Policy Pathways for AI-Driven Offshore Wind Development

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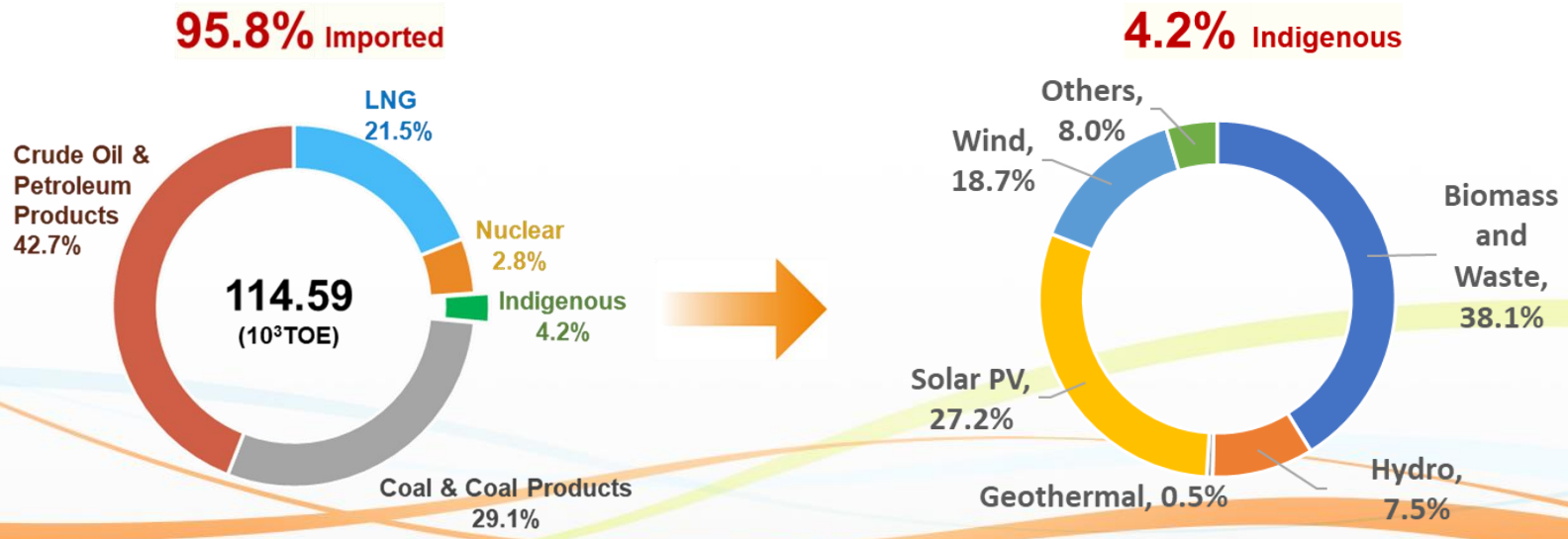
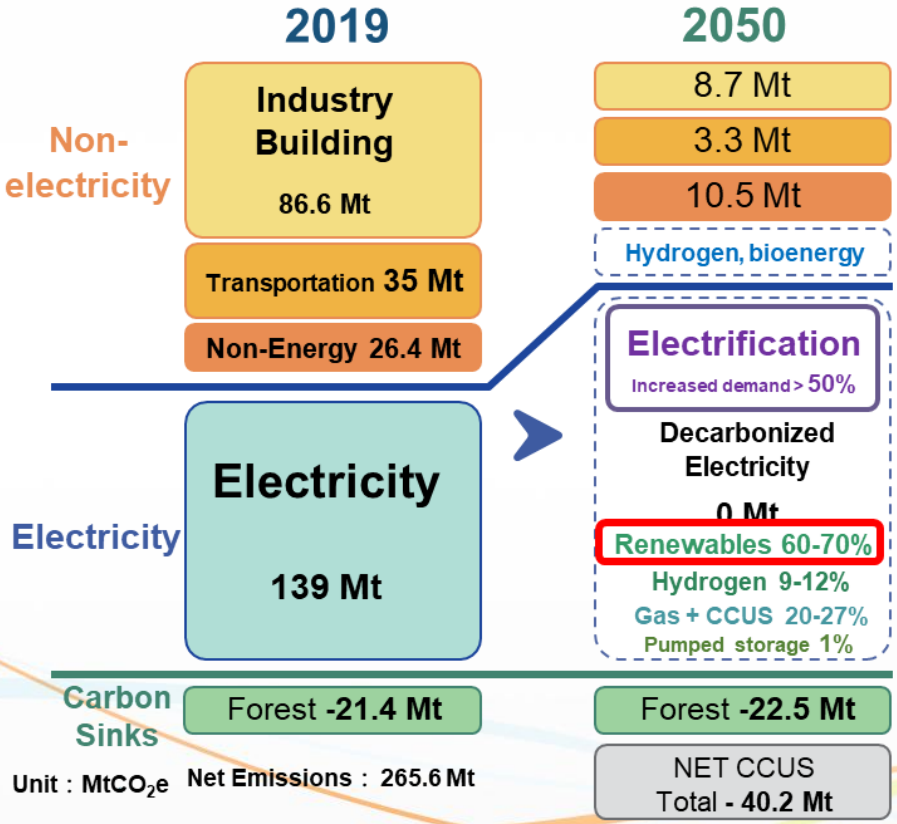
Energy Mix in Chinese Taipei

- As for the energy mix in 2024, **imported** energy accounted for **95.8%**, and **indigenous** energy only provided **4.2%**, in which half was contributed from **wind, solar, and hydropower.**

Total Energy Supply (2024)



2050 Net-Zero Emissions Policy



Hydrogen, Biomass, CCUS
(Steelmaking, chemical materials, cement industry and other process emissions)

60-70%
Renewable Electricity
Solar PV: 40-80 GW
Offshore Wind: 45-55 GW

Policy Pathway of Offshore Wind Power

Goals of Offshore Wind Power

2021	2026	2035	2050
237.2 MW	5.3 GW	18.4 GW	40~55 GW

PHASE 1 Demonstration Incentive Program (DIP)

2017: 2 Demo Turbines (8 MW) @Miaoli

2021: 2 DIP Wind Farms (237.2 MW, included 2 Demo WT)

- Formosa 1 @Miaoli (128 MW)
- Taipower 1 @Changhua (109.2 MW)

PHASE 2 Zones of Potential

2018: Completed capacity allocation

- By Selection: 3.836 GW
- By Auction: 1.664 GW

PHASE 3 Zonal Development

2026 - 2035 : (15 GW to be developed within 10 years)

- 2022: Round 1 selection for 2026-2027
- 2023: 5 wind farms have signed for the contracts
- 2024: 3 wind farms have signed for the contracts

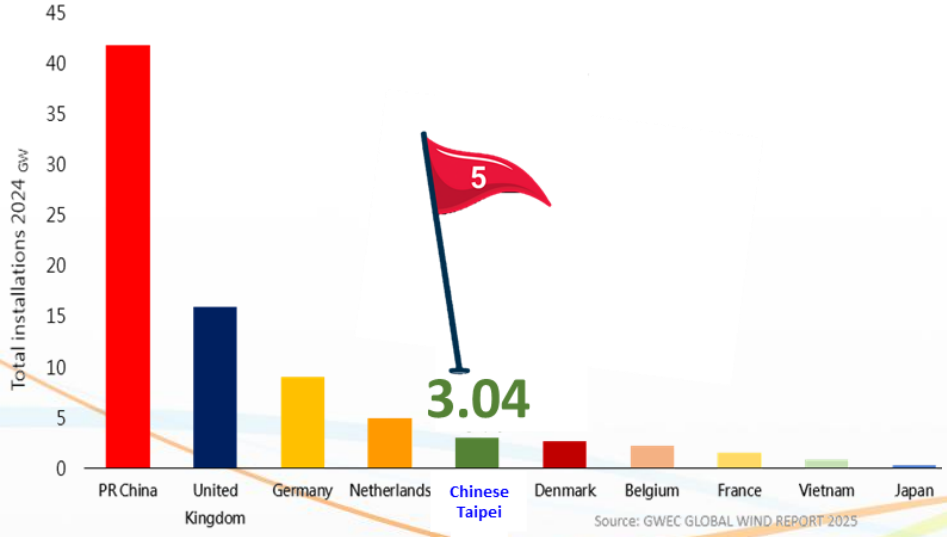
Achievements of Offshore Wind Power

- **GWEC**

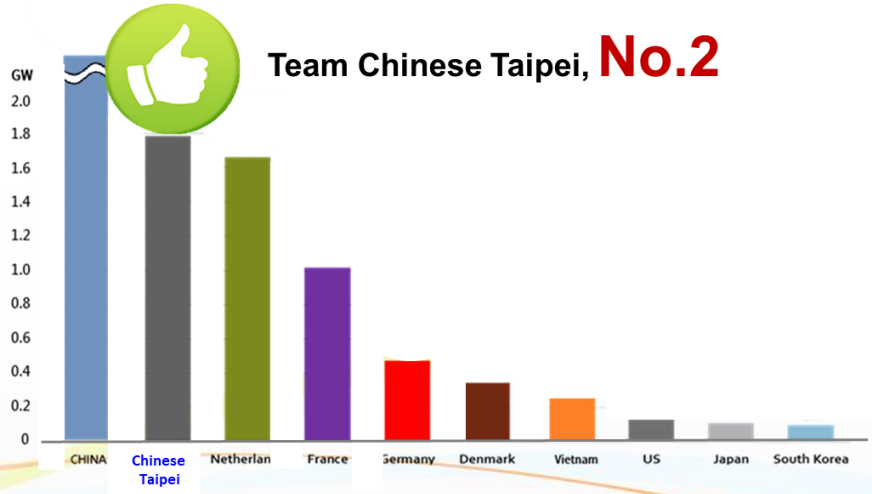
  Chinese Taipei's total offshore wind power installation capacity ranked 5th globally in 2024.

- **BloombergNEF**

  In 2024, Chinese Taipei ranked 2nd globally in terms of newly installed offshore wind capacity.



Source: GWEC (2025)



Source: BloombergNEF (2025)

AI Application in Offshore Wind Power O&M Services

- ***AI for Single Function***
- ***AI for Prediction***
- ***AI for Decision-Making***

AI for Single Function

Autonomous Device for O&M Inspection

- ✓ Drone / UAV Performing Unmanned Inspection for Offshore Wind Farms.
- ✓ Including Blades, Tower & Transition Piece.

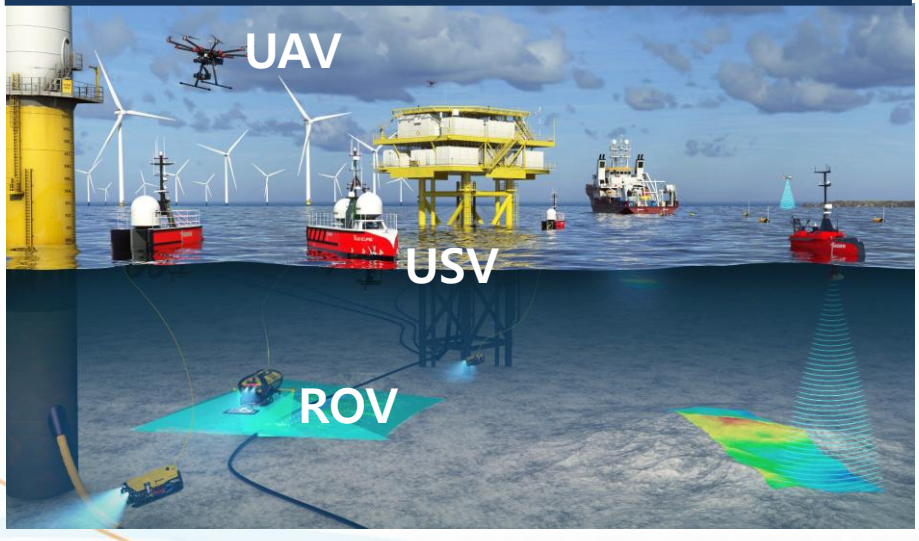
Key Benefits:

•Enhances operational safety by minimizing the need for high-altitude manual inspections.

•Use AI for defect analysis reduced defect occurr ence by six times and reduce the labor demand almost 50%.

AI for Prediction

Coordinated operation with multiple vehicles



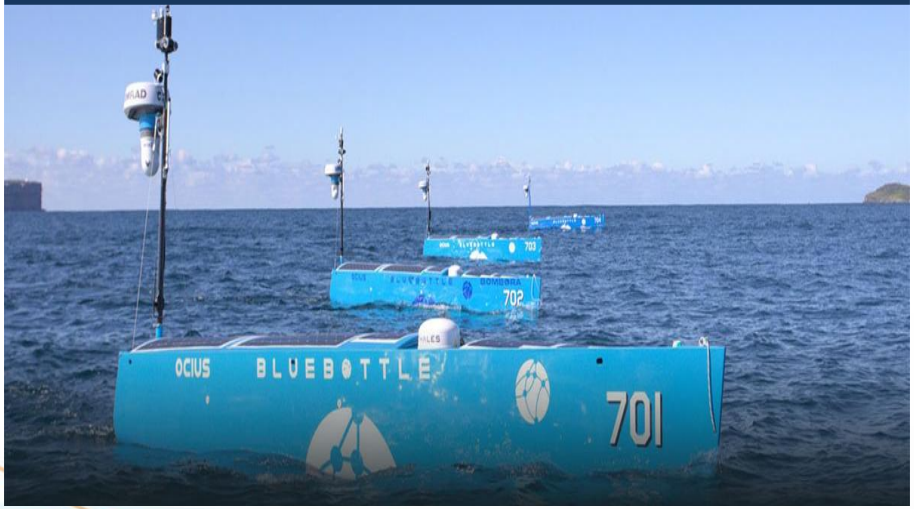
- ✓ USV + UAV Integrated Monitoring System for Offshore Wind Farms
- ✓ USV + ROV Integrated System for Autonomous Underwater Foundation Inspection in Offshore Wind Farms

Key Benefits

- Reducing workforce and vessel operations enables low-carbon offshore maintenance, reduce the O&M costs.
- Establishment of an AI-driven automated inspection database and develop the intelligent management.

AI for Decision-Making

Autonomous management system for Ocean energy



- ✓ Establish remote operation system to provide integrated data analysis for environmental monitoring, maritime safety, asset management, and marine ecology observation in offshore energy development.

Key Benefits

- AI-coordinated vehicle operations improve O&M decision-making efficiency by over 20% (based on DTU research).
- Integrating control and information systems with machine learning enhances reliability.

Conclusion

1. Offshore wind power plays a key role in driving Chinese Taipei’s 2050 net-zero transition.

2. Chinese Taipei builds a resilient, smart wind ecosystem through policy and innovation.

3. AI transforms offshore O&M into smart, automated, and data-driven management.

Thank You!

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