Socioeconomic and environmental implications of green fiscal policies in Asia and the Pacific

ESCAP-GFPN side event

“Empowering Ministries of Finance to Develop Integrated Solutions to the Debt, Development and Environmental challenges”

4th session of ESCAP Committee on Macroeconomic Policy, Poverty Reduction and Financing for Development

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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 biodiversity preservation

Policy assumptions
- Phase out carbon subsidies in 3 years
- Introduce a carbon tax at $5 in year 1 and rises steadily to $20 in year 4 and onwards
- Size, pace, duration and composition of environmental spending rise, e.g. 3% of GDP per year for 10 years; 80% from government source

Simulation results
- Output growth
- Inflation
- Public debt
- Poverty and income inequality
- Carbon emissions
- Air quality
ESCAP Macroeconomic Model for Sustainable Development

- A **structural econometric model** designed for long-term policy scenario analysis launched in late 2020.

- A complete **global model**
  - 46 individual full country models for Asia-Pacific economies
  - Smaller models for 9 key trading partners plus 4 other world’s regions

- 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
  - Country models are linked via trade, remittances, financial markets and energy markets

- **Special feature:** interactions among economic, social and environmental variables.
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

Introducing carbon tax

- Lower demand for fossil fuels & shift in energy mix
  - Lower energy input
  - Lower carbon emissions and better air quality
  - Lower potential output level
  - Higher labour productivity
  - Improved fiscal balance
  - Lower poverty

- Higher fiscal revenue
  - Higher real household income
  - Higher potential output level
  - Higher poverty and income inequality

- Higher production costs
  - Higher inflation
  - Lower business profits
  - Lower investment and potential output levels

Economic
Environment
Social
Evidence-based green fiscal policymaking

- Supporting government’s decisions on the scale, composition and pace of green fiscal policy interventions to meet climate targets
- Preparing to mitigate the potential adverse impacts of green fiscal 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

<table>
<thead>
<tr>
<th>Country</th>
<th>Indonesia</th>
<th>Mongolia</th>
<th>Sri Lanka</th>
<th>Thailand</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Introduce fiscal transfers for afforestation</td>
<td>• Invest in clean burning stoves</td>
<td>• Invest in energy access and energy efficiency</td>
<td>• Invest in environmental-friendly transportation</td>
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<td></td>
<td></td>
<td>• Invest in energy efficiency and renewables</td>
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<td></td>
<td></td>
<td>• Introduce pasture restoration subsidies</td>
<td></td>
<td>• Increase public environmental spending</td>
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<td></td>
<td></td>
<td>• Reduce reliance on coal exports</td>
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</tbody>
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*Notes:*
- Indonesia: Invest in clean burning stoves, invest in energy efficiency and renewables, introduce pasture restoration subsidies, reduce reliance on coal exports.
- Mongolia: Invest in clean burning stoves, invest in energy efficiency and renewables.
- Sri Lanka: Invest in energy access and energy efficiency.
- Thailand: Invest in environmental-friendly transportation, invest in energy efficiency and renewables, increase public environmental spending.
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

<table>
<thead>
<tr>
<th>Fuel subsidies</th>
<th>Carbon tax</th>
<th>Green fiscal transfers</th>
</tr>
</thead>
</table>
| • Abolish all carbon-linked government subsidies by 2025 | • Introduce a carbon tax in 2022 at $2.13 per tonne of CO₂  
  • Gradually rising to $60/tonne by 2040 | • 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

<table>
<thead>
<tr>
<th>Social protection</th>
<th>Green fiscal transfers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 25% of additional fiscal resources</td>
<td>• 75% of additional fiscal resources</td>
</tr>
</tbody>
</table>
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 (%)

[Graphs showing decreases in carbon emissions, air pollution, coal consumption, and tree cover loss over time.]
Country case study on Sri Lanka
Sri Lanka: Restoring fiscal stability and achieving sustainable development

Combined policy scenario

Enhancing fiscal resources scenario

Achieving sustainable development

- Economic dimension scenario
- Social dimension scenario
- Green dimension scenario
<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove carbon-related subsidies</td>
<td>Gradually over 3 years</td>
</tr>
<tr>
<td>Introduce carbon tax</td>
<td>From $5 to $20 per tonne of CO₂ over 4 years</td>
</tr>
<tr>
<td>Government spending</td>
<td>Of subsidy savings and new carbon tax revenue (30% on social protection, 20% on environmental protection, and 50% for budget support)</td>
</tr>
<tr>
<td>Increase value-added tax rate</td>
<td>By 2 percentage points</td>
</tr>
<tr>
<td>Increase corporate income tax</td>
<td>By 1 percentage point</td>
</tr>
<tr>
<td>Strengthen public debt management</td>
<td>(Reduced sensitivity between sovereign risk premium and government debt level)</td>
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### Policy actions to foster sustainable development: key assumptions

<table>
<thead>
<tr>
<th>Economic dimension scenario</th>
<th>Social dimension scenario</th>
<th>Green dimension scenario</th>
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<tbody>
<tr>
<td>• Promote exports of higher value-added goods</td>
<td>• Increase spending on social protection and poverty transfers (1.9% of GDP)</td>
<td>• Increase spending on energy access and energy efficiency (2.6% of GDP)</td>
</tr>
<tr>
<td>• Higher national R&amp;D spending (to 0.53% of GDP)</td>
<td>• Increase female labour force participation rate (from 33% to 43% in 10 years)</td>
<td>• Carbon tax introduction in other global economies</td>
</tr>
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<td>• Higher spending on education and healthcare (3.0% of GDP)</td>
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<tr>
<td>• Enhance domestic business environment</td>
<td></td>
<td></td>
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<tr>
<td>• Higher spending on transport and ICT (2.1% of GDP)</td>
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<td></td>
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<tr>
<td>• Lower user cost of capital</td>
<td></td>
<td></td>
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<tr>
<td>• Lower trade &amp; transport costs</td>
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<td></td>
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<tr>
<td>• Higher firms’ productivity</td>
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The green dimension scenario would cut carbon emissions far more than other scenarios; public debt position also improves.
Key takeaways
Main policy messages: big picture

- **A long-termism approach** would support green 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).

- **Synchronized multilateral effort** on carbon pricing will have positive spillover effects globally.
Main policy messages: designing green fiscal policy measures

• How governments would spend additional carbon-related fiscal resources matters.
  • A mix of social protection, environmental protection, and fiscal budget support?

• 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?

• Integrating green elements into economic policymaking.
  • Nepal: increasing the number of tourist arrivals, with and without additional spending to promote green tourism.
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