7th International Workshop on Sustainable Road Freight

Decarbonising Freight Transport: Strategies for Developing Countries

Research in progress:

Deep decarbonization pathways for freight in large and fast-growing economies: challenges and opportunities

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Introduction

Brazil, India and South Africa are all committed to meeting the long-term temperature goal of the Paris Agreement. Their domestic mitigation efforts focus on implementing their Nationally Determined Contribution (NDC); under the Agreement, these contributions need to be strengthened over time. However, three main challenges are encountered in the implementation and review of mitigation targets, policies and processes. First of all, there is a lack of tools to define transformational long-term strategies for complex sectors such as freight transport, which is traditionally poorly represented in existing long-term strategies or policy plans. Second, the domestic processes of policy development in the freight sector need to ensure that it is consistent with the long-term transformation required by the sectors to meet the Paris Agreement goals. Finally, there is a need to have an enhanced societal dialogue to support ambitious climate policy development through empowerment and coordination of national stakeholders.

Long-term low GHG emission development strategies with detailed freight strategy are a crucial tool to inform priority short-term actions with the best transformative impact, both at the country-scale and through international cooperation. Developing these strategies with specific focus at the sectoral level allows actors of the political economy (state, regions, cities, companies, consumers and citizens, researchers) to be engaged in a comprehensive dialogue about the transformation, thereby increasing the mitigation capacity at the national level. If they are connected to international processes, such as stocktake and revision cycles, developing long-term low GHG emission development strategies can also boost international mitigation capacity.

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Methodology

The fundamental methodological principles in common with the general approach of the DDP initiative are, notably: a national scale analysis, based on the specificities of the country, the long-term analysis by 2050 to inform short-term decisions, transparency and granularity of the hypotheses and the presentation of results that facilitates the sharing of knowledge and encourages discussions with different actor groups.

This project aims to apply these general principles to the freight transport and logistics sector in Brazil, India and South Africa. The starting point was the development of scenarios and an analysis of the sector's decarbonisation, taking into account all of the transformation levers ("storylines"). Beyond the classic focus on technological improvements and solutions based on fuel substitution, this involves a systemic analysis of all of the sector's transformation determinants, particularly changes in behaviour, lifestyles, infrastructure, space organisation and logistics strategies.

The analytical framework is built around five information families - the chapters of the storylines - which break down the main elements to enable the definition of a complete and coherent account of low carbon transformations. These five chapters are: economic and social macrostructure (systems of production, consumption and trade of goods); transport and storage infrastructure and its management; logistics operations and service provision; goods transport vehicles; and production and distribution of low carbon fuels.

The DDP method addresses the challenges involved with translating the actual relationships and implications of the narratives in terms of the quantified changes in various key indicators ("dashboard") that characterise the mobility patterns described. These key indicators include parameters such as changes in the goods being transported, modal shares, rail/road analysis of transport time, distance and cost. They are grouped in the "dashboard" into five main groups: goods and mobility; modal structure; logistics indicators; road freight transport; energy consumption and emissions.

In practice, this approach requires the best possible information about the current reality of freight transport in the different countries. We thus carried out a vast data collection project to describe the structure of the sector in very fine detail for the year 2010 or 2015, the starting point of the analysis. This detailed description combines several factors: all tonnes loaded and/or unloaded (segmented by major product categories), total and average distance travelled (in ranges of kilometres), modal structure and composition of vehicle fleets (in terms of capacities, engines and unit consumption), logistics performance indicators (load rate and empty running, road speed and/or total speed), etc. Based on the narratives and the world views they describe, the research teams then make hypotheses on the developments (joined or isolated) of these different indicators up to 2050, allowing them to link the changes in freight transport with its CO2 emissions.

Main expected results

The ongoing Deep Decarbonization Pathways project in Brazil, India, Indonesia, China and South Africa (DDP BIICS) is developing long-term deep decarbonisation pathways for these countries with specific deep dives in different sectors. The Brazilian, Indian and South African were willing to work on the deep decarbonisation of the freight transport sub-sector. Following the methodological framework presented before, the different teams developed

their trajectories with their national experiences, country-specific stakeholder engagement processes and interactions with the other international research colleagues involved in the project and would be able to share their first results about their country-specific challenges and opportunities to decarbonise the freight transport sector by October 2020.