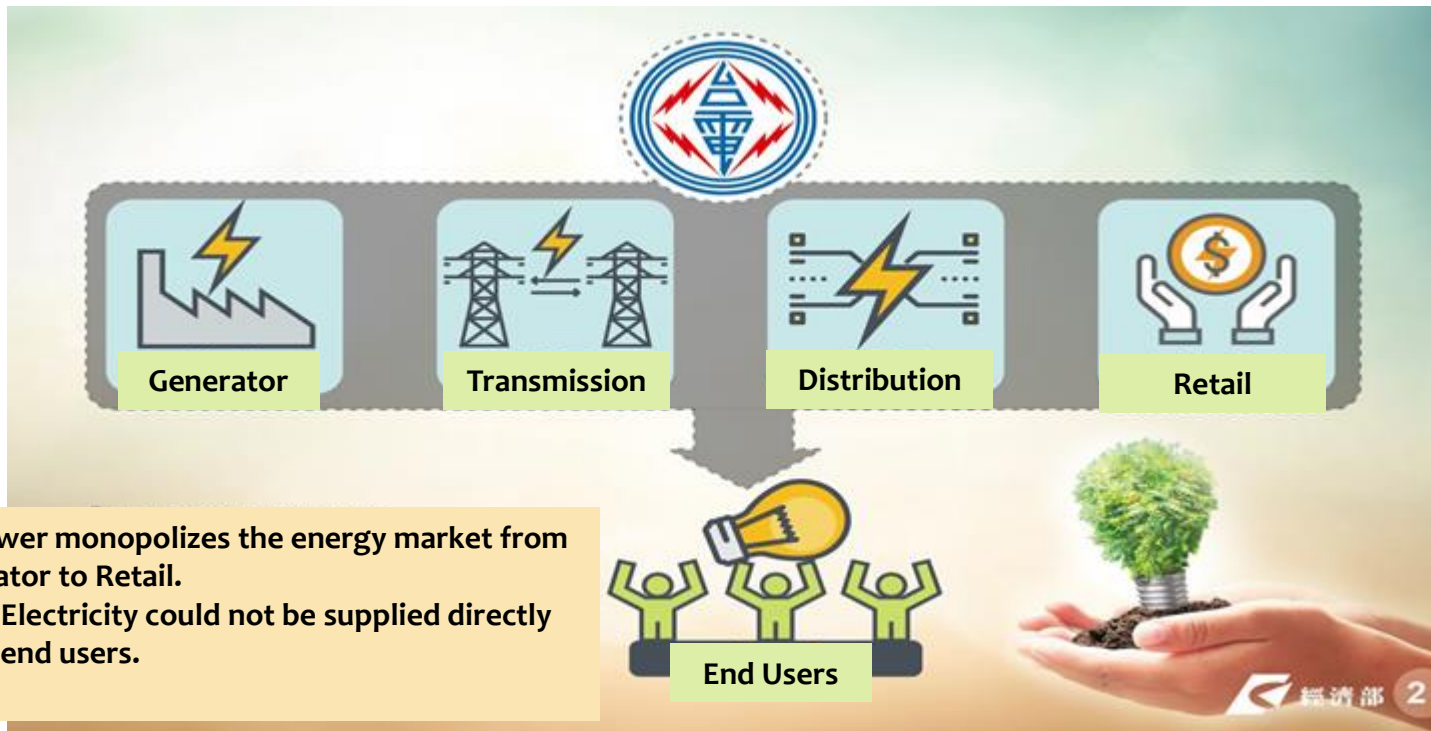
* Net electricity generation in 2016 - 251,475 (MkWh)

Nameplate Capacity By Type

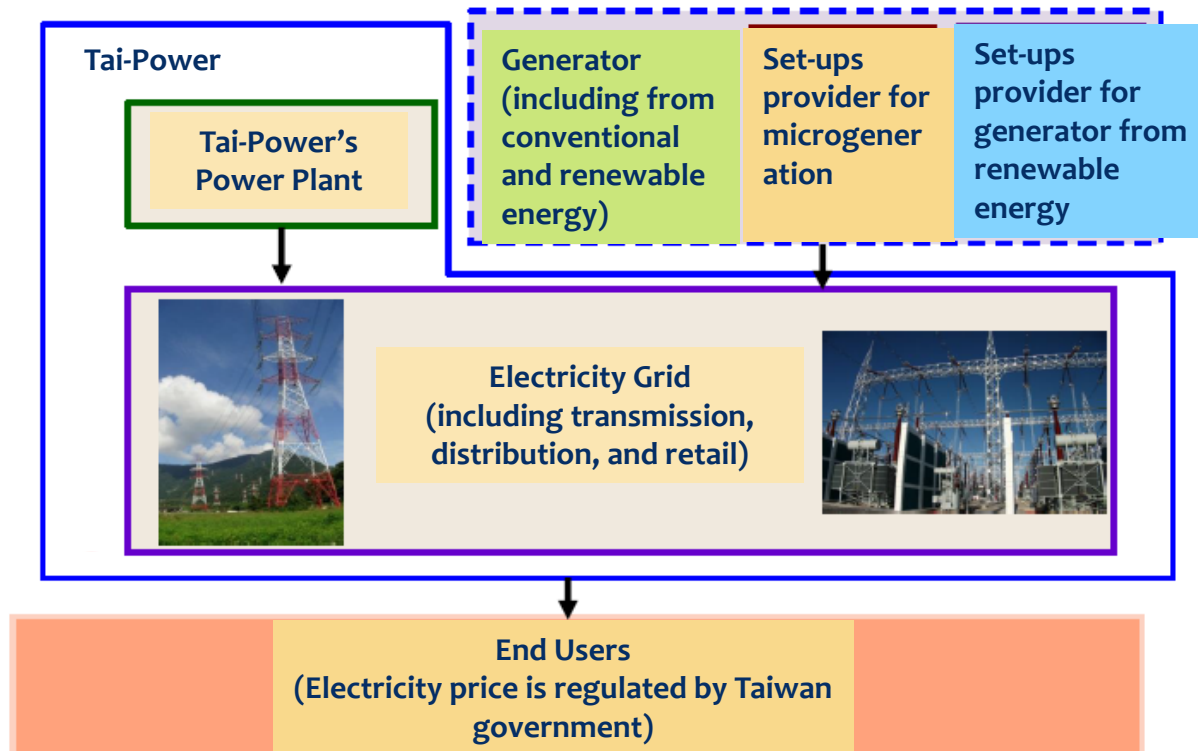


* Capacity - 32366 kW for Tai-Power
9329 kW for Others

Current Market Structure



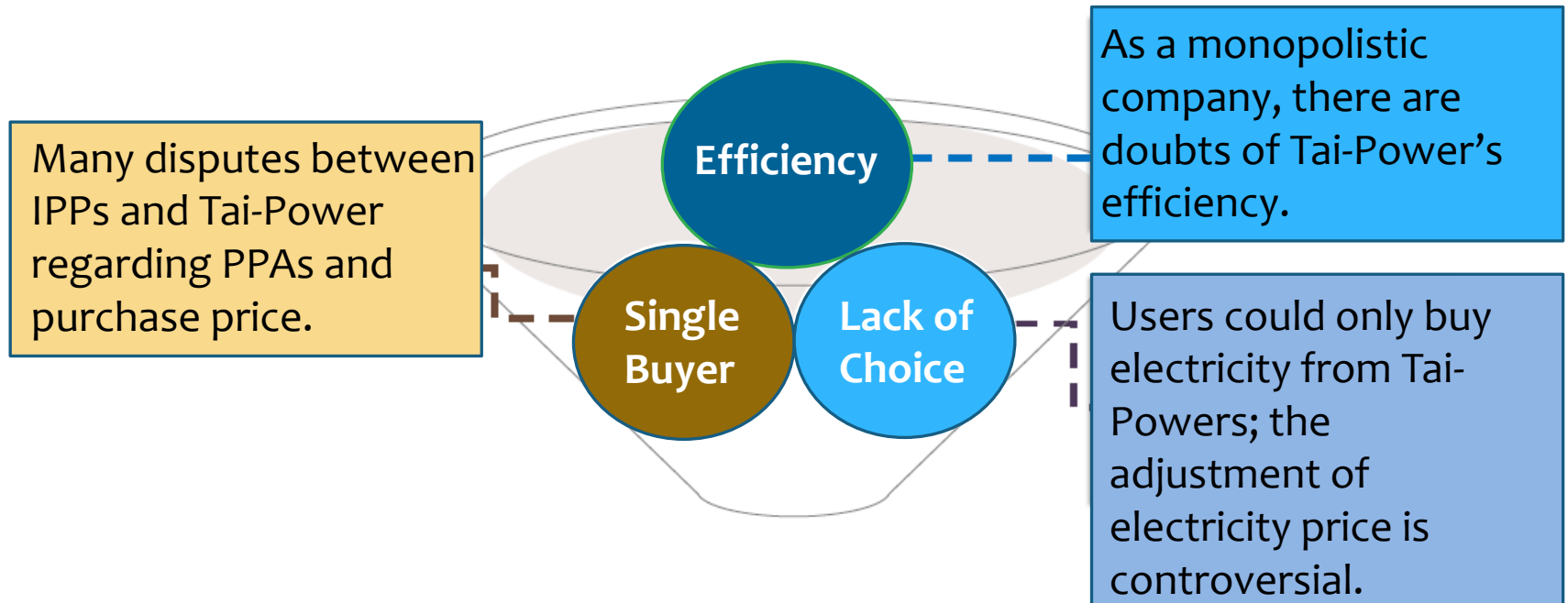
Current Market Structure



Current Market Structure

- * Tai-Power is the only vertically-integrated electric power company in Taiwan, owning the whole infrastructure from generating stations to transmission and distribution infrastructure.
- * Tai-Power entails the exclusive rights to sell electricity to the public, therefore the independent power producers (IPPs) have to sign the power purchase agreements (PPAs) to sell their production to Tai-Power, including IPPs using renewable energy .
- * End users has no options to choose whom they could buy electricity from.

Problems of Current Electricity Market



Energy Policy of Taiwan Government

- * Power supply transformation and electric power industry reform
 - * establishing a sustainable, stable, efficient energy markets
 - * Stop the reliance on nuclear by 2025: shutting down the operation of the nuclear power plants
 - * A goal to have 20% of the total electricity generation from renewable energy
 - * Target: Nuclear 0%, Coal 30%, Gas 50%, Renewables 20%
 - * Speeding up the construction of third LNG terminal to reduce the pollution and carbon emission
 - * **The modification of the energy laws builds the legal framework for the energy reform in Taiwan**

Energy Policy of Taiwan Government

- * Goal of the new energy policy
 - * Revolutionize the electric power industry to increase the quality and efficiency of the power supply.
 - * Tai-Power will be spun-off into two companies: splitting transmission and distribution from generation
 - * Establishing a single supervising authority for electric power industry
 - * loosen up the regulations, so the electricity could be distributed by grid or off grid, and users have the opportunity to make decision on its electricity purchase.

Energy Policy of Taiwan Government

- * The Plan of “Forward-Looking Infrastructure”
- * A specialized law (Special Act for Forward-Looking Infrastructure) enacted to exclude the cap on the public debt and the supervision in Public Debt Act. Allowing huge government expenditure.
 - * Rail infrastructure
 - * Green energy infrastructure
 - * Digital infrastructure
 - * Water infrastructure
 - * Rural infrastructure
 - * Develop a child-rearing friendly environment
 - * Ensure food safety
 - * Cultivate talent and increase employment

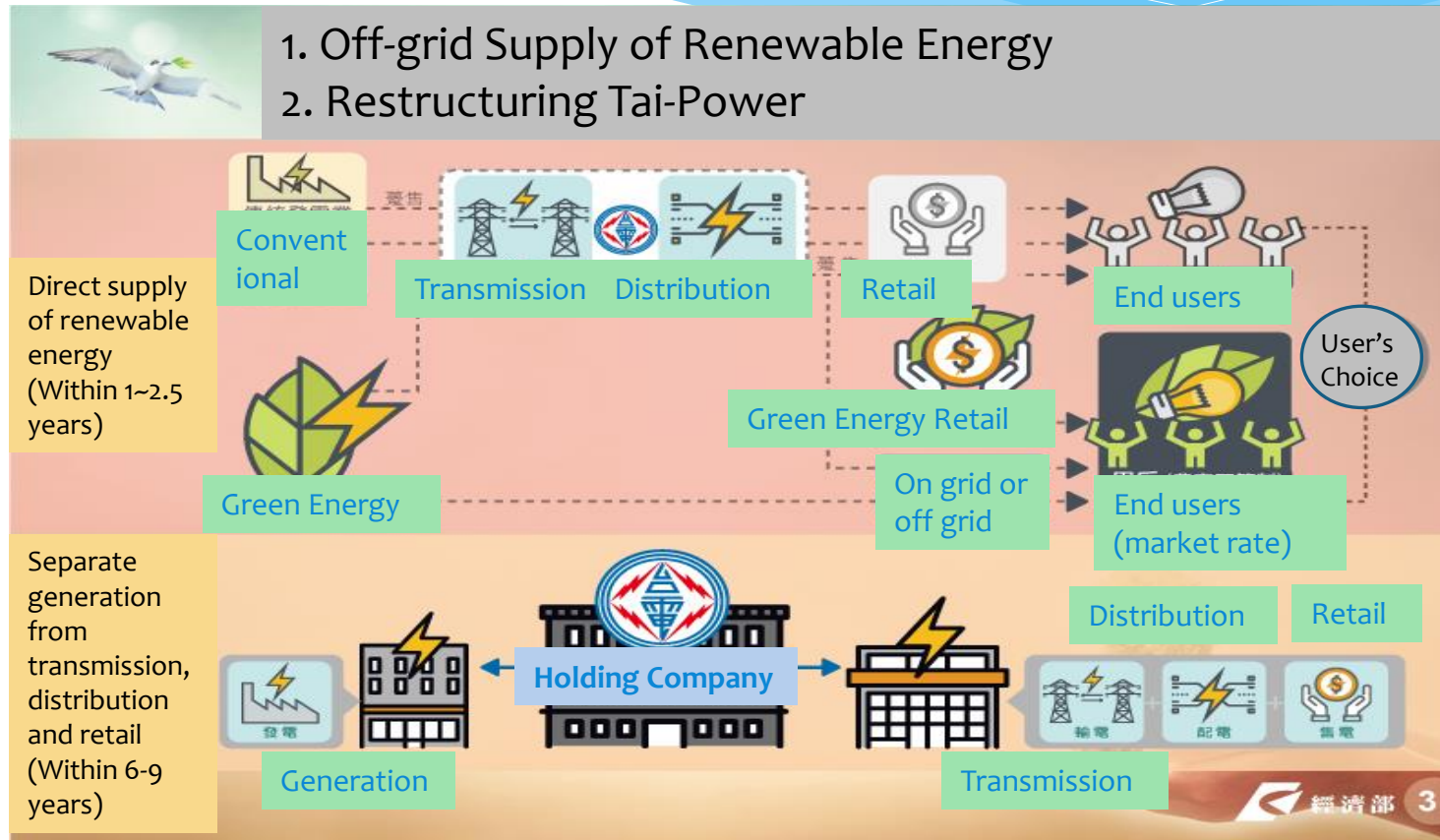
Energy Policy of Taiwan Government

- * Green Energy infrastructure: a public investment by NTD24.3 billion (~EUR 0.7 billion) in eight years (2017-2024), which could bring private investment amounting to NTD1.42 trillion (~EUR 40 billion) in estimation.
- * Focus on the R&D, development of solar, wind related projects, and science park of green energy in southern Taiwan
 - * Goal for solar: 1,520MW nameplate capacity in two years, and 20GW of accumulated nameplate capacity by 2025 (Ground mounted panels of 17GW and roof mounted panels of 3GW)
 - * Goal for wind: Through building the wind farms, "under-water" infrastructure, and the port, the target accumulated nameplate capacity is 4.2GW by 2025. (onshore of 1.2GW plus offshore of 3GW)

Change of Law-Energy Liberalization

- * The liberalization of the electricity power industry
 - * Introduce competition to the electricity market for efficiency, innovation, and better service.
 - * Ensure the quality of electricity supply and other generator's access to the grid
 - * End users are free to choose whom to buy from, therefore increasing the competitiveness of the market and the source of suppliers.
- * Green energy is the priority of this energy liberation at this stage, ahead of coal and gas.

Energy Liberalization-First Step



Key Amendments of the Electricity Act

- * Electricity Power Industry is divided into three:
 - * **Electricity Generating Enterprise:** A **non-public utility** that operates major power generation equipment and engages in the generating and selling of electricity, including the renewable-energy-based electricity generating enterprise.
 - * **Electricity Transmission and Distribution Enterprise:** a **public utility** that installs the power grids all over the country to wheel the electric power.
 - * **Electricity Retailing Enterprise:** a **public utility** that purchases electricity for the purpose of reselling it to the users, or a **non-public utility** that purchases **electricity generated from renewable energy** for the purpose of reselling it to the users.

Key Amendments of the Electricity Act

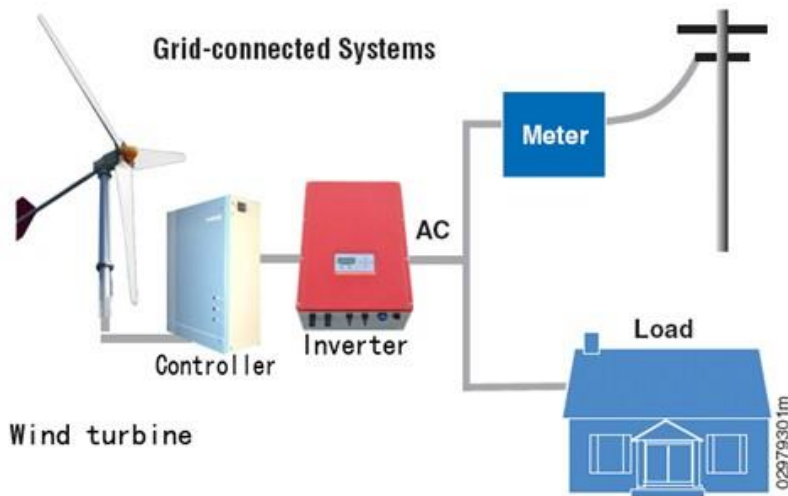
- * **Grid is the public good. Separate generation sector from the others**
- * A single, state-owned enterprise will provide the electricity transmission and distribution across the whole country (“Enterprise”).
 - * The Enterprise may **not** engage in the generation or retailing of electricity, but may engage in the electricity retailing if approved by the electricity industry regulatory authority. The **cross holdings** of shares of the generation and retailing is also **prohibited**.
 - * This provision will be in effect in six years with options to extend the effective date to the longest of nine years.
 - * Priority to the grid connections is given to **the renewable energy** on the condition that the power systems remain safe and stable.
 - * The Enterprise may set up an open, transparent **electricity trading platform**.

Key Amendments of the Electricity Act

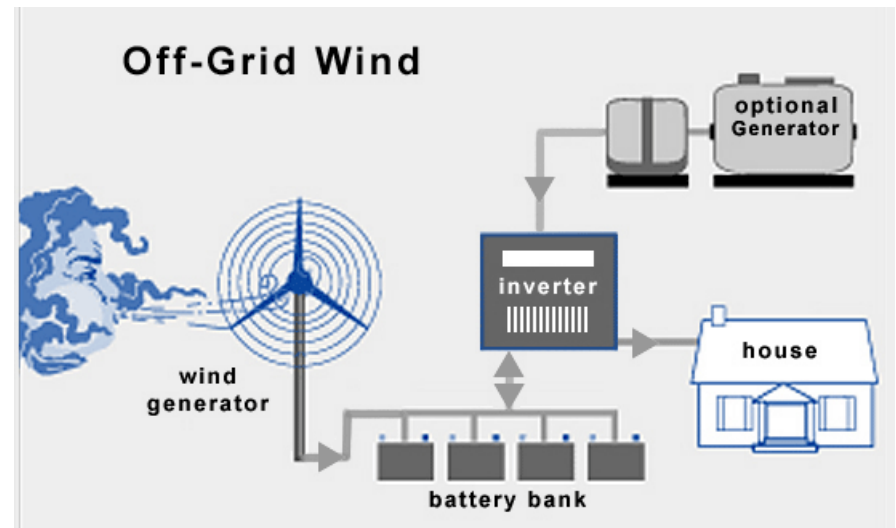
- * Renewable-Energy-Based Electricity Generating Enterprise could provide the retailing service.
 - * The electricity generated may only be sold to state-owned electricity retailing or to the Enterprise as the auxiliary service. The restriction **does not apply** to renewable-energy-based electricity generating enterprise
 - * Renewable-energy-based electricity generating enterprise with powerlines connecting to the power grids may supply the electric power to users **via the power grids**
 - * Renewable-energy-based electricity generating enterprise that have obtained approval from the electricity industry regulatory authority may install powerlines connecting directly to the users, to whom they **directly supply electric energy**

Regulation on Reviewing the Application of Off-Grid Supply of Renewable-Energy-Based Electricity Generating Enterprise

* On-Grid



* Off Grid



Advantage of Taiwan

- * Transition to Renewable Energy requires:
 - * 1) Technology: e.g. Taiwan IOT industry; Smart Grid
 - * 2) Sustainable Energy Policy and Economic Growth
 - * 3) Learning from International Experience
 - * 4) Sustainable Local Supply Chain
 - * 5) Local Infrastructure

Regulation on Reviewing the Application of Off-Grid Supply of Renewable-Energy-Based Electricity Generating Enterprise

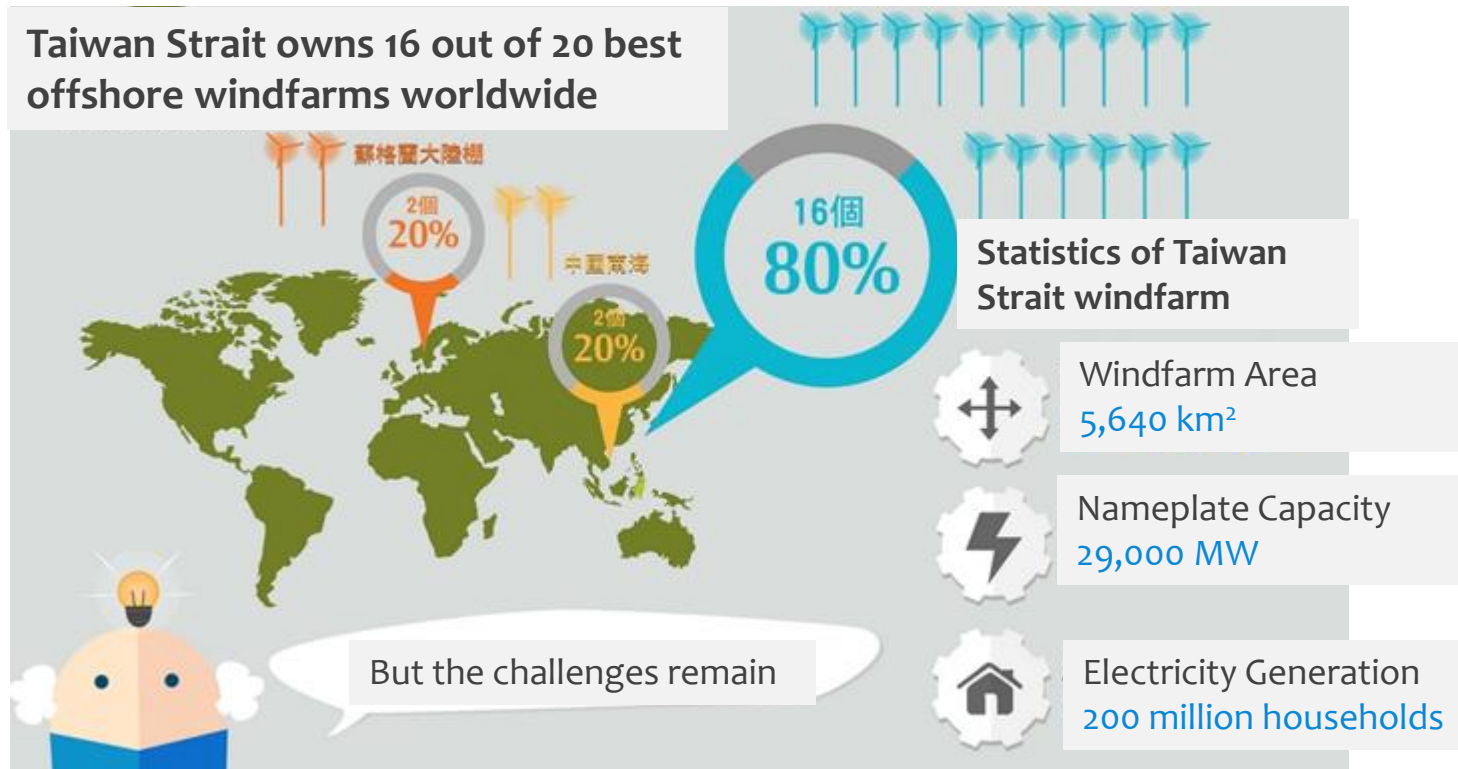
- * A single user shall not purchase electricity from two or more renewable-energy-based electricity generating enterprises for off-grid supply.
- * when supplying the electricity off-grid, the “Green Certificate” could be issued to the users altogether.

The Four-Year Plan of Wind Power

- * Target nameplate capacity for wind power
 - * 1,334 MW by 2025
 - * 4.2 GW by 2025
- * Target for offshore wind power
 - * 520MW by 2020
 - * 3 GW by 2025(600 wind turbines)

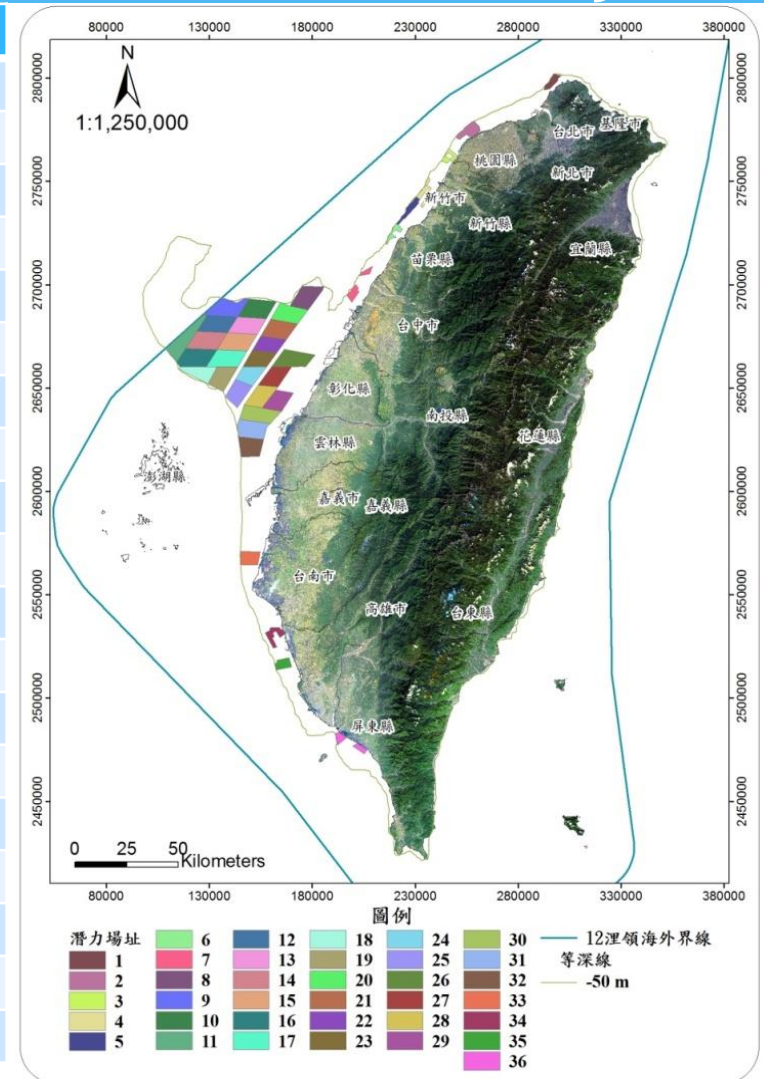
Potential of Taiwan's Offshore Wind Farm

Taiwan Strait owns 16 out of 20 best offshore windfarms worldwide

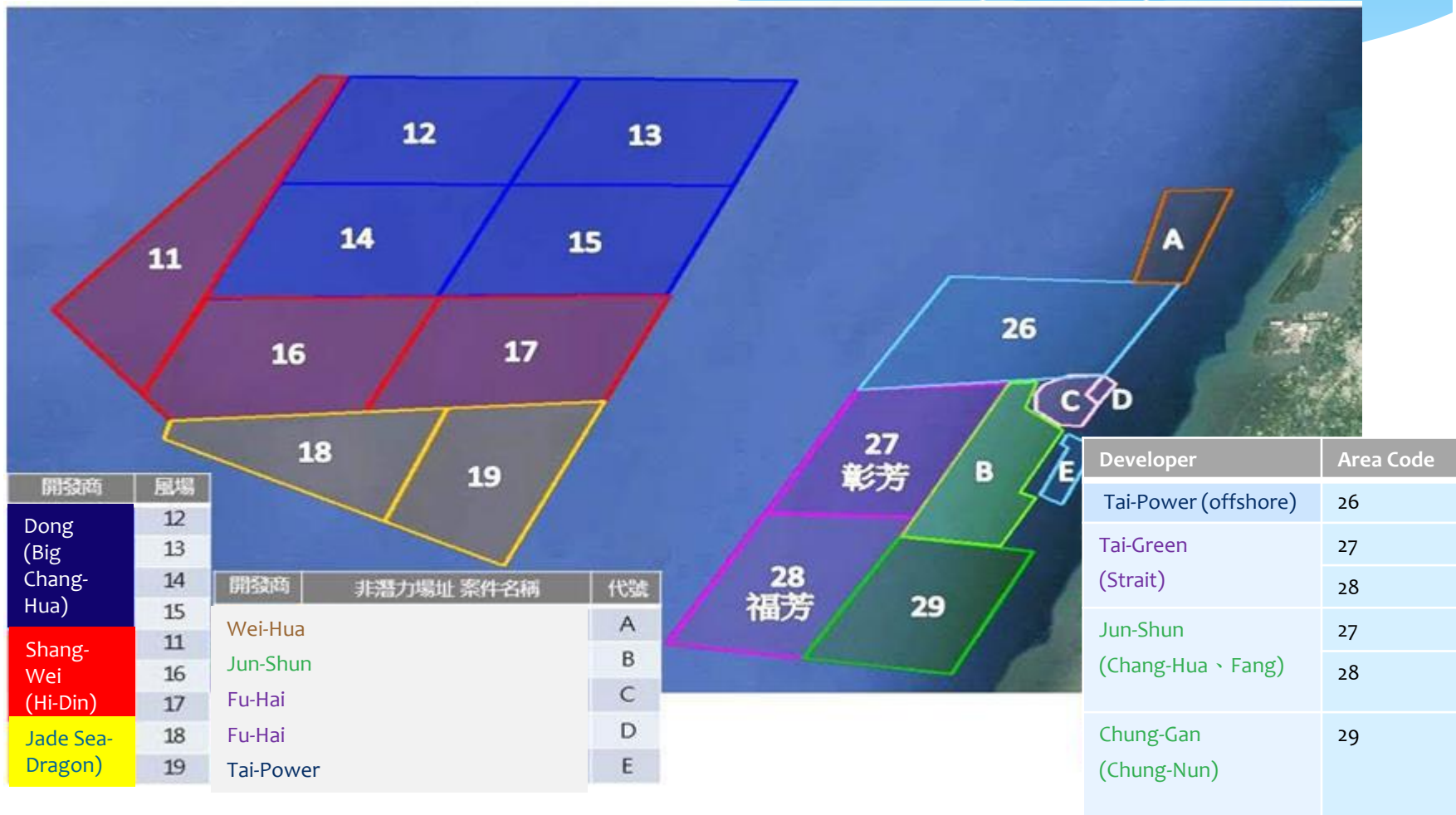


Announced Potential Areas for Development and its Availability

Area Code	Developer	Planned capacity (MW)	Status
2	Lee-Wei	251	Taken
3	Chu-Nan	151.8-159.3	Taken
4	Chu-Fan	410	Taken
5&6	Hi-Nun	555.45-736	Taken
11	Hi-Din-One	648-736	Taken
12	Big Chang-Hua West North	598	Taken
13	Big Chang-Hua East North	570	Taken
14	Big Chang-Hua West South	642.5	Taken
15	Big Chang-Hua East South	613	Taken
16	Hi-Din-Two	666-760	Taken
17	Hi-Din-Three	648-760	Taken
18	Sea Dragon three	468-512	Taken
19	Sea Dragon two	612-696	Taken
26	Tai Power	812	Taken
27	Chung Fang	475	Taken
27	Strait	500	Taken
28	Strait	500	Taken
28	Fu-Fang	500	Taken
29	Chung-Nan	450	Taken



Development Status of Chang-Hua Offshore Wind Farm



Challenge: Is Feed-in Tariff a Sufficient Incentive?

- * Feed-in tariff compared to the production cost
 - * Feed-in tariff
 - * 2015: NTD 5.7405 / KWh
 - * 2016: NTD 5.7405 / KWh
 - * 2017: NTD 6.0437 / KWh
 - * Initial production cost: NTD 6.01 / KWh

Challenge : Policy Instability

- * Planning of the sea route may reduce the availability of potential wind farm.
- * The estimated nameplate capacity is already three times higher of the target capacity.

Challenges : Other Problems

- * **Relations with local residents and interested groups:**

- * Developers have to compensate local fishers for their lost income, however, the government has not yet offered the formula for developers to follow.

- * **Financing:**

- * The lack of project finance causes funding difficult for developers.

- * **Environmental Protection Issues:**

- * Environmental impact assessment is time consuming, and the development may interfere habitats of the undersea creatures, to which the environmental groups strongly object.

The Windfarm Overlaps Dolphin's Habitats



Yellow Borders: The announced habitat of the Dolphins

Red Shade: Where the Dolphins stay most of the time

Purple Shade: Dolphin's possible habitat

Green: habitat for creatures in the wetlands

Thank You + Q&A