

Freight decarbonization should become a high priority for the revision of LT-LEDS and NDC

Submission to the 2nd Global Dialogue of the Mitigation Work Programme about the transport transition by Yann Briand, Senior Climate & Transport Researcher, Deep Decarbonization Pathways initiative, IDDRI-Sciences Po

This submission aims to inform Parties, in the perspective of the Mitigation Work Programme and the oncoming revision of LTSs and NDCs on key freight decarbonization options to enhance their contributions and support international cooperation.

Key messages:

- 1) The Mitigation Work Programme (MWP) is a critical instrument to operationalize the spirit of solidarity and mutual support for both ambitious climate action and strengthened international cooperation enacted by the Paris Agreement.
- 2) However, when looking at the framing of the 2nd Global Dialogue¹, there is a risk that:
 - a. Most discussions focus on passenger mobility, while freight emissions represents 40% of global transport emissions and is overlooked in current LTSs & NDCs.
 - b. The systemic transformations related to the current production, consumption and trading organisation and the current logistics organisation are not discussed, while necessary to deeply reduce freight emissions.
- 3) Deeply reducing freight emissions requires international cooperation to implement a systemic change in the current production, consumption and trading organisation able to manage transport demand. The MWP could contribute in identifying and discussing the policy conditions to :
 - a. Change production and consumption patterns towards a circular economy (reduce, reuse, recycle) favoring the limitation of material and resource use, repairing and sharing rather than buying new & multiplying goods.
 - b. Change localization patterns of production and sourcing activities to shorten the distances between production and consumption.
- 4) Deeply reducing freight emissions requires international cooperation to implement a systemic change in the current logistics organisation able to support modal shift to rail (and water to a certain extent). The MWP could contribute in identifying and discussing the policy conditions to :
 - a. Change delivery patterns and the constraints of the logistics system towards reducing fast delivery and small-size deliveries and relaxing delivery time constraints to facilitate the consolidation of flows
 - b. Finance, build and maintain multimodal transport and logistics infrastructures at all key flows intersections
 - c. Regulate access to transport & logistics infrastructures (access fee, speed regulations...)

¹ <https://unfccc.int/event/second-global-dialogue-and-the-second-investment-focused-event-under-the-sharm-el-sheikh-mitigation>

1) Why – Taking stock of current freight emissions and mitigation actions

About transport and freight emissions: Currently, the 9 GtCO₂eq emitted each year by the transport sector represent about 15% of total greenhouse gas (GHG) emissions. Transport-related emissions report a continuous growth since 1990 at an annual average of 2%, and increased faster than for any other end-use sector (IPCC, 2022). This is mainly due to accelerating demand and global supply chains, which could lead to almost tripling the tonne-kilometres by 2050 (ITF, 2021a), and the strong dependency to fossil fuels. Freight emissions account for about 40% of all transport GHG emissions (ITF, 2021a; SLoCaT, 2021) including international maritime freight's contribution of about 9% of transport sector GHG emissions.

About freight in NDCs: Current medium-term objectives and strategies for freight as reported in Nationally Determined Contributions (NDCs) under the United Nations Framework Convention on Climate Change, are far from being sufficient. Recent analyses highlight that freight transport measures are largely overlooked and very limited compared to passenger transport actions (ITF, 2021b; SLOCAT, 2021), while reinforcing sectoral details and granularity should be a priority (Gunfaus & Waisman, 2021; Hermwille, Obergassel, & Fragkos, 2022). Most freight decarbonisation measures focus on the development of low-carbon fuels, such as advanced biofuels or low-carbon electricity and the reduction of fuel consumption. They however neglect the development of infrastructures and incentives for rail, waterways and specific actions to transform the structure and length of supply chains (SLOCAT, 2021).

About freight in LTSs: Created under article 4.19 of the Paris Agreement, the “long term low greenhouse gas emission development strategies”, also known as Long-Term Strategies (LTSs), could represent a powerful policy tool to revise the NDC ambitions. Indeed, it could help to align NDCs' medium-term action horizon with the broader transformations and mid-century objectives described in the LTSs (Waisman et al., 2019). The development of country-driven and backcasted long-term deep decarbonisation pathways could play a key role to describe the economy-wide and sectoral systemic transformations by 2050-70 compatible with all country development priorities, and associated policy strategies over the next decades (Bataille et al., 2016; Waisman et al., 2019). However, LTSs are not yet developed, submitted and reviewed enough (UNFCCC, n.d.). In addition, it is evident from the literature that long-term freight pathways often exclude some important decarbonisation options such as those related to the systemic changes influencing the demand and supply chain structure, as well as modal choices (Tavasszy, Ruijgrok, & Davydenko, 2012), while deep decarbonisation requires such a broader set of options (de Blas, Mediavilla, Capellán-Pérez, & Duce, 2020).

To learn more: Briand et al. (submitted 2023, under revision). A pathway design framework for sectoral deep decarbonisation: the case of freight transportation. Climate Policy (under revision).

2) Tackling barriers of systemic changes through international cooperation

The latest IPCC Special Report on 1.5°C and AR6 highlight that reaching carbon neutrality by 2050 will require **unprecedented, rapid and far-reaching systemic transitions** in energy systems but also **land, urban and infrastructure, and industrial systems**, and will imply deep emission reductions in all sectors, including the freight transport sector. To reverse the current emission trend and structurally reduce them, the IPCC pinpoints that **technological innovations are not sufficient and a larger spectrum of mitigation options is required**.

Reaching zero-emission freight transport implies for example to transform existing production and consumption systems to reduce goods deliveries, shorten supply chains and facilitate modal shift and logistics optimization. But such systemic changes are complex to implement and require **structured international cooperation between countries and between the different actors**. In the freight sector, this will for example require **a strong involvement of the private sector and companies** who are the major transformational players of freight characteristics, supply chain organizations and demanded transport service levels.

Delving deeply into what these business transformations are is necessary **to identify the conditions of feasibility and the necessary actions of companies but also of governments and customers**. Indeed, companies' action rely also on the environment in which they operate, which is in turn critically conditioned by public policy.

Below, you can find two case studies with examples, which could be relevant to structure international discussions in the perspective of the MWP and facilitate cooperation between countries and actors.

Case study 1 – Cooperating to transform supply chain organisations

Companies, especially shippers and freight forwarders, hold key levers to drive systemic transitions not only in the transport systems itself but, more broadly, in the industrial processes and systems which contribute to the decarbonization of freight transport. **In other words, reaching zero-emission freight transport by 2050 requires a shift in companies' business models, organizations, as well as in their production, consumption and distribution processes to catalyze the larger spectrum of mitigation options.**

These transformations are expected to be driven by internal corporate decisions stimulated by changes in public policy **such as changing the national market access rules, import/export trade agreements, national industrial policies, consumer-oriented carbon labelling, among others.**

Based on the knowledge gathered through the Movin'On Community of Interest led by IDDRI and the SLOCAT Partnership on Sustainable Low Carbon Transport since 2020, structural business transformations and related challenges have been identified along:

- 1. Revisiting existing industrial processes and business models to reduce the number of freight movements;**
- 2. Revamping industrial facilities and suppliers to reduce the spatially fragmented supply chains;**
- 3. Changing logistics organizations and lowering transport service levels to support the consolidation of flows and facilitate modal shift.**

Learn more on:

- *Harry-Villain, L., Briand, Y., Waisman, H., Major, M., Castillo, L., Companies and carbon neutrality, a story of systemic transformations and cooperation: Illustration on the freight transport sector, Iddri, Note, November 2021.*
- <https://www.movinonconnect.com/en/coi/monde-affaires-soutenir-decarbonation-transport-marchandises/>

Case study 2 – Cooperating to transform logistics organisations

The evaluation of recent “modal shift to rail freight” strategies shows they often propose measures to develop infrastructure and improve rail competitiveness. **However, the strategies barely address the changes in the logistics context and their consistency with the development of rail’s market share.** And yet this logistical context defines all the limits and constraints within which the development of infrastructure, transport and logistics service solutions must take place. **Without clarifying this context, in an uncertain world, a modal shift strategy will not be able to offer a coherent vision of the main directions for rail freight.**

Based on the experience of the Deep Decarbonization Pathways network, key questions related to the evolution of the logistics context and their interactions with rail freight have been identified in relation with public action, as for example:

1) What service levels for freight transport? (Flexibility, stock, speed, total logistics cost)

- Trade and industrial rights and framework for service level strategies of companies regarding flexibility and stock requirements by sector and commodity.
- Production and consumption behaviour in terms of product variety, availability and delivery time.

2) What transformations for road transport (transport costs, speed, technologies)

- Labor laws and wages in the road transport sector.
- Driving restrictions (location, speed, weight, etc.) and consideration of various road transport externalities (wear and tear, congestion, accidentology, noise, air pollution, etc.).
- Regulatory, economic and infrastructural measures to support new technologies (autonomous lorries...) or new energies (electric, hydrogen...).

Learn more on:

- Briand, Y., Combes, F., Nierat, P., Waisman, H. (2020). How the Rail Freight Development Strategy can strengthen the sector’s ambition in France. IDDRI, Issue Brief N°06/20.
- Briand et al. (submitted 2023, under revision). A pathway design framework for sectoral deep decarbonisation: the case of freight transportation. Climate Policy (under revision).

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