

Thailand's Economy-wide Implications of Delaying Carbon Emissions Peak to 2030: Analysis of New NDC

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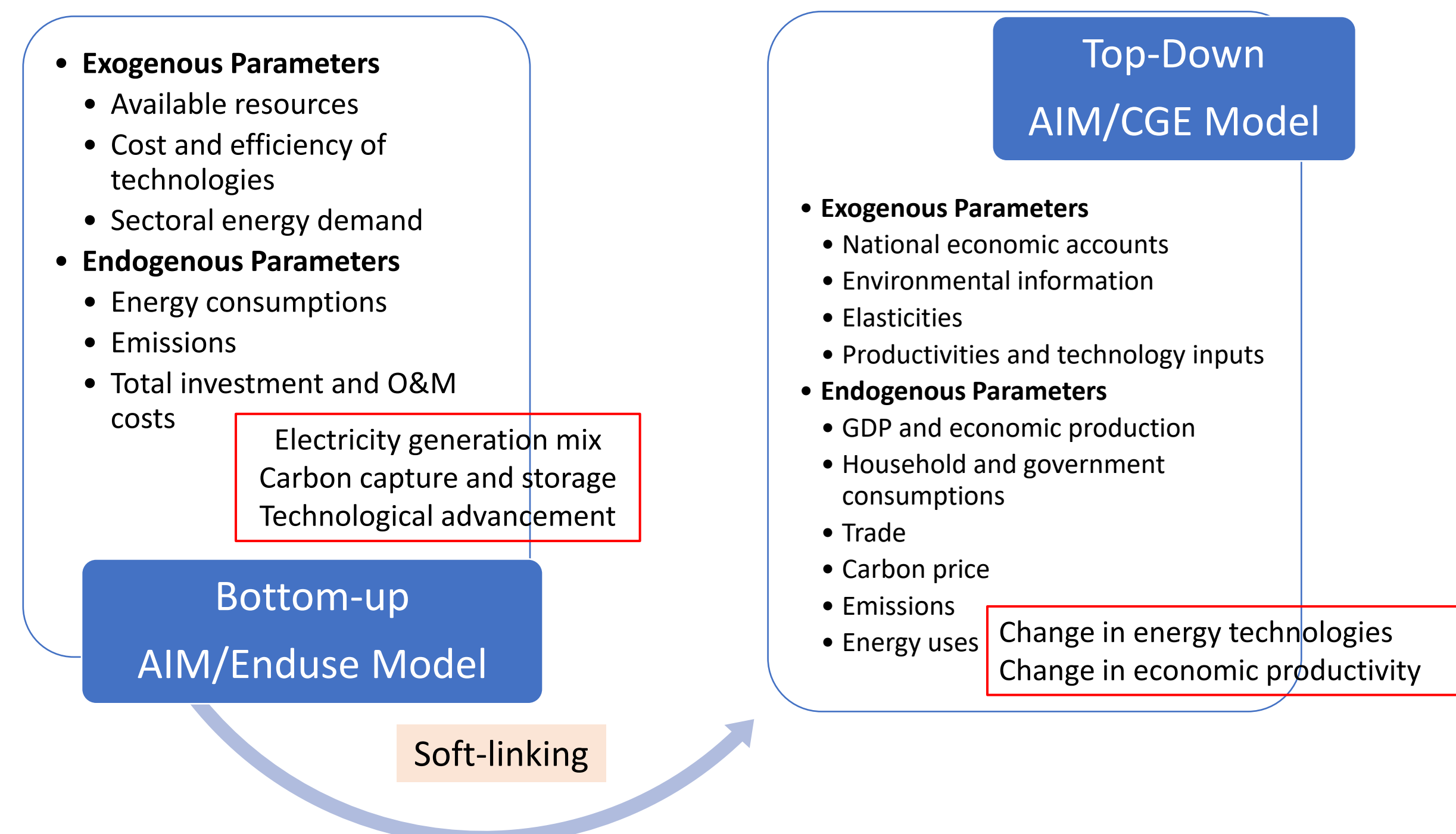
INTRODUCTION

- Delaying the peak in carbon emissions poses a substantial risk to meeting national climate commitments.
- Few studies have thoroughly explored the macroeconomic implications of delaying emission reduction efforts.
- Though achieving carbon emissions peak before 2030 is imperative for Thailand, but at the same time very challenging to achieve it.

Objective: Explore the macroeconomic impacts of delaying carbon emissions peak from the current 2025 to 2030 while striving to meet Thailand's new Nationally Determined Contribution (NDC) targets.

METHODOLOGY

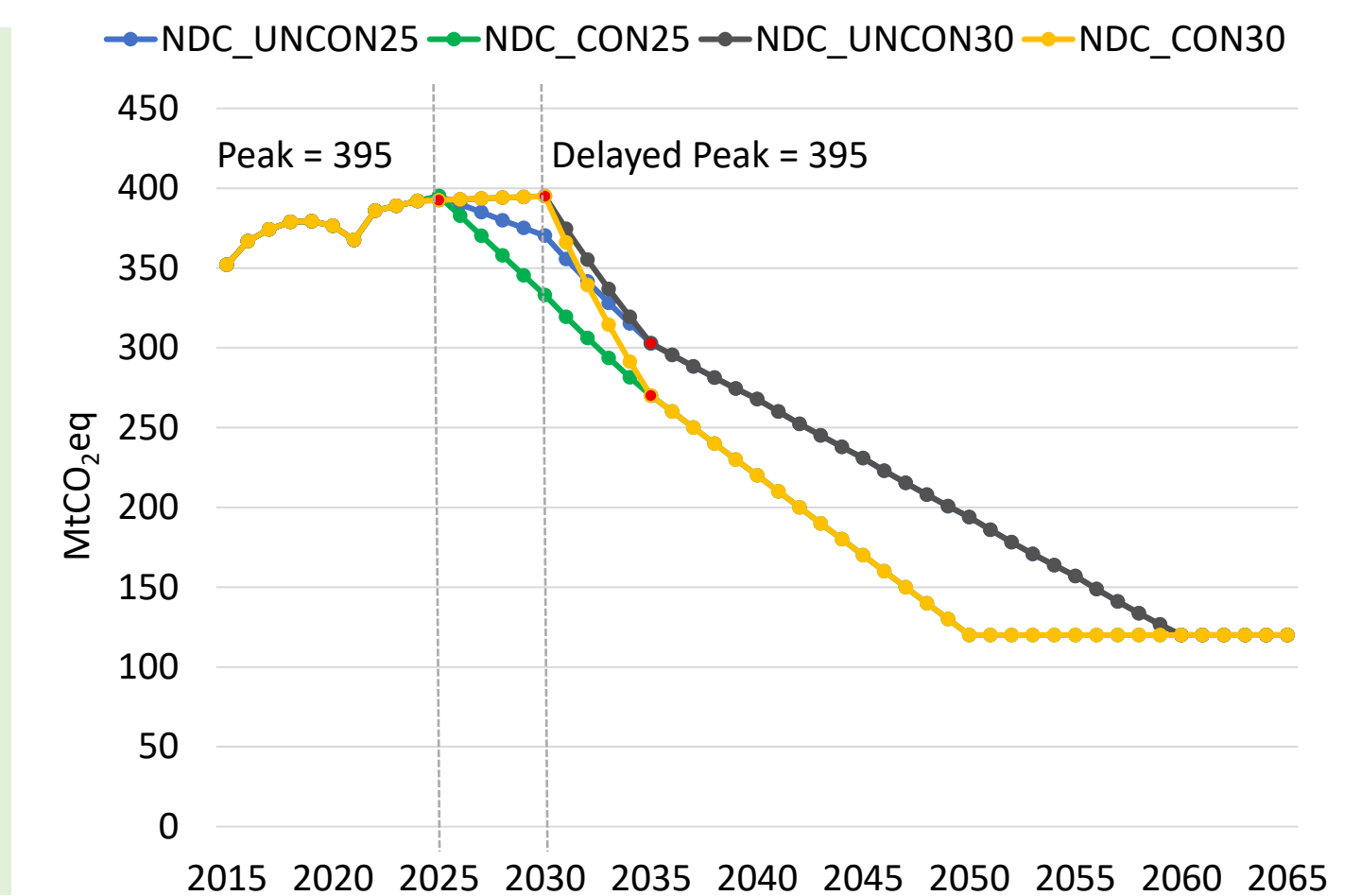
- A recursive dynamic Asia-Pacific Integrated Model/Computable General Equilibrium (AIM/CGE) model specific to Thailand has been developed.
- The study considers a 2015 input-output (I/O) table to calibrate the model.
- The sectors are aggregated into 32 production sectors, of which five are energy sectors. The electricity sector within the I/O table is disaggregated into eight power generation subsectors, namely coal, natural gas, oil, biomass, hydro, solar, wind and other renewables.
- A soft-linkage has been established between the AIM/Enduse and AIM/CGE models to provide better technological representation.



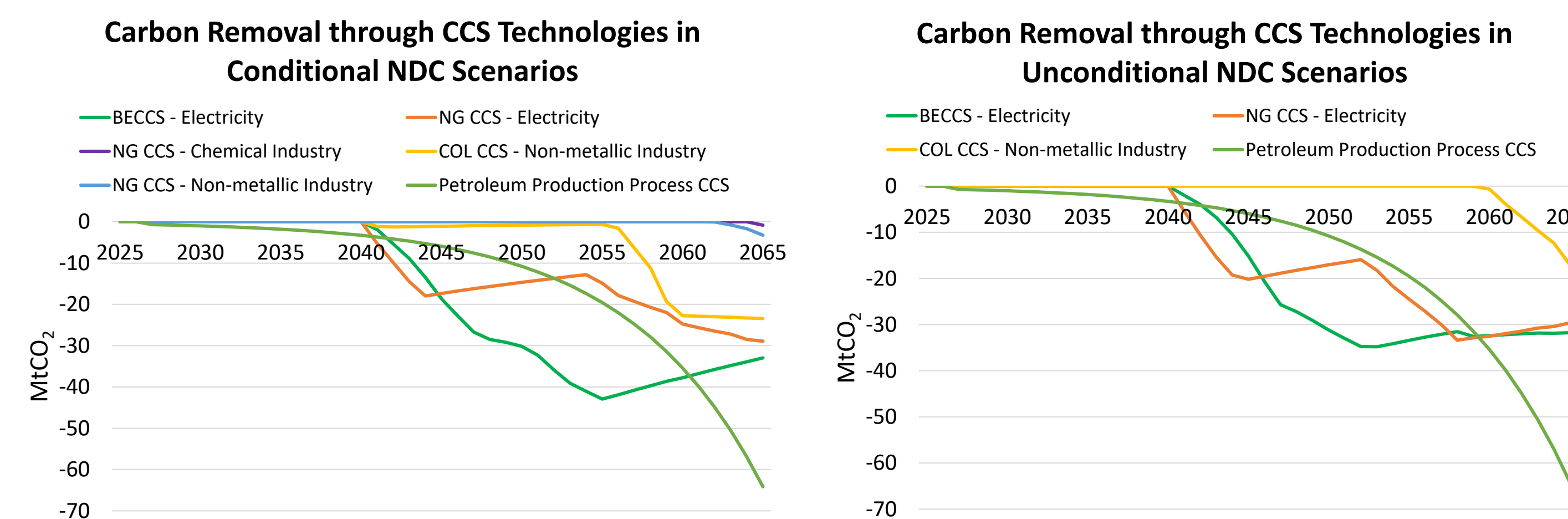
RESULTS AND DISCUSSION

GHG Emission Trajectories

- GHG emissions would reach 303 MtCO₂eq by 2035 under the unconditional NDC scenario, while under the conditional NDC scenario, emissions are expected to be lower at 270 MtCO₂eq in the same year.
- The carbon emissions peak at 395 MtCO₂eq in 2025, but this peak is assumed to be delayed to 2030 in both the NDC_UNCON30 and NDC_CON30 scenarios.
- A carbon sequestration potential of 120 MtCO₂ is assumed from the land use, land-use change, and forestry (LULUCF) sector between 2037 to 2065, in line with the National Strategy that aims to maintain 55% of forest and green cover of the country's total land area (MNRE, 2022).

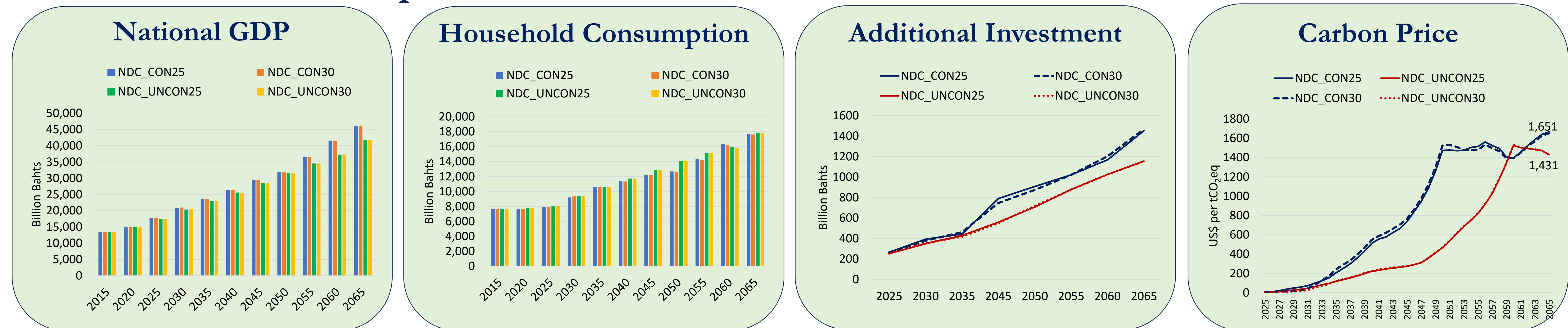


Carbon Capture and Storage will be a Key Option for Reducing GHG Emissions



- Carbon removal through carbon capture and storage (CCS) technologies is considered in power generation, as well as in the chemical and non-metallic industries.
- No difference is assumed in the CCS mitigation potential in power generation and industries in the conditional and unconditional NDC scenarios for both the delayed and accelerated peak scenarios.
- However, in the delayed peak scenarios, carbon removal through CCS in the petroleum production process is assumed to become operational only by 2031, instead of the government's planned timeline of 2027.

Socioeconomic Impacts



CONCLUSIONS

- Delaying the peak of carbon emissions from 2025 to 2030 lead to short-term gains in GDP, but it is likely to result in economic losses over the long term.
- Short-term gains in household consumption can be observed with a delayed emissions peak, but over time, these are offset by reduced consumption levels driven by intensified climate policy measures and economic restructuring.
- Additional investments in mitigation technologies increases by 4.3% in 2035 in the delayed conditional NDC scenario while it would increase by 2.4% in 2030 in the delayed unconditional NDC scenario.
- Although short-term carbon mitigation costs get lowered with a delayed peak, they seem to escalate over the long term.

REFERENCES

NESDC. (2015). Input-output table of Thailand 2015, Office of the National Economic and Social Development Council, Office of the Prime Minister, Bangkok.
 MNRE. (2022). Thailand's Long-term Low Greenhouse Gas Emission Development Strategy (Revised Version), Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment.
 B. Tribune. (2024). Thailand's Statement at COP29. November 20, 2024. <https://bkktribune.com/thailands-statement-at-cop29/>

| Scenarios | NDC_CON25 | NDC_CON30 | NDC_UNCON25 | NDC_UNCON30 |
|--|---|-----------|---|-------------|
| Features | | | | |
| Level of GHG Emissions Mitigation in 2035 | Follow new conditional NDC target with a 29% reduction in GHG emissions compared to 2019 levels | | Follow new unconditional NDC target with a 20% reduction in GHG emissions compared to 2019 levels | |
| Timing to Reach Peak Emissions | 2025 | 2030 | 2025 | 2030 |
| Reach Net-Zero Emissions | 2050 | | 2060 | |