Bureau of Energy
Ministry of Economic Affairs






APEC

EGNRET 55 & EGEEC 56 Joint Meeting

Energy Development in Chinese Taipei

Dr. Chung-Hsien CHEN
Director, Energy Technology Division
Bureau of Energy, Ministry of Economic Affairs

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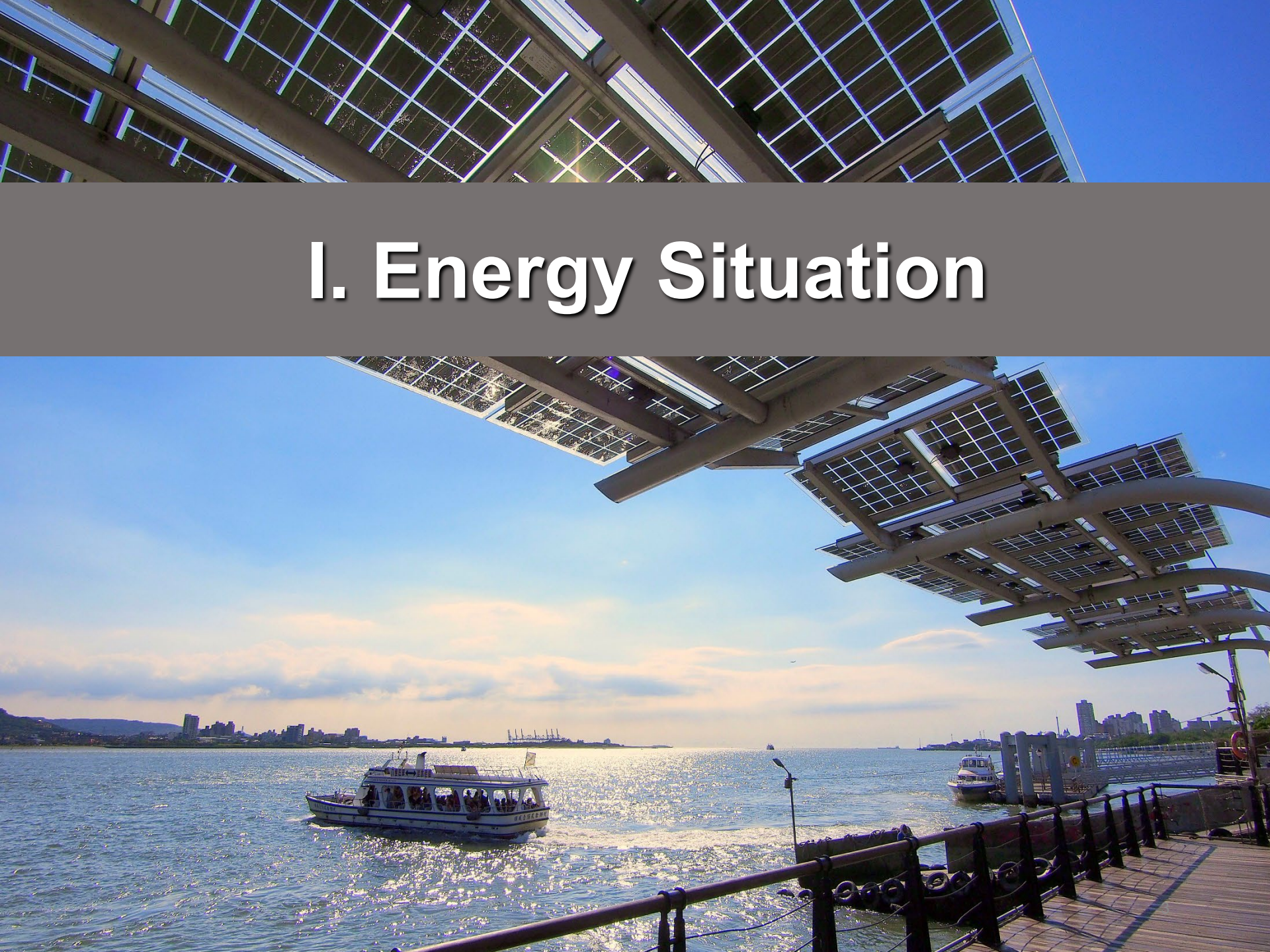


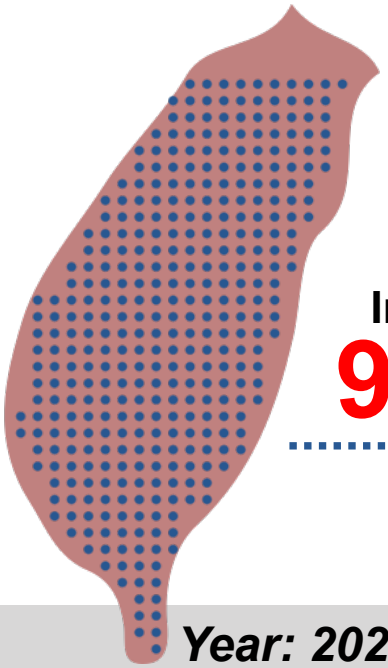
I. Energy Situation

Energy Supply

As nearly 98% of Chinese Taipei's energy depends on imports and isolated power systems, it is important to improve energy self-sufficiency.

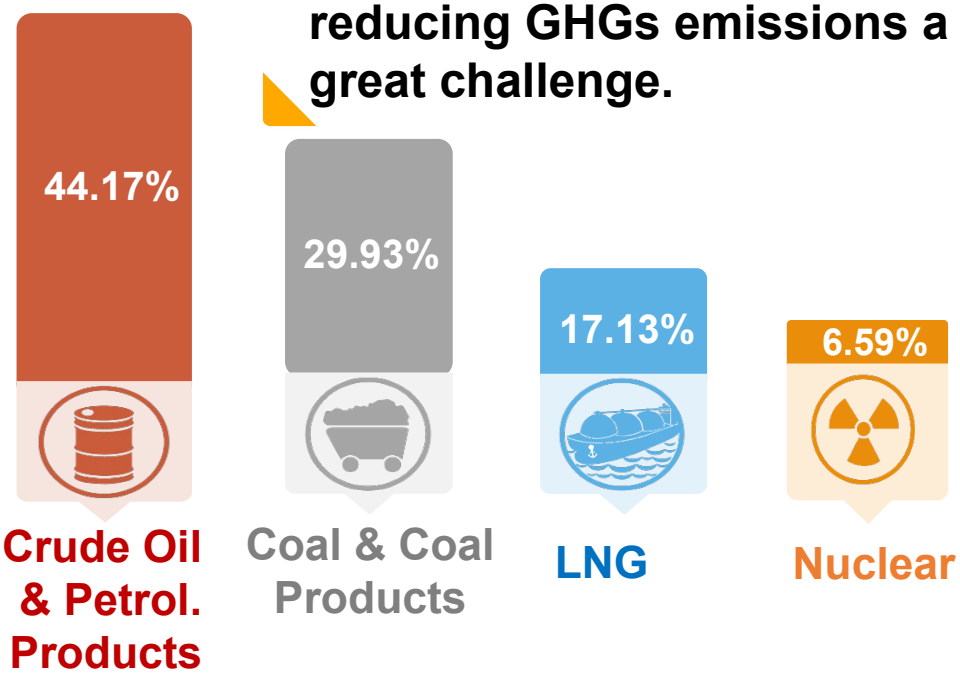
Indigenous
2.2%

Renewables
Solar 0.4%
Wind 0.2%
Hydro 0.3%
Biomass 1.2%



Imported
97.8%

90% of the energy imports are fossil fuels, which makes reducing GHGs emissions a great challenge.

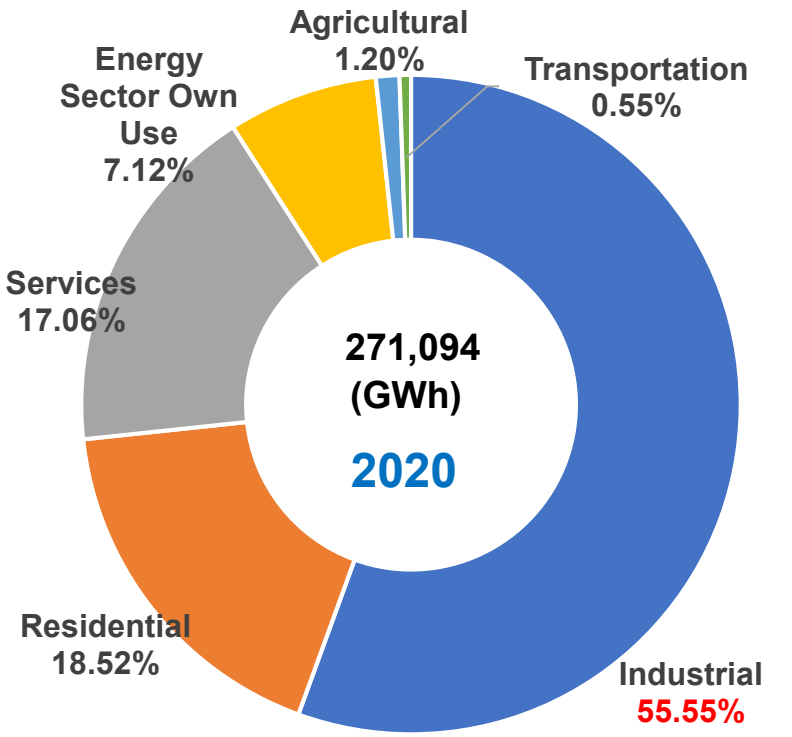


Year: 2020

Energy Consumption

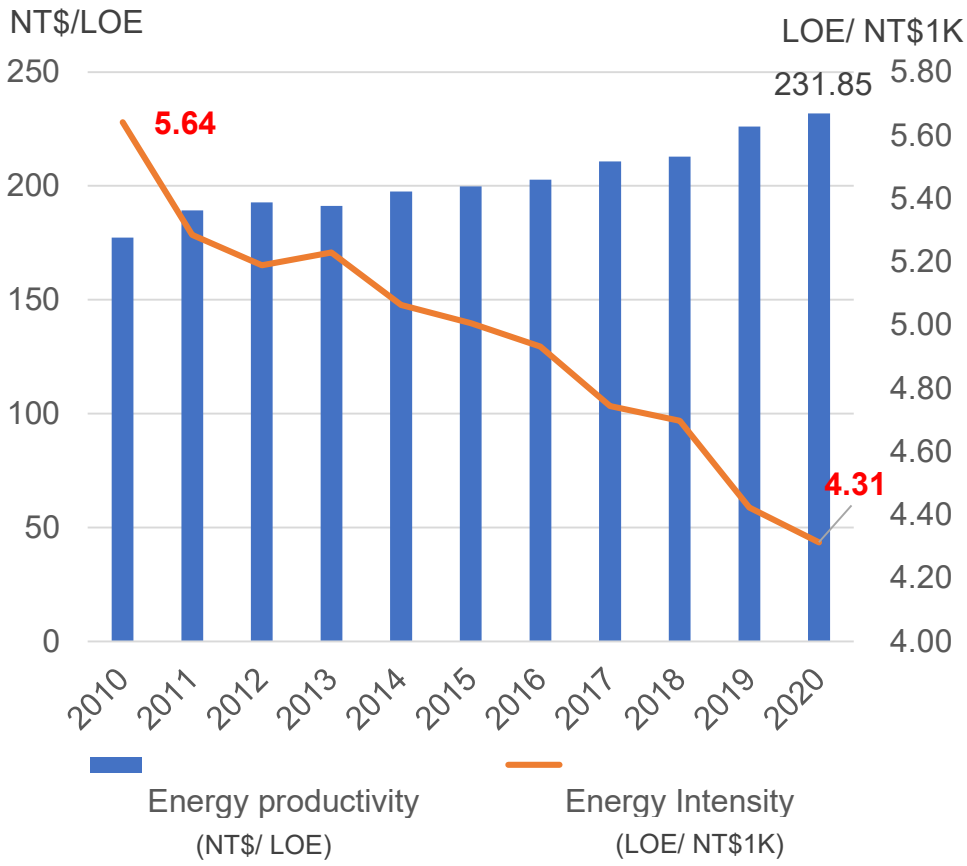
Industrial sector accounts for the largest share of electricity consumption at 55.55% in 2020.

Electricity Consumption (By Sector)



The energy intensity has reduced 24% from the last ten years.

Energy Productivity and Energy Intensity



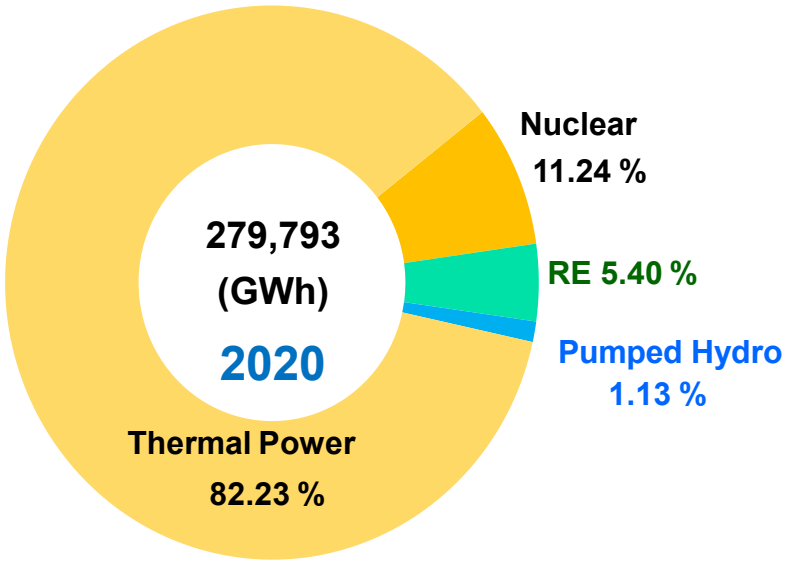
Source: Energy Statistics Handbook 2020

Energy Structure and Power Company

- Thermal power accounts for the largest share (82.23%) of electricity generation.
- The energy market is partially liberalized with 9 independent power producers up to date.

Structure of Electricity Generation

(By Fuel)



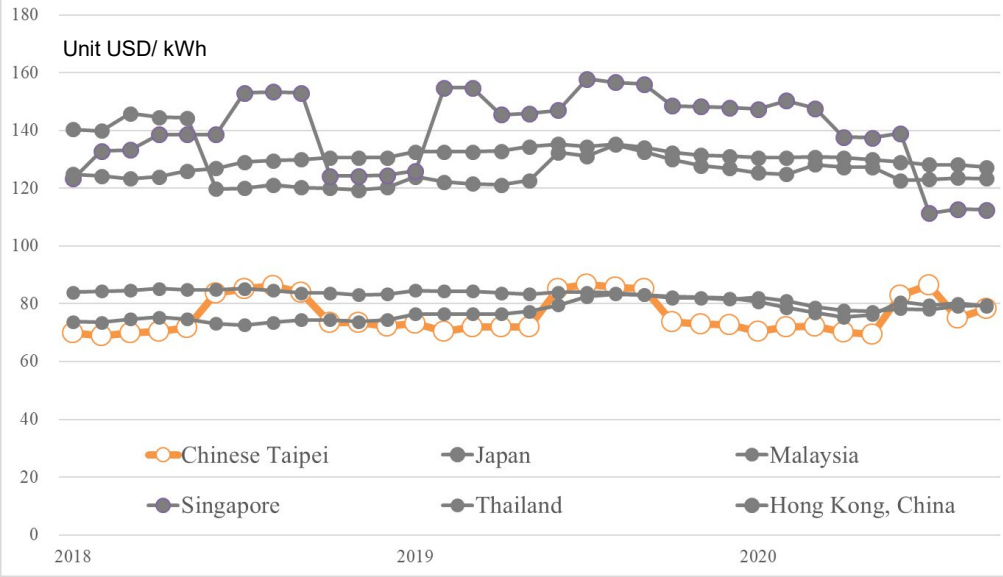
Nine Independent Power Plants in Chinese Taipei

Source: Energy Statistics Handbook 2020

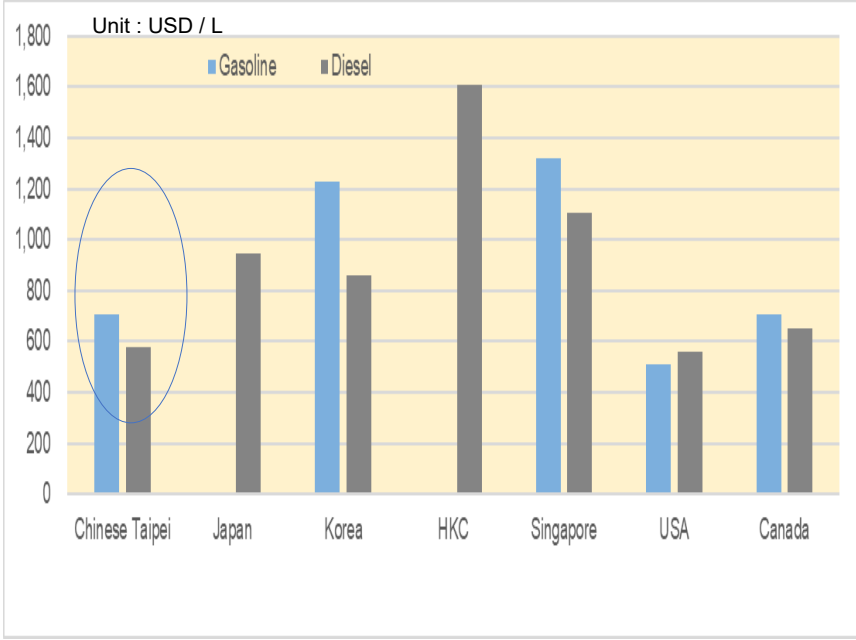
Energy Price

Electricity rates and retail gasoline and diesel prices in Chinese Taipei are relative lower compare with prices in APEC economies.

Residential Electricity Rates



Retail Gasoline and Diesel Price



Source: Taipower Company, Bureau of Energy.

II. Energy Transition

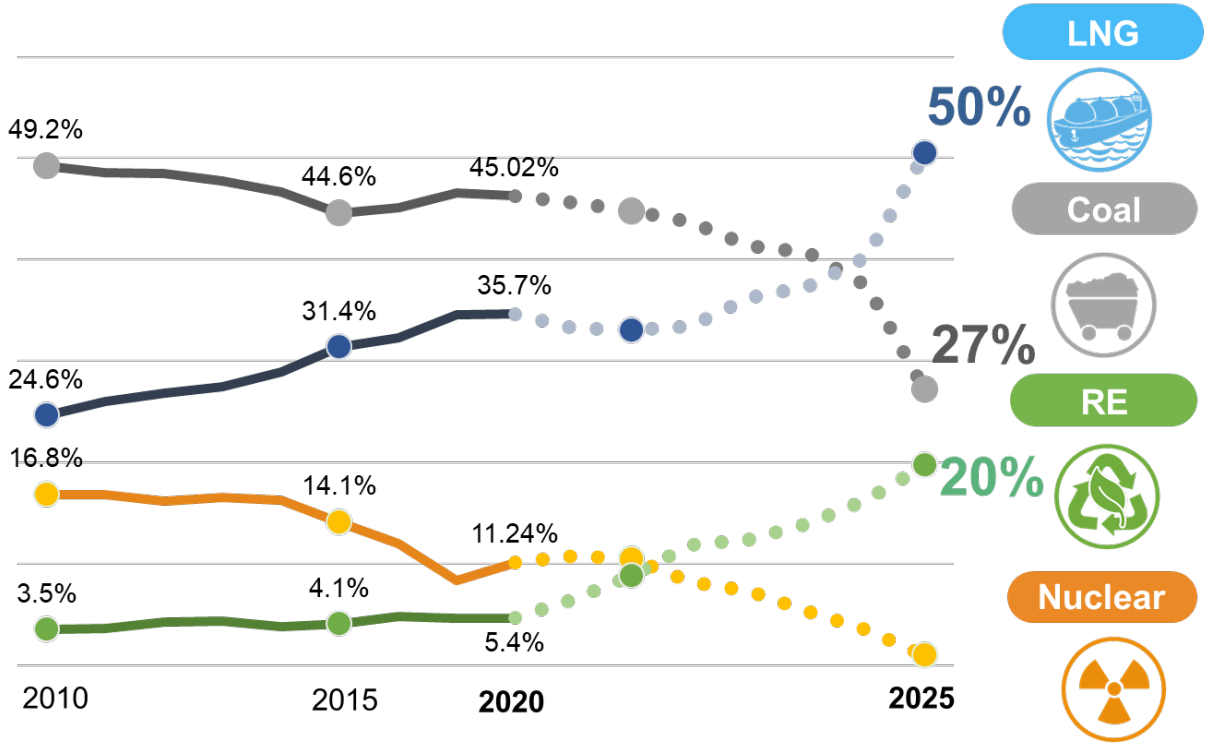
Energy Transition Objectives

The government announcement to promote energy transition in May 2016.

Renewable Energy & Energy Saving : main pillars of the energy transition.

Energy Transition Pathway

There are clear targets and pathways for the energy transition in Chinese Taipei.



Increase Natural Gas

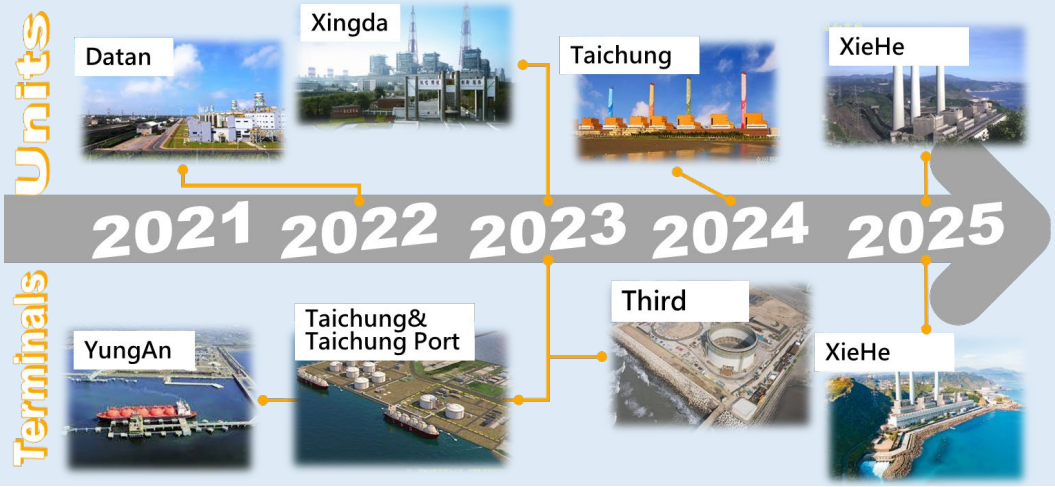
Reduce Coal-fired

Promote Green Energy

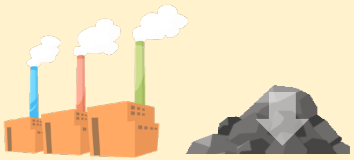
Achieve Nuclear-free

Increase Natural Gas/Reduce Coal-fired

- Add new low-carbon gas-fired units, about 12 GW by 2025.
- New/expanded LNG: 5 terminals total 26.2 Mt supply by 2025.



No new coal-fired power plants will be built before 2025 and will be replaced by gas-fired units after they are decommissioned.



46%
2019

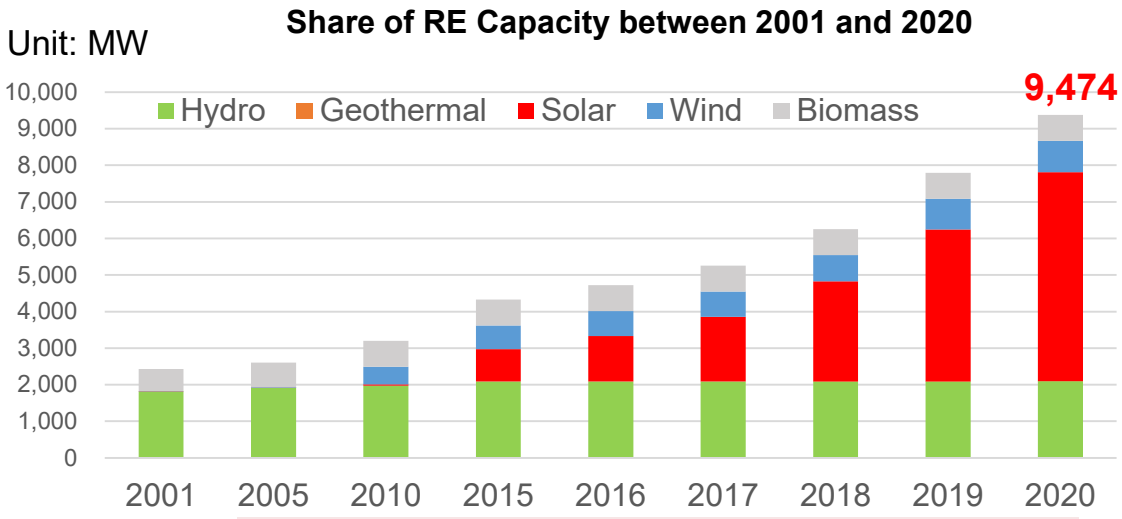
27%
2025

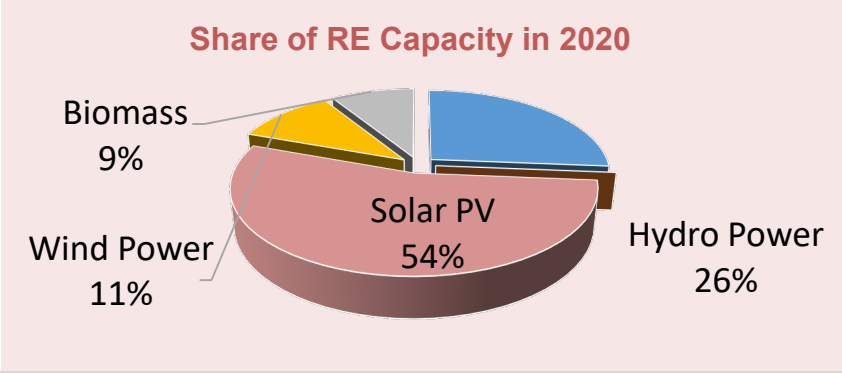
high-efficiency ultra-supercritical power plants

III. Renewable Energy Development

Renewable Energy Development

- The total installed capacity of renewable energy was 9,474 MW by the end of 2020.
- Renewable energy is the fastest-growing energy source in Chinese Taipei.
- The government has set the target of 20% renewable energy generation by 2025.





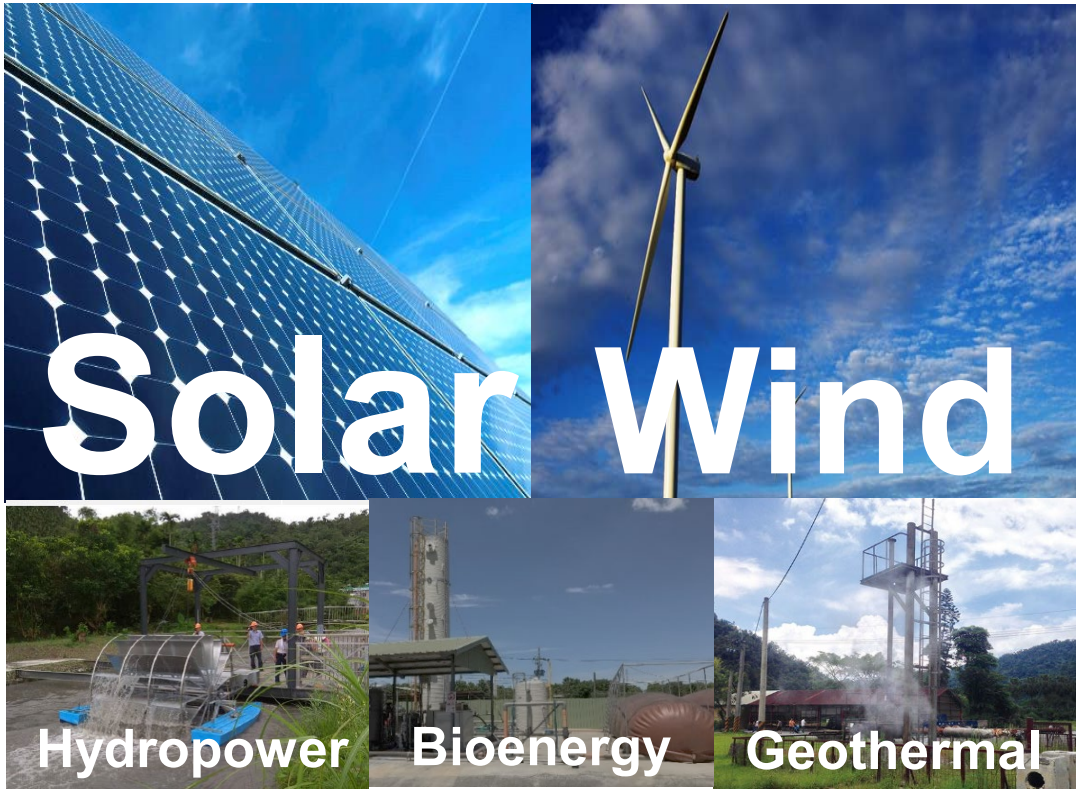
Renewable Energy Targets

Power Capacity (MW)		2025(f)
Solar PV		20,000
Wind	onshore	1,200
	offshore	5,738
Geothermal		200
Biomass		813
Hydro Power		2,150
Fuel Cell		60
Total		30,161

Source: Bureau of Energy (2021)

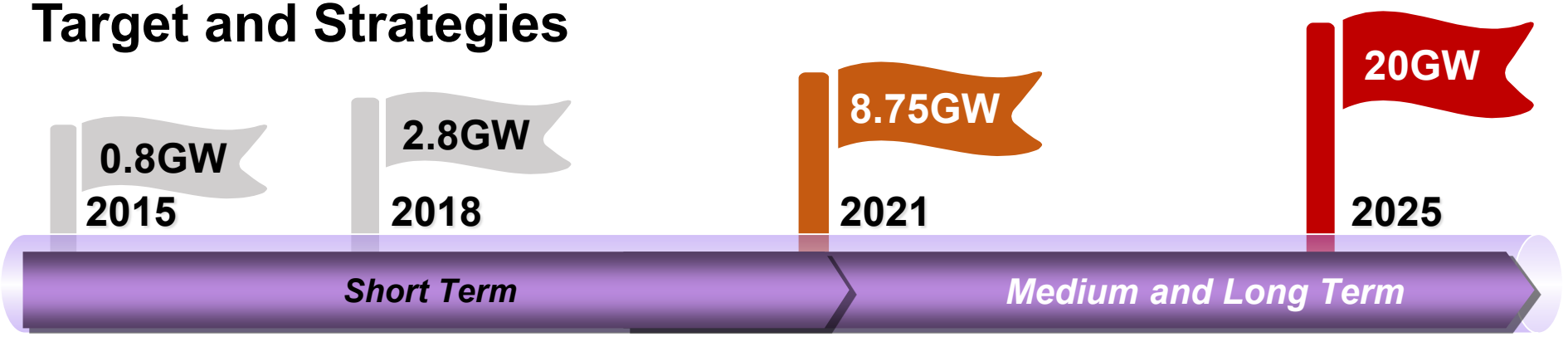
Targets for RE Development

- The government mainly focuses on the development of solar and wind Energy as the RE target aims at developing 20 GW of solar energy and 5.7 GW of offshore wind energy.
- Other renewables, such as waste-to-energy, geothermal and small hydropower are also been actively promoted.



Renewable Energy: Solar PV

Target and Strategies




Tainan County Salt Industry Land


Chiayi County Salt Industry Land


Agongdian Reservoir


GFun Industrial Corp.

8 GW + **12 GW**

Rooftop

- Factories' roofs
- Government
- Public roofs
- Agricultural facilities
- The others

Ground-mounted

- Optimize land use
- Encourage hybrid projects

Renewable Energy: Offshore Wind

Target: 5.7 GW by 2025

Phase 1

Demonstration Incentive Program

- **Incentives for Pioneers**
- Subsidy for 2 Wind Farms by 2020 (238 MW)

Phase 2

Zone Application for Planning

- **Transition Period**
- 36 Zones of Potential (totally 5.5 GW allocated)

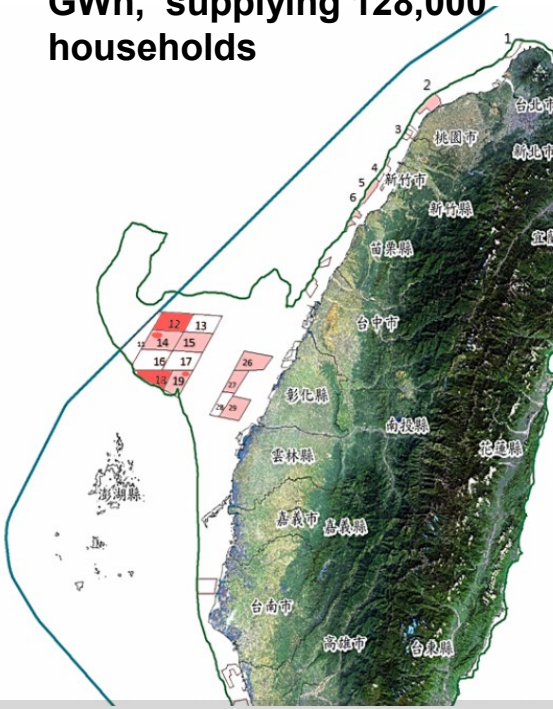
Phase 3

Zonal Development

- **Self-sustaining Industry**
- Optimal Resource Utilization

Formosa Demonstration Wind Farm

- **Total capacity 128 MW**
- **First commercial-scale offshore wind project**
- **Construction initiated on 18th May 2018 (on-grid in 2019)**
- **Annual production 480 GWh, supplying 128,000 households**



Renewable Energy: Offshore Wind

DRAFT VERSION

Phase 3: Zonal Development

2026 - 2035 Total capacity 15 GW

Capability Review & Bidding Process

2026 - 2031
Release capacity: 9 GW

2032 - 2035
Release capacity: 6 GW

Stage 1 : Year-based capacity installation

Period 1	Period 2	Period 3
•Grid-connection year: 2026 -2027	•Grid-connection year: 2028-2029	•Grid-connection year: 2030-2031
•Alloc.: 3 GW	•Alloc.: 3 GW	•Alloc.: 3 GW
•Selection: Q2-Q3 2022	•Selection : Q2 2023	•Selection: Q2 2024

Qualifications of Application: EIA consent and financial criteria passed

Stage 2

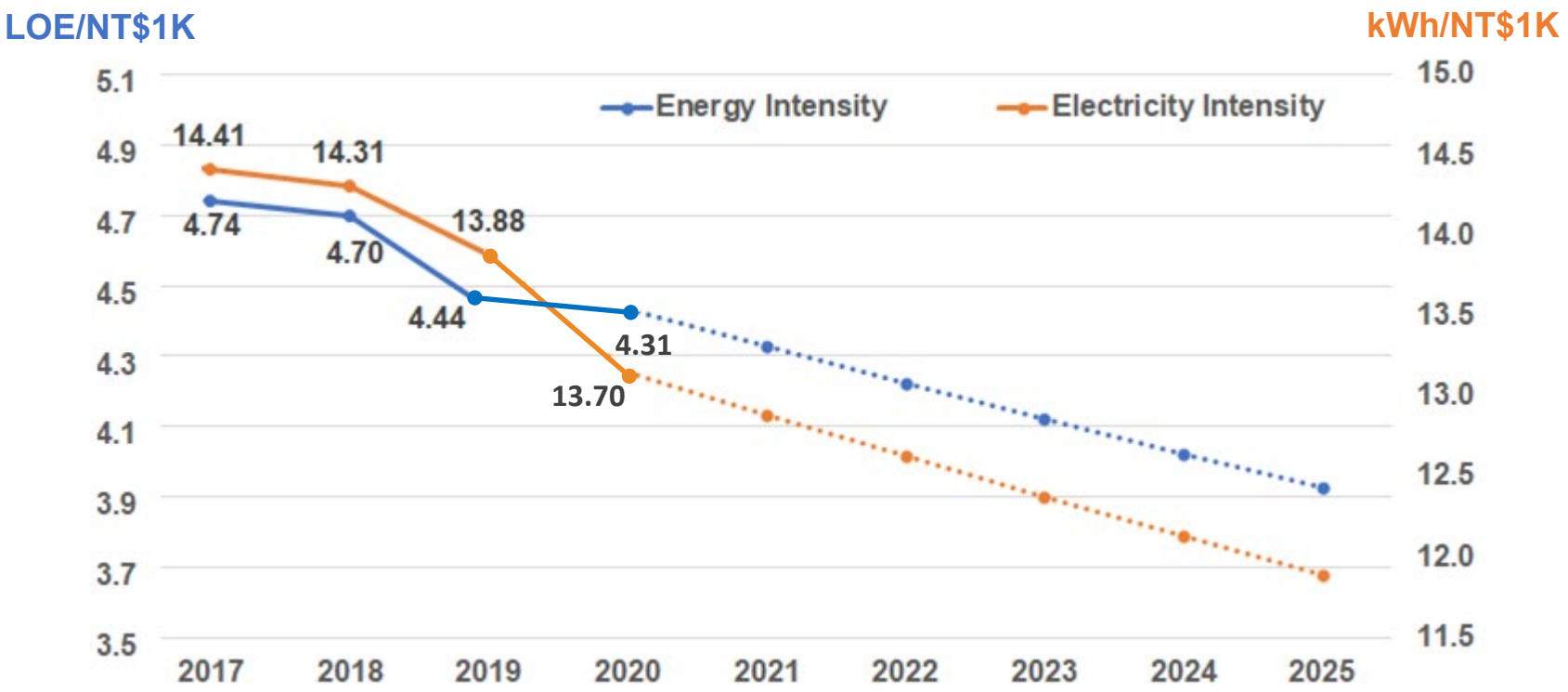
Further planning would be based on the results of stage1 and the international technology development.

IV. Energy Efficiency and Conservation

Energy Conservation Goal

Policy goals of Average Energy Intensity and Electricity Intensity improvement from 2017 to 2025:

- **Energy Intensity : -2.4% annually**
- **Electricity Intensity : -2% annually**



Enhancing Measures

- Expand the scope of incentives and assistance to energy users.
- Strengthen laws and regulations for continuous improvement.

Energy audit for energy intensive users

Joint efforts with locals govts

1% energy saving for energy intensive users

Energy saving consulting

Energy Efficiency standards

Energy saving incentive program

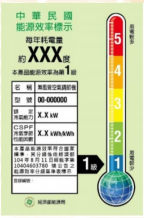
Mandatory & Voluntary Programs

- To provide guidance to consumers for the purchase and to encourage manufacturers to produce high energy efficiency products. Three principal policies have been employed in the promotion of energy efficiency management for equipment and apparatuses.
- Average Energy Intensity improvement from 2017 to 2020 is 3.0% which is better than EC goal 2.4%.

Mandatory Programs

Minimum Energy Performance Standard (MEPS)
29 products
(Promoting Date:Dec, 1981)
84.6%
of Household Electricity Consumption in Summer

EE Ranking Labeling (Mandatory)
17 products
(Promoting Date:July, 2010)
82.9%
of Household Electricity Consumption in Summer



Directed: MOEA
Administrated: ITRI
ITRI Industrial Technology Research Institute

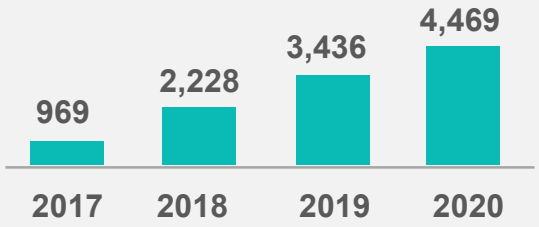
Energy Conservation Labeling (Voluntary)
51 products
(Promoting Date:Dec, 2001)
95.2%
of Household Electricity Consumption in Summer

New Power Saving Campaign Program

- **Continuous implementation of New Power Saving Campaign Program**
- **Joint efforts between the local and central governments to promote mid- and long-term energy saving plans**

Energy Saving **Carbon reduction**

Power Saving Target



Target

4,469 GWh

(From 2017 to 2020 Cumulative)

Achieved **4,611** GWh

(From 2017 to 2020 Cumulative)

Government 313 GWh

Livelihood 1,586 GWh

Industry 2,712 GWh

Government Leadership

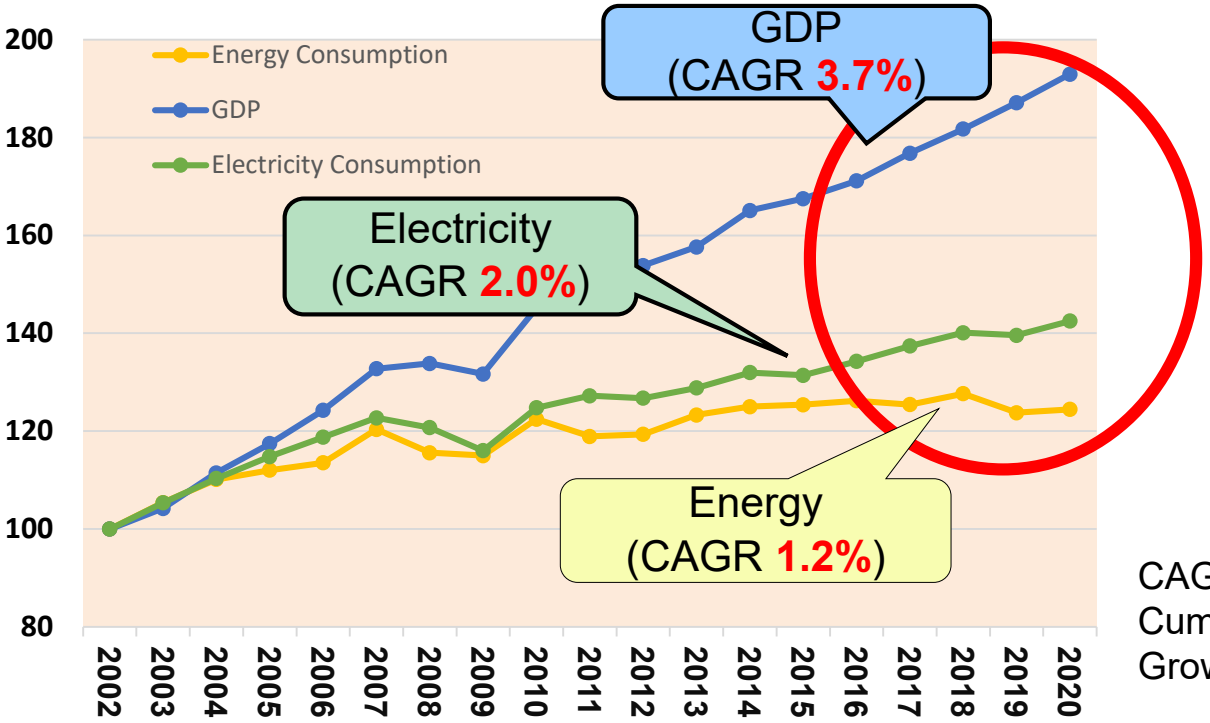
Industry Participation

Community Involvement

Building Efficiency

Achieved Performance in Energy Efficiency

- **Improved energy efficiency resulting in contained energy consumption growth**
  - Growth rates of energy and electricity consumption being substantially lower than that of GDP in recent years in Chinese Taipei
  - Data showing energy consumption and GDP moving towards decoupling



CAGR:
Cumulative Annual Growth Rate

Source: BOE (2021), Monthly Energy Statistics.

V. Conclusion

Conclusion

- Chinese Taipei is plotting a path to achieve net zero emissions by 2050, both via an ongoing energy transformation, and by developing systematic strategies to reduce emissions in different sectors.
- The government aims to increase the share of renewable energy generation to 20% by 2025 (20 GW of solar PV & 5.7 GW from of offshore wind) to achieve our energy transition target.
- We have set goals of improving energy intensity by an average of 2.4% and electricity intensity by 2% annually from 2017 to 2025.
- We look forward to enhancing cooperation with APEC member economies and move toward a net-zero energy future.

Thank You

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Ministry of Economic Affairs