Socioeconomic and environmental implications of macroeconomic policies in Asia and the Pacific

Consultation Workshop in Viet Nam

Lin ZHUO
Macroeconomic Policy and Financing for Development Division, ESCAP

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Context

- ESCAP's technical assistance projects on **economic policy scenario analysis** in selected Asia-Pacific countries through an in-house macroeconomic model for sustainable development.

- Supporting evidence-based policymaking
  - Demonstrating the potential long-run **economic, social and environmental impacts** of selected national policy scenarios.

- The analysis addresses the question of ***what-if***, rather than *how-to*.
  - What are the potential impacts of introducing a carbon tax on GDP, poverty and carbon emission levels?

Policy scenario analysis through ESCAP Macroeconomic Model for Sustainable Development

Policy scenario analysis: basic steps

Development ambition

- Greener economy

Policy actions

- Rationalize carbon subsidies
- Introduce a carbon tax
- Increase spending on renewable energy, energy efficiency and bio-circular-green investment

Policy assumptions

- Phase out carbon subsidies and introduce a carbon tax at $80 per ton of CO2 in 3 years and keep it at $80 onwards
- Size, pace, duration and composition of the additional government spending rise, e.g. overall 5% of GDP per year for 5 years; 100% from government source (or partly from carbon tax increase)

Simulation results

- Slower output growth?
- Higher inflation?
- Lower public debt?
- Reduced poverty and income inequality?
- Lower carbon emissions?

ESCAP Macroeconomic Model for Sustainable Development

- A **structural econometric model** designed for long-term policy scenario analysis (rather than short-term forecasting) launched in late 2020.
- Based on a **standard macroeconomic framework**
  - *Short-term GDP* is driven by aggregate demand: consumption, investment and net external trade
  - *Potential output level* is driven by aggregate supply: labour force, capital stock, energy use and efficiency, productivity growth, and damage from climate shocks
  - Special feature: interactions among economic, social and environmental variables, detailed labor market section which includes male and female labor force participation rate decomposition
- ***Original model* – a multi-country model covering 46 ESCAP countries and main trading partners**
- *Viet Nam* - **a standalone country model with exogenous Rest of the World**
  - Country model for Viet Nam with about 100 equations
  - Assumptions on global variables for trade, remittances, energy sector and global demand

The model contains various *input* and *output* variables

Sample input variables

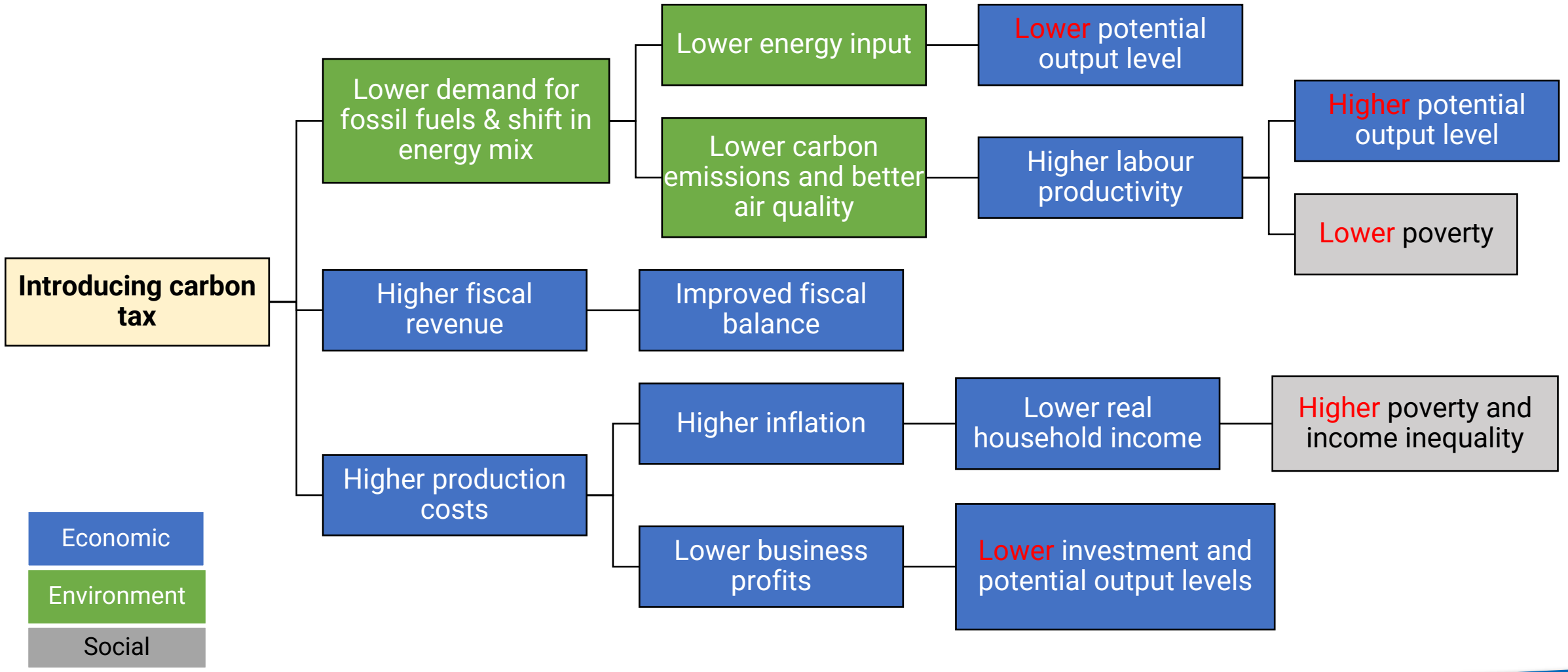
- **Public spending (consumption and investment)**
  - Education
  - Health care
  - Social protection
  - ICT
  - Climate-resilient infrastructure
  - Environmental protection
- **Private investment**
- **Tax rates**
  - Income
  - Corporate
  - International trade
- **Carbon pricing**
  - Carbon subsidy
  - Carbon tax

Sample output variables

- **Social variables**
  - Poverty incidence
  - Income inequality (Gini)
- **Environmental variables**
  - Carbon emissions
  - Air quality (PM2.5)
  - Energy use
  - Energy efficiency
- **Economic variables**
  - Potential output level
  - GDP components
  - Inflation rate
  - Fiscal balance
  - Government debt

Why does policy scenario analysis for sustainable development matter?

Socioeconomic impacts of green fiscal policies can be ambiguous



Evidence-based policymaking

- Supporting government’s decisions on the scale, composition and pace of policy interventions to meet sustainable development goals
- Preparing to mitigate the potential adverse impacts of certain policies
- Increasing buy-in from other stakeholders

Examples of green fiscal policy scenarios in selected Asia-Pacific countries

ESCAP studies on green fiscal policies in selected Asia-Pacific countries

Common scenarios

- Phase out fuel price subsidies
- Introduce carbon tax (domestically and/or globally)
- Spending of subsidy saving and carbon tax revenue on development and/or budget support

Indonesia

- Introduce fiscal transfers for afforestation

Mongolia

- Invest in clean burning stoves
- Invest in energy efficiency and renewables
- Introduce pasture restoration subsidies
- Reduce reliance on coal exports

Nepal

- Green and sustainable tourism
- Expand renewable supply

Thailand

- Invest in environmental-friendly transportation
- Invest in energy efficiency and renewables
- Increase public environmental spending

ESCAP
Economic and Social Commission for Asia and the Pacific

Country case study on Indonesia

Green economic policy scenarios in Indonesia: *big picture*

- Introducing a carbon tax at the Government's announced rate in 2022
- Removing all carbon-linked government subsidies in 2022
- Spending additional fiscal resources on social, connectivity and environmental programmes and public debt deduction
- Introducing green fiscal transfers from the central government and subnational governments to encourage afforestation
- **A combined policy scenario**

Green economic policy scenarios in Indonesia: *some details*

Green policy measures

Fuel subsidies

- Abolish all carbon-linked government subsidies by 2025

Carbon tax

- Introduce a carbon tax in 2022 at $2.13 per tonne of CO_2
- Gradually rising to $60/tonne by 2040

Green fiscal transfers

- Introduce transfers to subnational governments at 0.3% of GDP in 2022
- Gradually rising to 0.9% of GDP from 2024 onwards

Use of fiscal savings & carbon tax revenue

Social protection

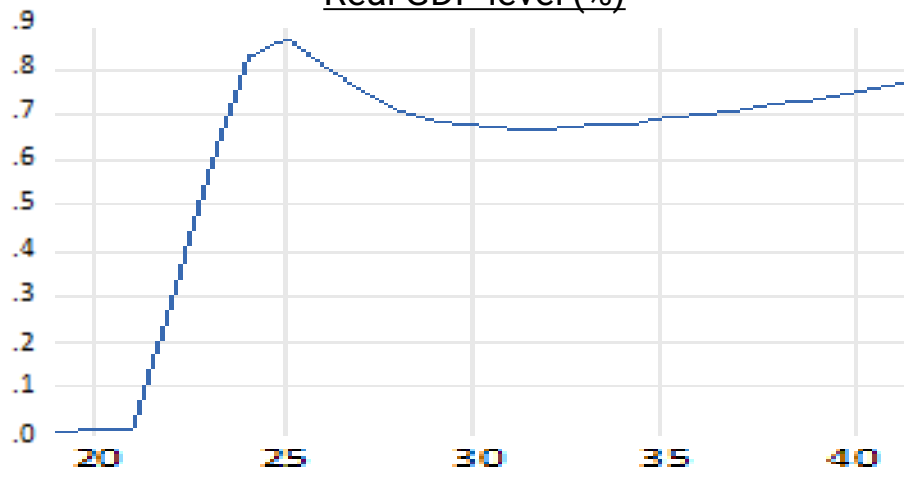
- 25% of additional fiscal resources

Green fiscal transfers

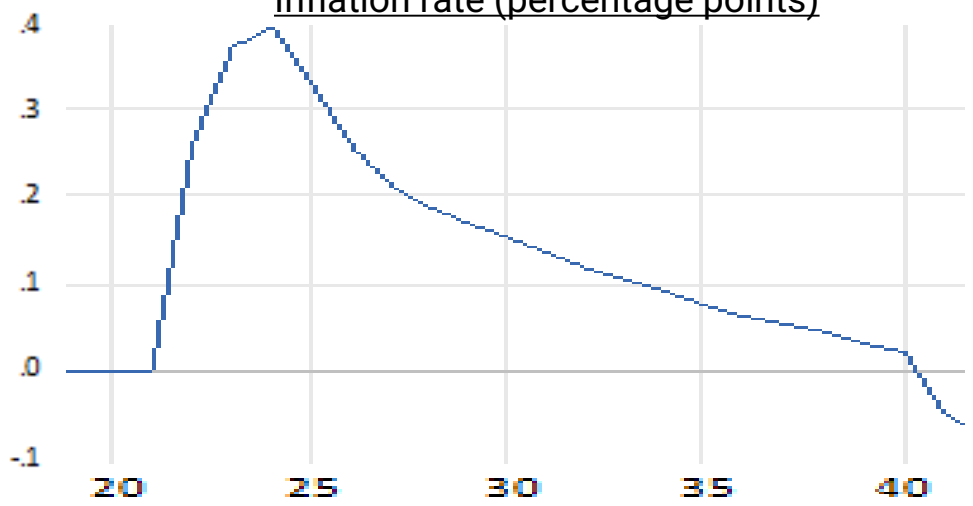
- 75% of additional fiscal resources

Greener development in Indonesia is good for its economy and people …

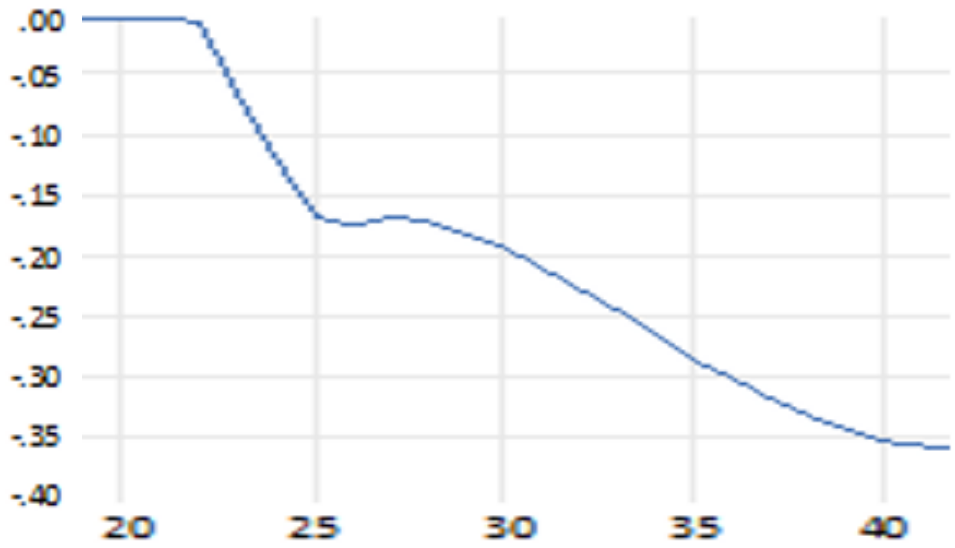
Real GDP level (%)



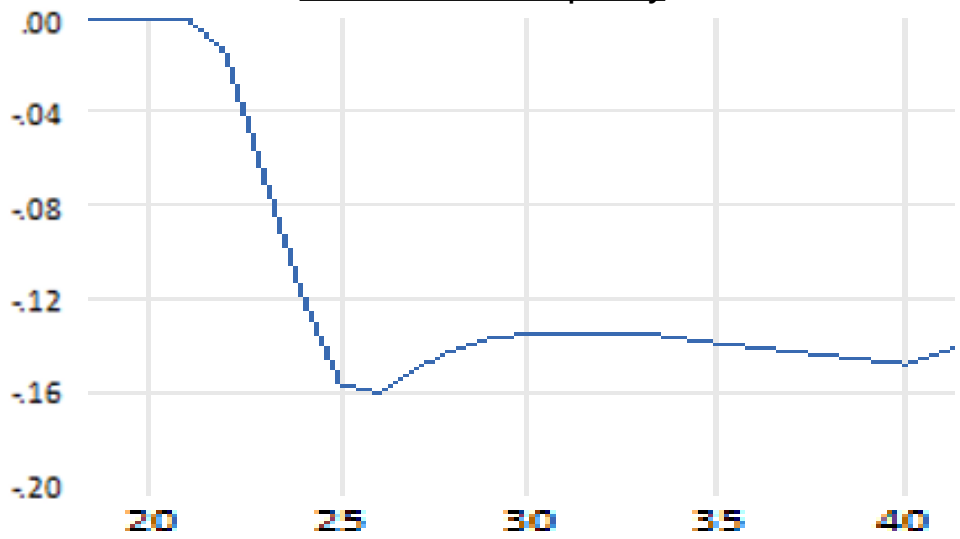
Inflation rate (percentage points)



Poverty headcount ratio ($5.50 per day)

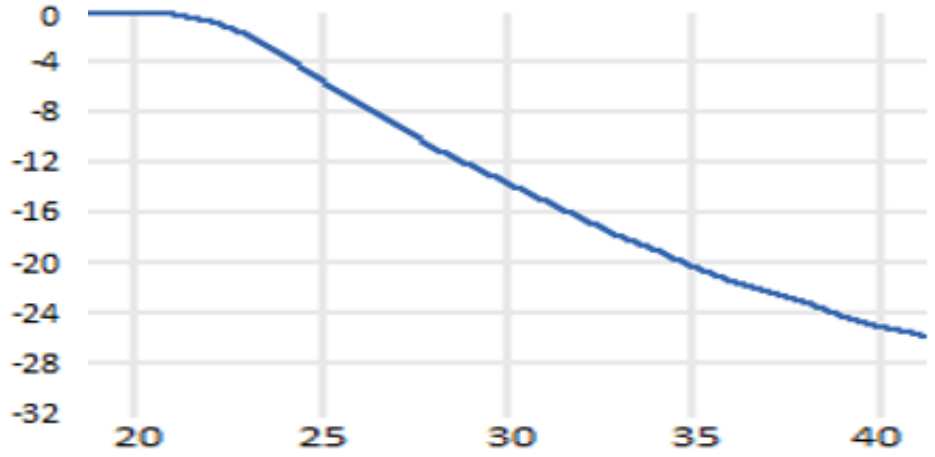


Gini income inequality

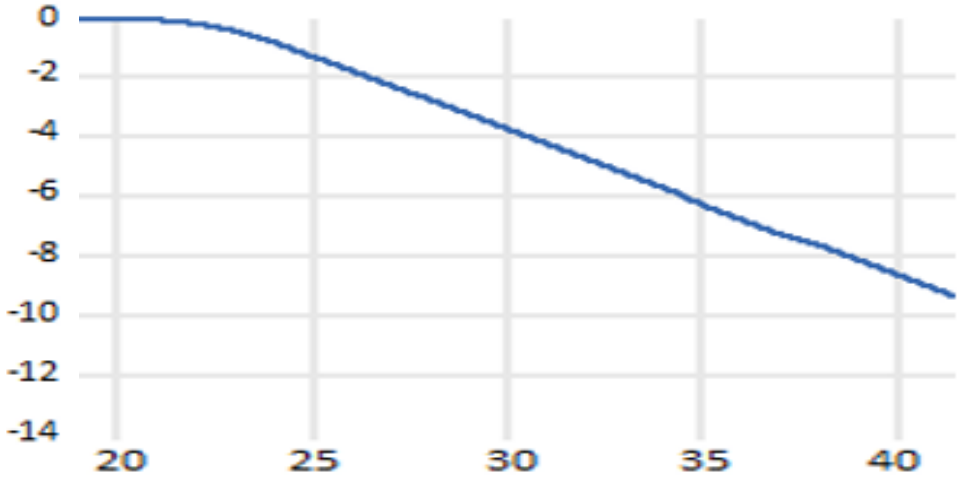


… while environmental outcomes are also set to improve notably

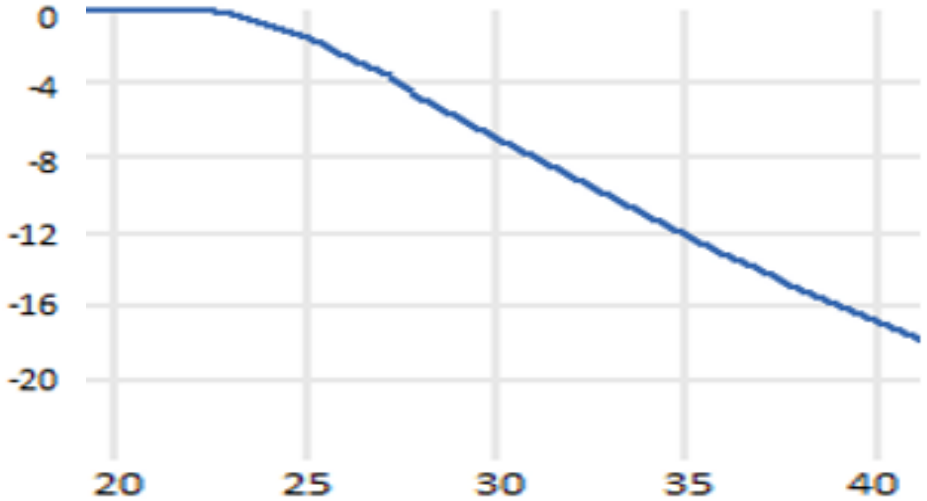
Carbon emissions (%)



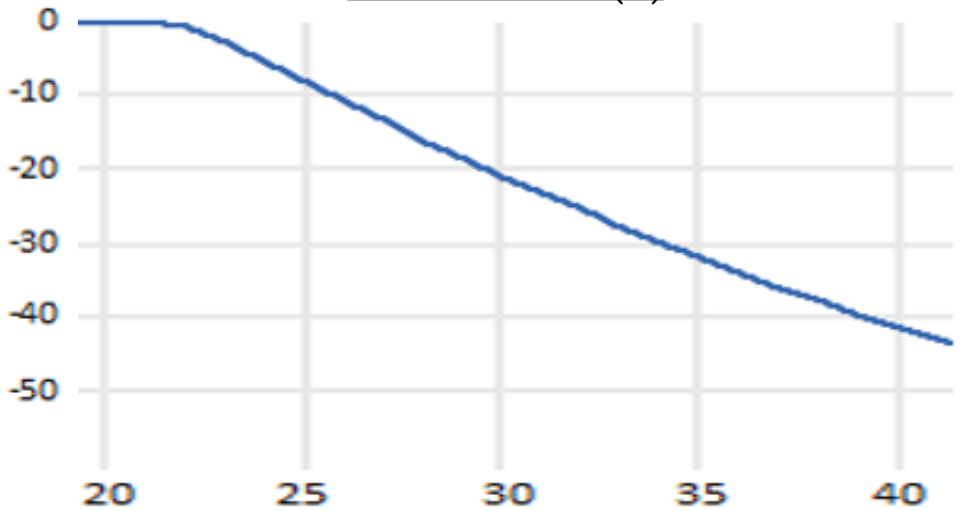
Air pollution (PM2.5) (%)



Coal consumption (%)

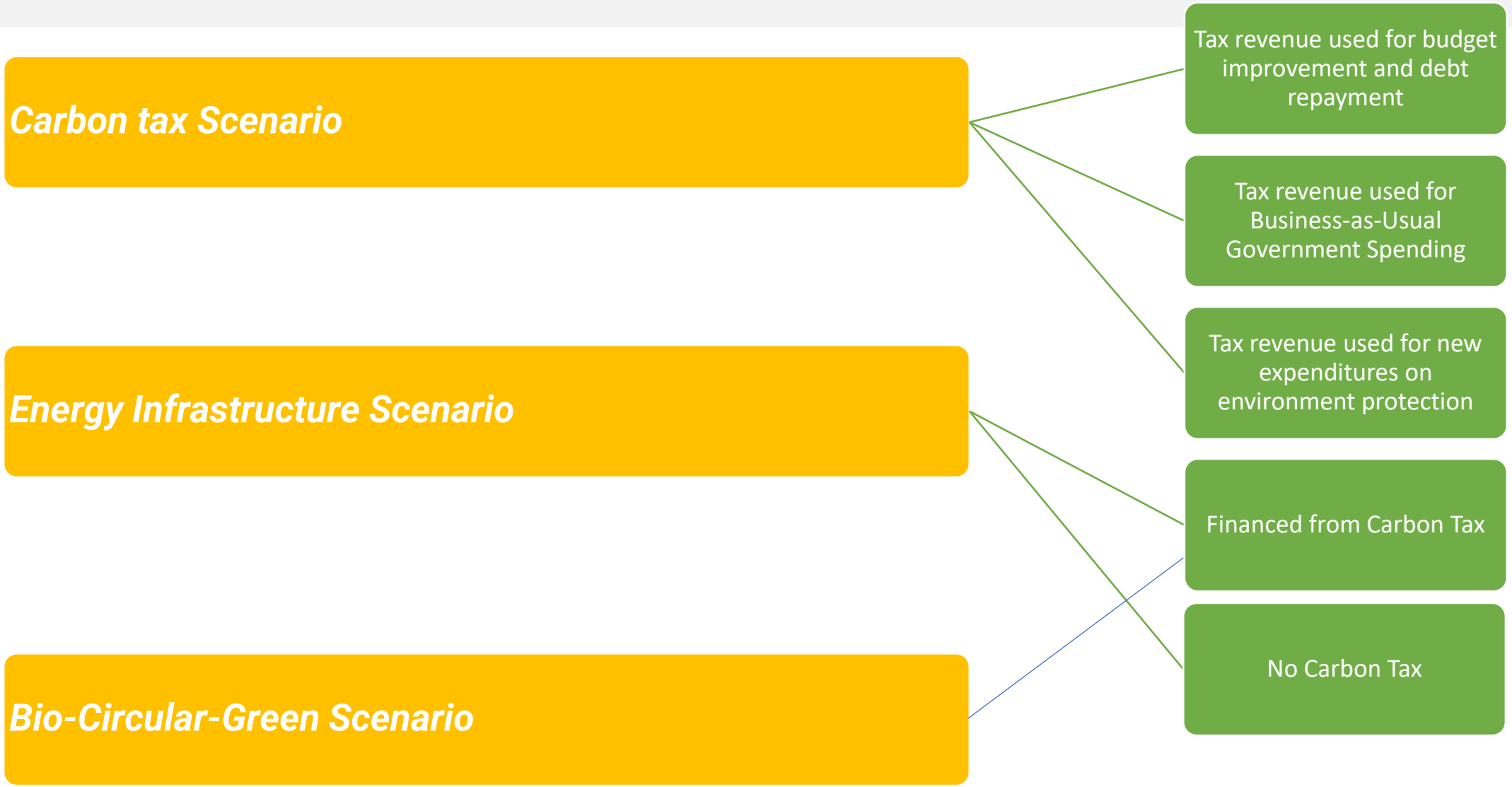


Tree cover loss (%)

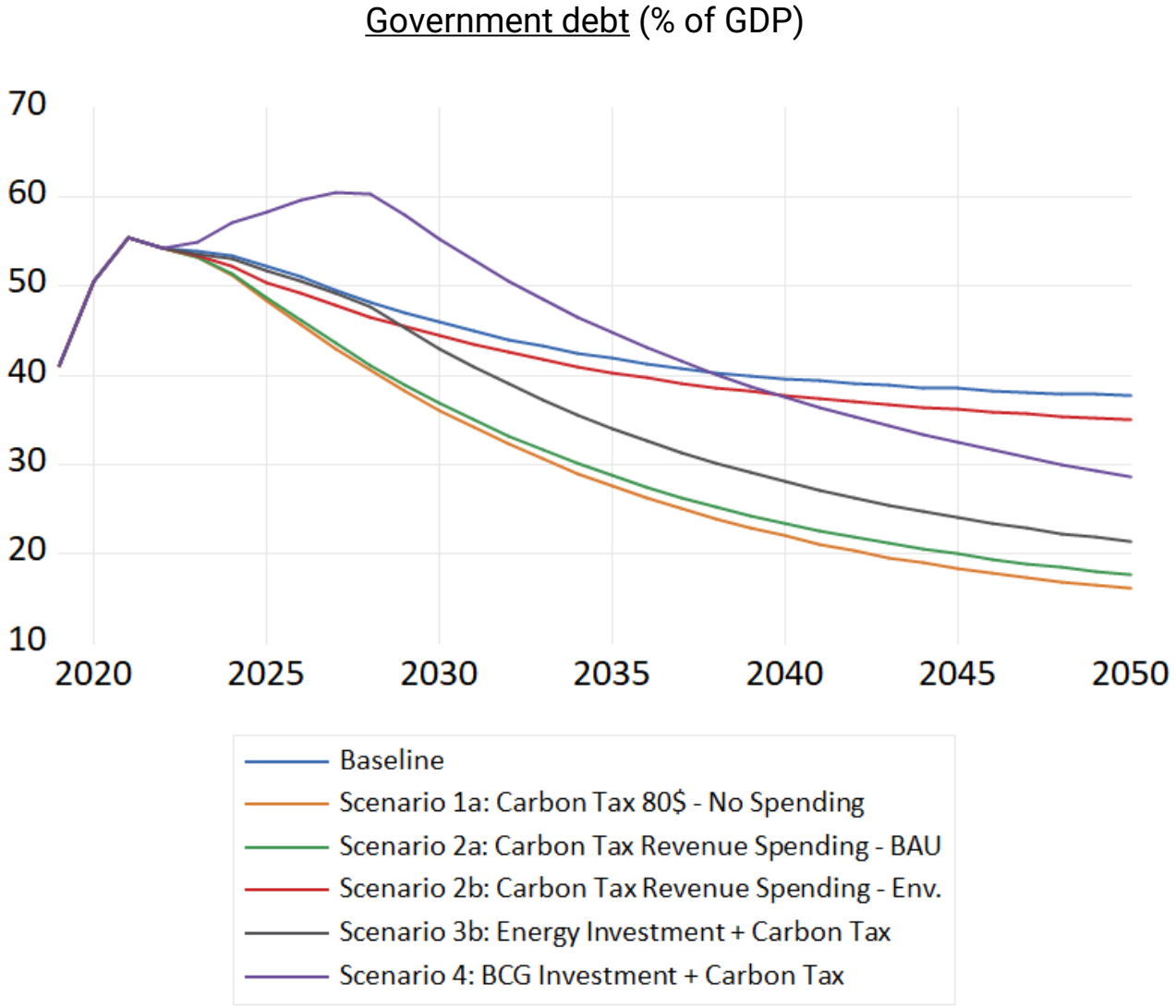


Country case study on Thailand

Policy scenarios for Thailand: green development

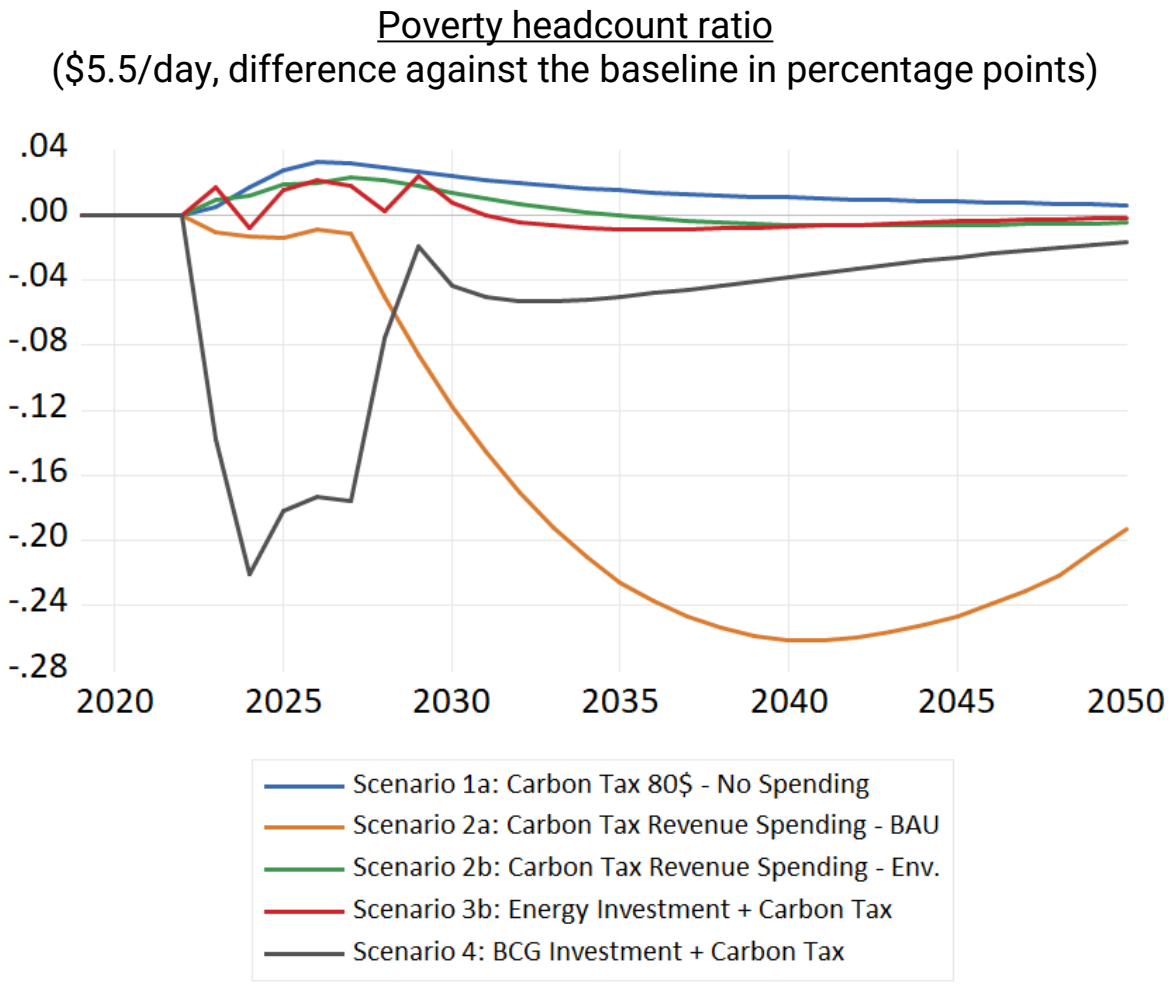


Carbon Tax scenario reduces government debt significantly, thus creating room for larger public spending for sustainable development



- Government debt path depends primarily on fiscal balance, real interest rate, and economic growth.
- Implementing the **carbon tax (Scenario 1a)** helps cut government debt to around 36% of GDP by **2030** relative to 46% of GDP in the baseline.
- Pursuing scenario with extra spending on top of the carbon tax scenario would result in less notable decline in government debt, but further benefit people and the environment (see following slides).

Channeling the carbon tax revenue into government spending shows marked improvements in the social, economic and environmental outcomes…

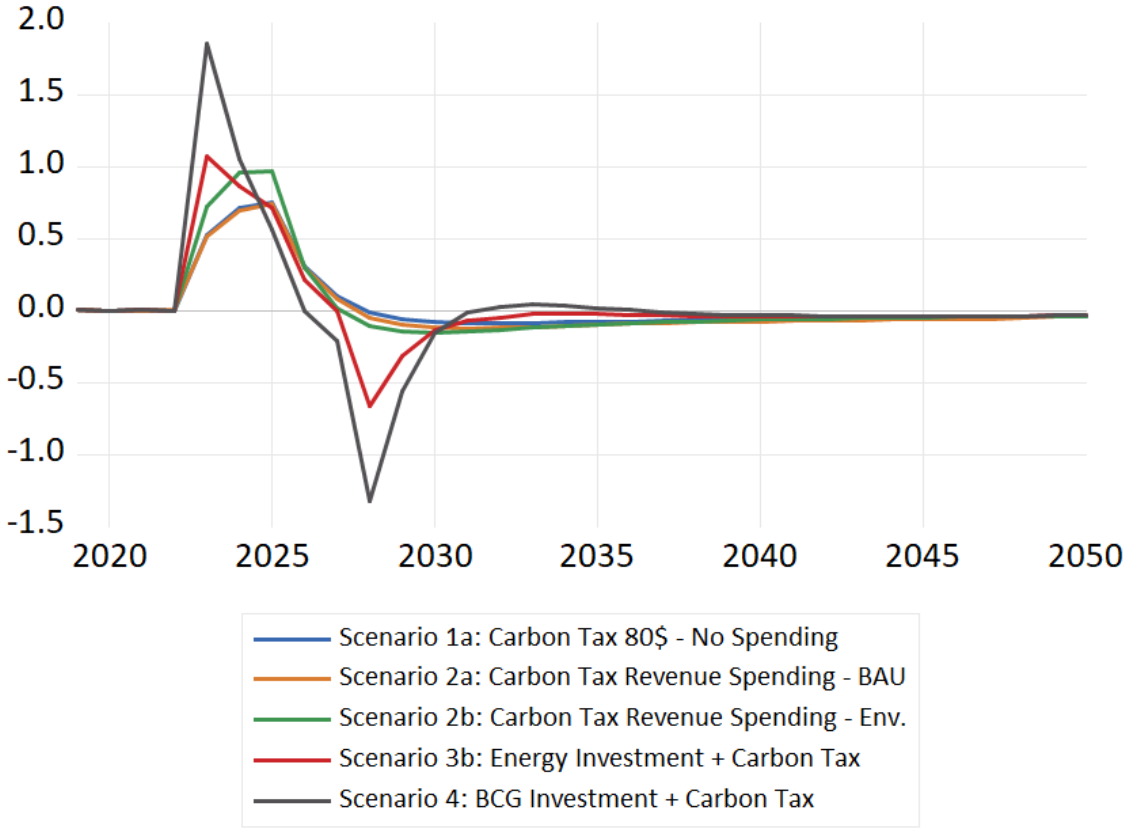


- By channeling the carbon tax revenue into business-as-usual policy spending **(Scenario 2a)** on social protection, health, and education, these expenditures create beneficial long-term social and economic effects.

- However, they do not contribute enough to environmental improvements

Bio-Circular-Green investment has positive environmental and social effect but disrupt the economy in the short run

Inflation (difference against the baseline in percentage points)



- Bio-Circular Green investment:
  - Environmental protection, healthcare, environmental efficiency and social protection spending
- Temporary higher investment pushes up inflation and GDP in the short run in the BCG scenario
- Environmental impact of the investment and the carbon tax rate is the biggest among the scenarios
- Long run effect of the scenario is positive, but short-term imbalances might suggest a more gradual investment plan.

Key takeaways

Main policy messages: big picture

- A **long-termism approach** would support sustainable development.
  - Carbon tax will push up inflation initially, but this should not deter the gradual introduction of carbon pricing schemes to meet climate targets.

- **Striking a balance** between maintaining macroeconomic and fiscal stability and pursuing climate ambitions.
  - Keeping in view of long-term sustainable development while dealing with near-term macroeconomic challenges (e.g. rising public debt level).

Main policy messages: designing sustainable development policy measures

- How governments would **spend additional carbon-related fiscal resources** matters.
  - Taxing carbon will increase inflation temporarily, but has the potential to generate significant fiscal revenue
  - A mix of social protection, environmental protection, and fiscal budget support?
  - If carbon revenue is channeled back into the economy, it can increase economic activity; reduce inequality and poverty; make progress towards emissions targets and reduce air pollution

- Considering the different socioeconomic and environmental implications of **different policy designs**.
  - Mongolia: boosting livestock exports through larger livestock numbers, pasture restoration subsidies or intensive farming techniques?
  - Nepal: increasing the number of tourist arrivals, with and without additional spending to promote sustainable tourism

Thank you

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