**CARBON TAX IMPLEMENTATION IN THE ENERGY SECTOR**

**A Comparative Study in G20 and ASEAN Member States**

**INTRODUCTION**

As one of the key players to advance the global economy, the Group of Twenty (G20) has a vital role in promoting the climate agenda. G20 members comprise 19 countries with massive economies and the European Union (EU). The group has an influential role in supporting other low-income countries (LICS) to reduce their GHG emissions.

Some G20 members offer examples of implementing carbon pricing to reduce GHG emissions by using carbon tax or emissions trading systems (ETS). Among these G20 members, six countries (Japan, South Africa, Argentina, France, Ireland, and Mexico) have implemented the carbon tax.

Apart from the G20, another important player with one of the biggest economies in the world is the Association of Southeast Asian Nations (ASEAN). There are 10 ASEAN members, but it is Singapore only who has already implemented the carbon tax. Indonesia, meanwhile, plans to implement a carbon tax policy starting in 2025.

**GHG EMISSIONS BY SECTORS**

GHG emissions are derived from five sectors:

- Agriculture sector
- Waste sector
- Industrial processes and product usage (IPPU) sector
- Energy sector
- Land use, land-use change, and forestry (LULUCF) sector

The energy sector dominates the highest contributor to GHG emissions in almost all member states except Indonesia. Yet, the emission profile in Indonesia likely shift since the energy production will significantly increase, following the future energy demand growth.

**GENERATED TAX REVENUES FROM CARBON TAX**

The contribution level of carbon tax revenue to the government’s total revenue varies for each country. Figure 3 shows that France and Ireland’s carbon tax revenue contributes 0.71% and 0.53% of their total government revenue, respectively. This means that each of USD 5.3 of Ireland’s and USD 7.1 of France’s total tax revenue will generate from carbon tax for every USD 1,000 of total government revenue. Meanwhile, the rest of the countries’ carbon tax revenue contributed less than 0.3% each to their government revenue.

**Source:** International Energy Agency, 2021
### Revenue Recycling Comparison

A comparison of revenue recycling methods (compiled by PYC from various sources).

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<tbody>
<tr>
<td></td>
<td></td>
<td>General budget</td>
<td>Non mitigation earmarking</td>
<td>Business</td>
<td>Public</td>
</tr>
</tbody>
</table>
| Indonesia     | • Additional for development funds   
                • Environmental-friendly investment   
                • Support for welfare improvement for the poor and vulnerable    |                          |                                   |                               |                      |                         |                              |                         |                         |
| Japan         | • Promotion of lithium-ion batteries   
                • Support for energy-efficient equipment for small and medium-sized businesses  
                • Promotion of energy efficiency and renewable energy through "New Green Deal Fund" financing   
                • Subsidize "Joint Crediting Mechanism" to foster emission reductions in developing countries |                          |                                   |                               |                      |                         |                              |                         |                         |
| Singapore     | • Support companies to invest in energy-and-carbon-efficient technologies |                          |                                   |                               |                      |                         |                              |                         |                         |
| South Africa  | • Reduction in electricity generation levy and renewable electricity premium  
                • Income tax allowance on energy efficiency savings |                          |                                   |                               |                      |                         |                              |                         |                         |
| Argentina     | • To general budget, intended for the National Housing Fund, the Transport Infrastructure Trust, and the social security system |                          |                                   |                               |                      |                         |                              |                         |                         |
| France        | • Reduction of income and corporate taxes   
                • Energy assistance to low-income households |                          |                                   |                               |                      |                         |                              |                         |                         |
| Ireland       | • To general budget | To energy efficiency measures for low-income households |                          |                                   |                               |                      |                         |                              |                         |                         |
| Mexico        | • For general budget                                                                 |                          |                                   |                               |                      |                         |                              |                         |                         |

The income generated from carbon tax, as a part of environmental taxation is important for a country to provide distributional and economy changes which are impacted by carbon emissions. There are four methods of revenue recycling, which have been implemented by those countries: (1) general spending, (2) compensation for carbon burden, (3) mitigations in covered sectors, and (4) mitigations in uncovered sectors.

### Carbon Tax Schemes Comparisons Based on Emissions Price & Sector Coverage

A comparison of implemented carbon tax schemes by emissions price, sectoral coverage and share of jurisdiction emissions covered (data is compiled by PYC from various sources).

There are also various carbon tax prices per ton of CO2e (tCO2e) for each country. The top two highest carbon tax prices can be found in France and Ireland, at USD 52.4 per tCO2e and USD 39.3 per tCO2e, respectively. Mexico applies a USD 0.4 per tCO2e tax as its floor price, specifically for coke oil. Meanwhile, the rests are in the range below USD 10 per ton CO2e. Based on the table, we found that a higher emissions price may not cover a large share of emissions in the country.

<table>
<thead>
<tr>
<th>Country</th>
<th>Year Started</th>
<th>Price per tCO2e</th>
<th>Sectoral Coverage</th>
<th>The Share of Jurisdiction Emissions Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ireland</td>
<td>2010</td>
<td>USD 39.3</td>
<td>Industry, Power, Aviation, All fossil fuels (tax only)</td>
<td>49%</td>
</tr>
<tr>
<td>Japan</td>
<td>2012</td>
<td>USD 2.6</td>
<td>All fossil fuels (tax only), power, industry, building</td>
<td>75%</td>
</tr>
<tr>
<td>France</td>
<td>2014</td>
<td>USD 52.4</td>
<td>Industry, Power, Aviation, All fossil fuels (tax only)</td>
<td>35%</td>
</tr>
<tr>
<td>Mexico</td>
<td>2014</td>
<td>USD 0.4 (Coke Oil), USD 3.2 (Aviation Fuel)</td>
<td>Solid fossil fuels, liquid fossil fuels</td>
<td>23%</td>
</tr>
<tr>
<td>Argentina</td>
<td>2018</td>
<td>USD 5.5</td>
<td>Solid fossil fuels, liquid fossil fuels</td>
<td>20%</td>
</tr>
<tr>
<td>South Africa</td>
<td>2019</td>
<td>USD 9.2</td>
<td>All fossil fuels (tax only)</td>
<td>80%</td>
</tr>
<tr>
<td>Singapore</td>
<td>2019</td>
<td>USD 4</td>
<td>Industry, Power</td>
<td>80%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>2025</td>
<td>USD 2.1</td>
<td>All fossil fuels, Industry, power</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Abbreviations**

- **G20**: Group of Twenty
- **EU**: European Union
- **LICS**: low-income countries
- **GHG**: Greenhouse Gas
- **ETS**: emissions trading systems
- **ASEAN**: Association of Southeast Asian Nations
- **IPPU**: Industrial processes and product usage
- **LULUCF**: land use, land-use change, and forestry
- **tCO2e**: ton CO2 emission
- **Gg CO2e**: Giga CO2 emission
- **Tbd**: to be discussed
- **RHS**: Right Hand Scale