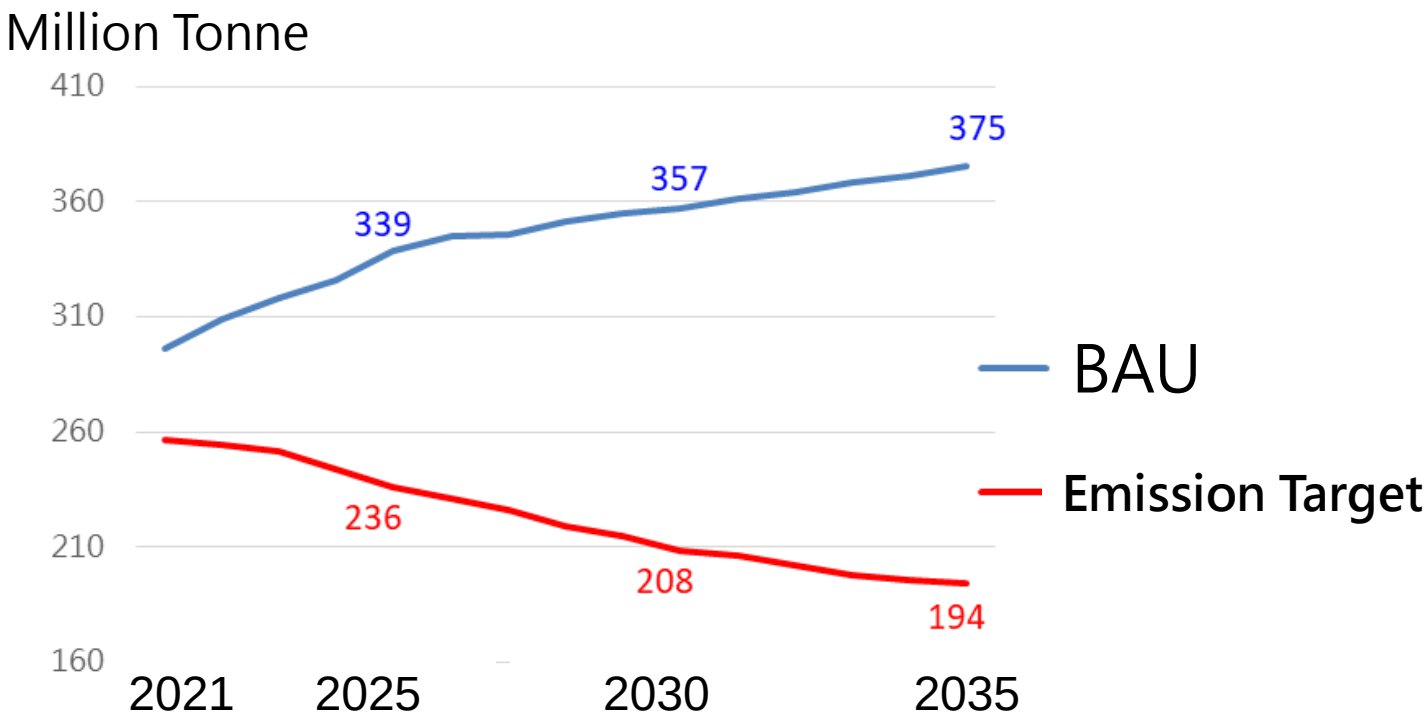
How to Achieve Taiwan's NDC Target and What are the Economic Impacts

September 30, 2021

The Emission Target in Taiwan

Background

- Emission target in 2035: From BAU of 375 to 194 million tonnes
- Multiple policies are required to achieve the target
- Taiwan will review its emission target every 5 year



Contributions and Policy Use

Contributions

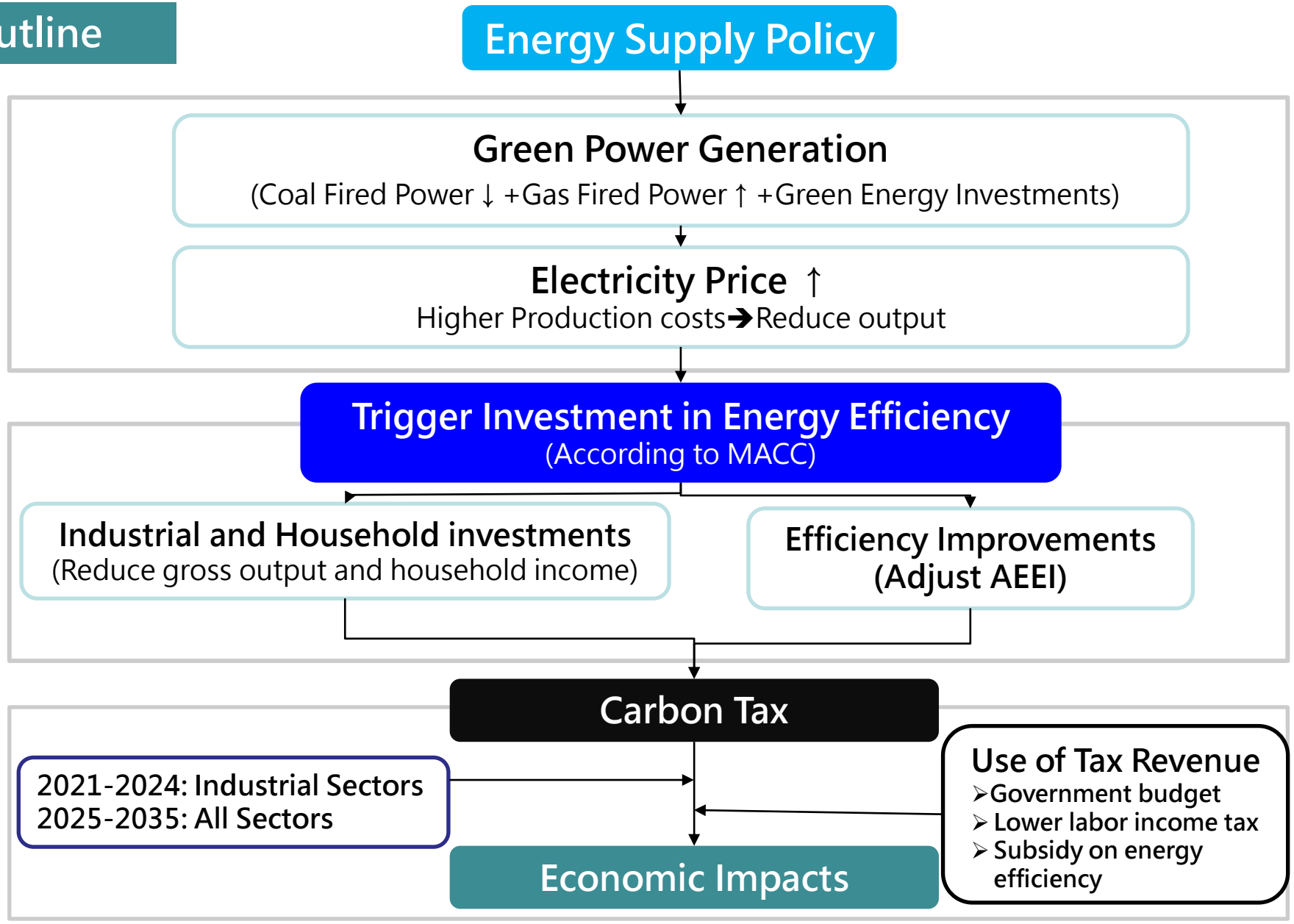
- **Identify economic effects of multiple policies/scenarios**
  - ✓ **Positive Effects: Renewable investment, natural gas investments and energy efficiency improvements**
  - ✓ **Negative Effects: higher electricity price and carbon tax**

Future Policy Use

- The analysis might be used for the **negotiation between Ministry of Economic Affairs** (economic development) and **Environmental Protection Agency** (environmental regulation) **in Taiwan**

Policy Action and Scenarios

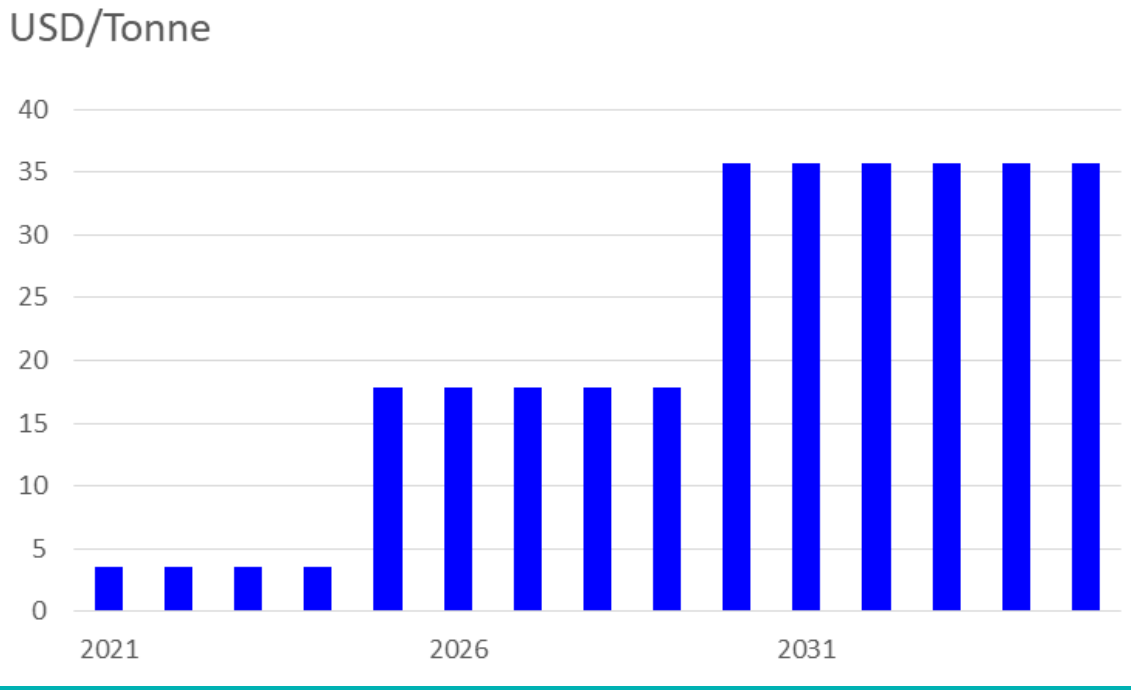
1.Outline



Policy Action and Scenarios

2.Carbon Tax Design

- Carbon tax rate increases in 5-year interval
  - Taiwan will review its emission reduction achievement every 5 year.
- **We set up an ad-hoc tax rate, increasing it up to 35 USD/tonne in 2035**
  - Environmental Protection Administration (EPA) in Taiwan proposed 3 USD/tonne (similar to the case in Singapore)
  - The punishment for those which fail to obey the abatement requirement will be fined up to 50 USD/tonne



Proposal for Global Environmental Research

1. The results have not been confirmed by the Ministry of Economic Affairs

- A full analysis with multiple scenarios might not be submitted to a journal until our sponsor has published the results

2. Study the effect of Carbon Tax only, and how to use the tax revenue well

- **We propose the analysis how to achieve the target using the carbon tax only and consider the use of carbon tax revenue for**
  - ✓ **Government budget**
  - ✓ **Lower labor income tax**
  - ✓ **Subsidy on the industries according to emission reduction**

Request to AIM/CGE

The future investigation on net-zero emission of Taiwan in 2050

- The Taiwan TIMES team has investigated the **supply side technology** to achieve net-zero emission in 2050
- **CCS** and **low carbon technology** is the key to achieve

Need to extend the CGE model such that it could consider net-zero pathway

- A extension of CGE to use **advance technology** is necessary for the future
  - ✓ Without consider a carbon reduction technology, the carbon price will be unreasonably high and the CGE is not possible to achieve a net-zero emission
- The experience of AIM/CGE is useful for the future extension
  - ✓ Discussions, instructions, lecture notes, or research reports are useful for the development of CGE for Taiwan

Thank You for Your Attentions

Appendix

- Target for more renewables and less coal fired power plants
  - Electricity Carbon Emission Factor↓➔big effects on carbon reduction
- Electricity Price ↑+Energy Efficiency Improvements➔Furthe reduce the emissions
- Still need the carbon tax to reach the target