CHAPTER 2

Nationally determined contributions and the transport sector
2.1 Introduction

In 2015, countries participating in the Conference of the Parties (COP21) of the United Nations Framework Convention on Climate Change (UNFCCC) in Paris, adopted the international climate agreement, which has come to be known as the Paris Agreement, and entered into force in 2016. In the run-up to COP21, several countries submitted their intended nationally determined contributions aimed at reducing greenhouse gas emissions. Following the entry into force of the Paris Agreement and in accordance with the agreement, countries that have ratified the agreement are required to submit their nationally determined contributions. As of September 2019, 185 countries had ratified the agreement. The climate actions contained in the nationally determined contributions, if implemented, will determine whether the world will achieve the key goal of the Paris Agreement: to maintain global average temperatures below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C.9

Nationally determined contributions are one of the main elements of the Paris Agreement. Through them, countries put forward the national climate actions, and climate targets that they expect to contribute towards the goal of keeping global average temperatures below 2°C above pre-industrial levels. The nationally determined contributions should ideally also detail measures to improve the country’s resilience to the negative impacts of climate change.

While there is no pre-defined format for preparing nationally determined contributions, each one contains the mitigation and adaptation measures that are expected to be taken and the priority sectors across which the mitigation efforts will be undertaken. The contributions are to be revised every five years from 2015 onwards. Accordingly, they will be revised in 2020 and 2025. As of November 2019, one country has already submitted its second nationally determined contribution to the UNFCCC. The Paris Agreement requires that revised nationally determined contributions submitted to UNFCCC build upon previous efforts and be more ambitious than prior commitments.

2.2 Greenhouse gas emissions by sector in the Asia-Pacific region

In the Asia-Pacific region, emissions from the energy sector accounted for the bulk of the carbon dioxide (CO₂) emissions, 39 per cent, followed by the industrial and agricultural sectors; emissions from the transport sector accounted for 6 per cent of the emissions in 2010 (Figure 1).10 The East and North East Asia region is the largest emitter of CO₂ in the region, accounting for 55 per cent of the total emissions, while Pacific countries as a whole were responsible for 3 per cent of the region’s emissions in 2010.11

FIGURE 1
Greenhouse gas emissions in the Asia-Pacific region (million tonnes of CO₂ equivalent), 2010

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10 Economic and Social Commission for Asia and the Pacific, Responding to the Climate Challenge in Asia and the Pacific: Achieving Nationally Determined Contributions (NDCs) (Bangkok, United Nations, 2017).
11 Ibid.
2.3 Nationally determined contributions in the Asia-Pacific region

As of October 2019, 48 countries in the Asia-Pacific region had ratified the Paris Agreement (Figure II).\(^{12}\) To date, 43 nationally determined contributions and eight intended nationally determined contributions have been submitted to UNFCCC by ESCAP member countries.\(^ {13}\)

As mentioned earlier, there is no predefined format for preparing nationally determined contributions and they vary from country to country in terms of priorities and focus areas. The energy sector and electricity generation, more specifically, were the priority areas in many of the nationally determined contributions from countries in the Asia-Pacific region. Notably, 38 countries in the Asia-Pacific region have submitted nationally determined contributions that contain references to the transport sector.\(^{14}\) The measures in many of the contributions, however, lack details on specific transport emissions reductions targets or the contribution of mitigation actions in the transport sector to overall emissions reduction targets.

In addition, the level of detail on transport specific mitigation actions in nationally determined contributions varies between countries. Although the transport sector is referenced in contributions submitted by countries in the Asia-Pacific region, revealing the importance of the sector, details on how the transport sector will be decarbonized is missing.

A study\(^ {15}\) on transport and nationally determined contributions in a few countries experiencing rapid motorization has found that there was in some cases limited involvement of transport ministries in the preparation of nationally determined contributions. It indicated that this was, in some


\(^{13}\) Based on data extracted from Partnership of Sustainable, Low Carbon Transport, "Transport Knowledge Base" Version 0.2 and the NDC Registry (interim) Available at https://www4.unfccc.int/sites/NDCStaging/Pages/Home.aspx.

\(^{14}\) Based on data extracted from Partnership of Sustainable, Low Carbon Transport, "Transport Knowledge Base" Version 0.2.

\(^{15}\) E. Lohr, N. Perara, and N. Hill (2017), Transport in Nationally Determined Contributions (NDCs): lessons learnt from case studies of rapidly motorising countries, synthesis report (Bonn, Germany, German Agency for International Cooperation).
cases, the result of lack of climate change modelling expertise in transport ministries, and limited availability of data on emissions from the transport sector, and mitigation potential, which affected the modelling processes. Some of the transport sector recommendations of the study were: to improve emissions data collection in the transport sector; to develop nationally determined contributions implementation plans for transport; and to mainstream nationally determined contributions into national transport policies.

In terms of mitigation measures by transport modes, in the 38 nationally determined contributions with transport sector references, the focus has been most predominately on passenger transport, which is featured in more than 20 thereof, and to a lesser extent on freight transport, which has been referenced in more than 10 thereof. In terms of transport subsectors, the bulk of the mitigation measures focus on urban transport, which consists of public transport and road transport for passengers (figure IV). This is followed by measures aimed at heavy rail, inland waterways, and walking and cycling.

In terms of mitigation strategies in the transport sector (figure V), promoting public bus transport and inducing a shift towards public transport are the first priority mitigation measures in East and North-East Asia, South and South-West Asia, and South-East Asia. Using alternative energy, such as bio fuels, liquefied petroleum gas and liquefied natural gas, is the preferred strategy in the Pacific, and South and South-West Asia. Promoting e-mobility is also a major priority action in Pacific, East and North-East Asia, and South and South-West Asia.

Apart from this, strategies that focus on improving and developing road infrastructure are highlighted in the nationally determined contributions submitted by countries in South and South-West Asia, and North and Central Asia. Mitigation measures targeting regular maintenance and inspection of vehicles are also a priority in the Pacific, while green freight measures are another priority in South and South-West Asia, and South-East Asia.

**FIGURE IV**
Transport mitigation measures by sub-sectors from nationally determined contributions in Asia and the Pacific

[Diagram showing mitigation measures by sub-sectors from nationally determined contributions in Asia and the Pacific]

Source: Based on data extracted from Partnership of Sustainable, Low Carbon Transport, “Transport Knowledge Base” Version 0.2.
FIGURE V
Transport mitigation strategies from nationally determined contributions in Asia and the Pacific

Source: Based on data extracted from Partnership of Sustainable, Low Carbon Transport, “Transport Knowledge Base”, Version 0.2.

Note: LPG, liquefied natural gas; CNG, compressed natural gas.

2.4 Smart transport systems and nationally determined contributions

As many countries have acknowledged the advantages of smart transport systems in mitigating greenhouse gas emissions, such systems are included in some of the nationally determined contributions and intended nationally determined contributions. Table 1 shows some examples that are directly excerpted from the relevant sources.16

As can be seen from table 1, although the terminologies used are varied, at least nine out of 38 countries have made references to smart transport technologies as a mitigation measure in their nationally determined contributions.

TABLE 1  Examples of smart transport systems in nationally determined contributions and intended nationally determined contributions

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>TRANSPORT SECTOR MITIGATION MEASURES</th>
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<tbody>
<tr>
<td>Azerbaijan</td>
<td>“Improvement and expansion of the scope of intellectual transport management system”</td>
</tr>
<tr>
<td>Bhutan</td>
<td>“Promoting use of appropriate intelligent transport systems”</td>
</tr>
<tr>
<td>Cambodia</td>
<td>“Improve operation and maintenance of vehicles through motor vehicle inspection and eco-driving, and the increased use of hybrid cars, electric vehicles and bicycles”</td>
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<tr>
<td>China</td>
<td>“Advocate green travel and accelerate development of smart transport and green freight transport”</td>
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<tr>
<td>Cook Islands</td>
<td>“The Cook Islands is looking to embrace proven low carbon transport technologies and is currently exploring the most effective incentives for promotion of transition towards clean energy transportation”</td>
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<tr>
<td>Japan</td>
<td>“Promotion of Intelligent Transport Systems ITS (e.g. centralized control of traffic signals)”</td>
</tr>
<tr>
<td></td>
<td>“Promotion of automatic driving, eco-driving and car sharing”</td>
</tr>
<tr>
<td>New Zealand</td>
<td>“New Zealand’s long-term emission pathway anticipates accelerated emission reductions post 2030 once agricultural mitigation technology becomes more widely applied and uptake of low-emission transport technology increases”</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>“Introduce an Intelligent Transport System (ITS) based bus management system”</td>
</tr>
<tr>
<td>Tuvalu</td>
<td>“The growing emissions in the transport sector, as evidenced from the increased numbers of vehicles on land and vessel for sea transport, needs to be addressed through technological innovations”</td>
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