E

The decarbonization of international trade

The transition to a low-carbon economy will require the transformation of many economic activities, including international trade. This chapter looks at the extent to which trade contributes to greenhouse gas emissions, but also assesses its importance for the diffusion of the technology and know-how needed to make production, transportation and consumption cleaner. Although carbon emissions associated with international trade have tended to decrease in recent years, bold steps are needed to further reduce trade-related emissions. Greater international cooperation is needed to support efforts to decarbonize supply chains and modes of international transport.

Contents

Key facts and findings

- Carbon emissions embodied in world exports are estimated to account for slightly less than 30 per cent of global carbon emissions in 2018. This share has been slowly declining since 2011.
- Emissions embodied in exports derive from both domestic and foreign inputs. From 1995 to 2018, the estimated share of CO_2 emissions with foreign origins in total trade-related emissions increased from 24 per cent to 31 per cent.
- Although trade increases global CO_2 emissions compared to a hypothetical autarky situation, simulation analysis suggests that the cost of GHG emissions associated with international trade would be outweighed by the benefits of international trade.
- Greater international cooperation on improving carbon content measurement, reducing emissions from the transport sector, and improving the sustainability of global supply chains is necessary to reduce trade-related greenhouse gas emissions.
- International support for developing countries is critical so that they can reduce their trade-related emissions, including those connected to sustainable agricultural supply chains.

1. Introduction

The transition to a low-carbon economy is likely to entail a transformation of most economic activities, including international trade. Reducing greenhouse gas (GHG) emissions will increasingly become a business imperative to remain competitive and efficient. Decarbonizing trade will require reducing carbon emissions from the production stage but also the transportation stage.

Although measuring the overall impact of trade on carbon emissions is complex, identifying carbon hotspots along the supply chains, where there is an intense generation of GHG emissions, is essential to prioritize and implement climate change mitigation strategies.

This chapter discusses how carbon emissions originating from international trade can be measured. It then reviews the channels through which international trade can increase or decrease emissions, and discusses how the level of carbon emissions and welfare would change in a counterfactual world with no international trade. The chapter concludes with a discussion on the role of international cooperation, including at the WTO, in supporting strategies that aim to reduce the carbon emission associated with international trade, such as improving carbon efficiency in transportation and ensuring the environmental sustainability of supply chains.

2. Accounting for carbon emissions originating from international trade is complex

Conceptually, the carbon emissions embedded in a traded product – sometimes referred to as carbon footprint – include all direct GHG emissions from the whole life cycle of a product, i.e., its production, assembly, packaging, shipping to the market (to consumers) and disposal. A more comprehensive measurement of embedded carbon emissions can also account for the indirect GHG emissions generated by the production and transportation of the inputs used to produce the final product or service, including the GHG emissions from the generation of the electricity used during production.

Changes in the way land is used to produce goods and services (e.g., clearing of forests for agricultural use) impact GHG emissions, and can be included in the assessment of the carbon emissions embedded in traded products. Land use change is estimated to account for 12.5 per cent of the carbon emissions associated with human activities between 1990 and 2010 (Houghton et al., 2012). The expansion of agriculture and the production of traded goods have been identified as important drivers of global land use change (Böhringer et al., 2021).

In practice, comprehensively estimating the carbon footprint of a product or an economic activity is complex and data-intensive. A common approach, known as carbon accounting, uses sectoral carbon emission data and input-output (I-O) tables, which track an economy's circular flow of goods and services, to estimate the carbon emissions associated with international trade (WTO, 2021a).[1]

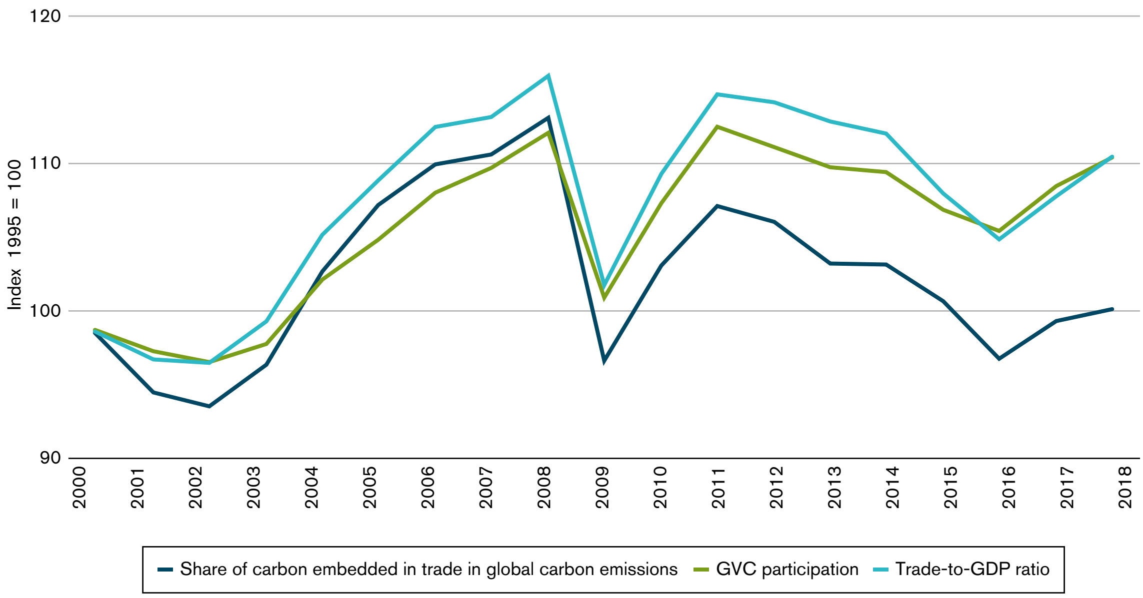
According to the most recent available estimates, the carbon emissions embedded in world exports in 2018 amounted to about 10 billion tons of CO_2, or slightly less than 30 per cent of global carbon emissions (OECD, 2022d). The share of CO_2 emissions embedded in trade in total emissions, while increasing significantly between 1995 and 2008, has been on a declining trend since 2011 (see Figure E.1). Moreover, since the financial crisis of 2008, carbon embedded in trade seems to have declined relative to trade's contribution to GDP or global value chain (GVC) participation, suggesting a decoupling of carbon emissions and trade thanks, in part, to greater energy efficiency.

Aggregate accounting results hide important regional differences. For instance, Canada, China, the European Union, India, Japan, the Republic of Korea, the Russian Federation, and the United States are found to be the main contributors to global carbon emissions embedded in international trade (see Figure E.2). Over the past decade, the growth of global carbon emissions embedded in trade has been mainly driven by a few high- and middle-income countries.

The amount of GHG emissions embedded in an economy's exports is determined by a broad range of factors, including its economic size, the sectoral composition of its foreign trade, its level of participation in global value chains, the modes of transportation used for its imports and exports and the energy efficiency of its production system, which depends in part on environmental and energy policies (WTO, 2021a). For instance, a few sectors, including energy and transportation, account for more than 75 per cent of the GHG emissions embedded in international trade (Yamano and Guilhoto, 2020).

Given that international trade separates production and consumption across space, carbon emission accounting can be analysed from a production

Figure E.1: The share of emissions embedded in international trade in total carbon emissions has been slowly decreasing in recent years



Source: Authors' calculation, based on the OECD Trade in embedded CO_2 ($TeCO_2$) database for carbon emissions embedded in trade, the World Bank's World Development Indicators for the trade-to-GDP ratio, and the OECD Trade in Value-Added (TiVA) database for GVC participation.

Note: Data have been normalized to 100 for the year 2000 to depict differences in trends. GVC participation is measured as share of foreign value-added in exports.

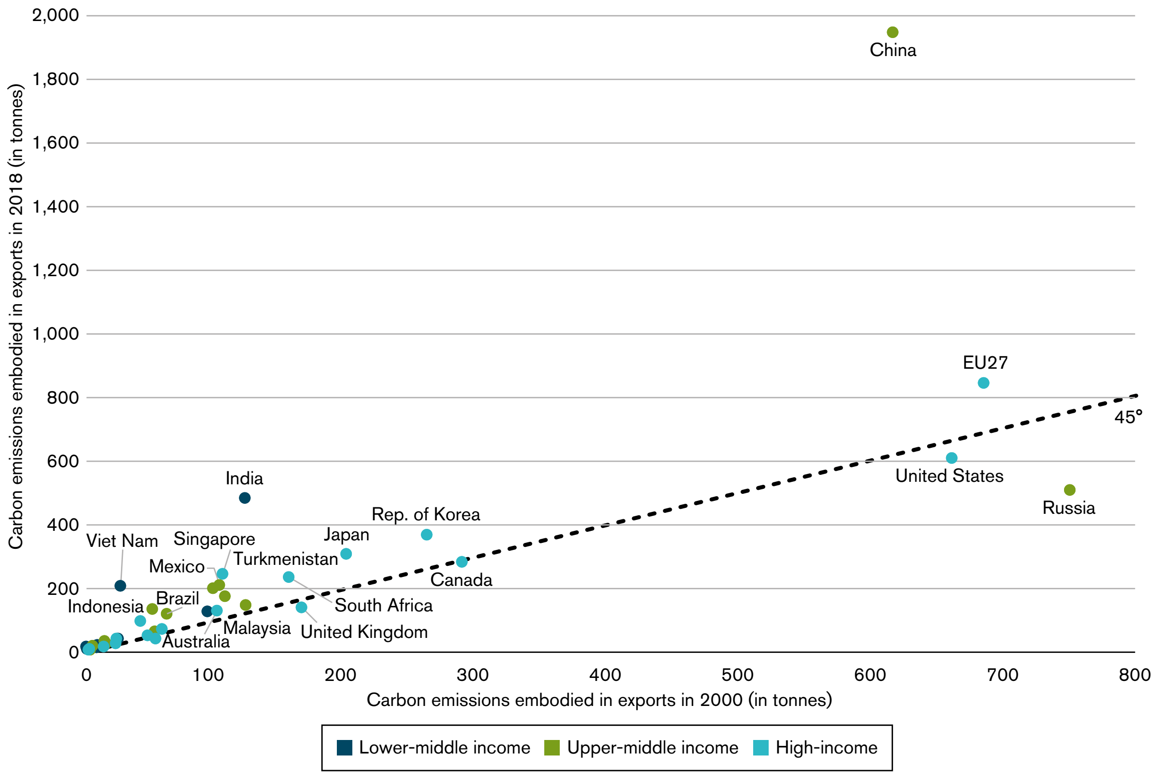
perspective (i.e., production of goods and services consumed domestically and exported) or a consumption perspective (i.e., consumption of goods and services produced domestically and imported). The difference between the production and consumption determines the trade balance in carbon emissions, namely whether economies are net importers or exporters of carbon emissions. While developed economies tend to be net importers of carbon emissions, developing economies and fossil fuel commodity dependent economies tend to be net exporters of carbon emissions (OECD, 2022d).

Although high-income economies remain more dependent on imported carbon-intensive activities than middle-income economies, the net imports of embedded carbon emissions has declined in recent years, in part thanks to improvements in energy efficiency (see Figure E.3) (Wood et al., 2020). Very few economies have, however, moved from being net importers of embedded carbon emissions to being net exporters, or vice versa (Yamano and Guilhoto, 2020).

The rise in GVCs has increased the fragmentation of production processes with the offshoring of some tasks. Emissions embedded in trade, therefore, can derive from the lifecycle of a product as well as from the embedded emissions in domestic and foreign inputs. Economies more integrated in GVCs have increased the share of carbon emissions embedded in imports of intermediate inputs, and thus the amount of carbon emissions embedded in their exports. From 1995 to 2018, the average share of carbon emissions with foreign origins in total trade-related emissions increased from 24 per cent to 31 per cent (OECD, 2022d).

While carbon emission accounting provides interesting insights on the amount and evolution of carbon emissions embedded in international trade, it is a purely descriptive analysis that cannot capture all aspects of the complex relationship between trade and carbon emissions. For instance, it does not provide any insights about the changes in carbon emissions and welfare that would arise in a counterfactual world in which trade is replaced by domestic production. More generally, carbon accounting is silent on the determinants of carbon emissions embedded in trade and on the net impact of trade on carbon emissions.

Figure E.2: The increase in carbon emissions embedded in international trade is mostly driven by a few economies



Source: Authors' calculation, based on OECD TeCO$_2$ database.

Note: The horizontal axis indicates the logarithm of carbon emissions embedded in exports in 2000, and the vertical axis indicates the logarithm of carbon emissions embedded in exports in 2018. The dashed line indicates the 45-degree line. Countries below the line have reduced the carbon emissions embedded in their exports between 2000 and 2018.

3. International trade affects carbon emissions in multiple ways, both positive and negative

The effect of trade on the environment is theoretically undetermined, because different mechanisms pulling in opposite directions are at play, and different factors determine the importance of the role of each of these mechanisms (WTO, 2013). The overall impact of trade on GHG emissions is therefore an empirical question.

(a) International trade can raise emissions through different channels

Trade-opening increases the level of production, transportation and consumption of goods and services, thus increasing carbon emissions. This is commonly referred to as the "scale effect" of trade (Antweiler, Copeland and Taylor, 2001).

Expansion of trade by GVCs, which accounts for almost half of global trade today (World Bank, 2020), also contributes to more carbon emissions from international transportation, i.e., an additional contributor to the scale effect.

Different modes of transport have different impacts on carbon emissions, which are in large part determined by the source of energy used (WTO, 2013). Air transport is the most carbon-intensive mode of transportation, followed by road transport (e.g., trucks). Rail and maritime transport are relatively less carbon-intensive.

The international transport sector is estimated to account for over 10.2 per cent of global carbon emissions in 2018 (OECD, 2022d). Although carbon emissions from the international transport sector fell by over 10 per cent in 2020 during the COVID-19 pandemic, they have been growing steadily at an average annual rate of 1.9 per cent since 1990 (ITF, 2021a).

While passenger transportation accounts for more than two-thirds of international transport emissions,

Figure E.3: Carbon emissions embedded in net imports of high-income countries have peaked in 2006

Source: Authors' calculation, based on OECD TeCO$_2$ database.

Note: Net exports of carbon emissions are the difference between carbon embedded in exports and carbon emissions embedded in gross imports. A negative net exports correspond to net imports of carbon emissions.

the remaining transport emissions are associated with international freight transport. International freight transport is also estimated to represent, on average, 33 per cent of the carbon emissions generated by international trade during the production and transport of goods traded internationally, the remaining 67 per cent of trade-related emissions are associated with the production of traded goods (Cristea et al., 2013).

Although the bulk of international trade continues to be transported by sea, trade-related transport activities and carbon emissions are projected to increase sharply due to the increase in air transport to deliver time-sensitive products, such as fruits and vegetables and consumer electronics.

Changes in the sectoral composition of production resulting from trade-opening can increase or reduce emissions, depending on whether or not the country has a comparative advantage in carbon-intensive industries (McLaren, 2012). This is commonly referred to as the "composition effect" (Antweiler, Copeland and Taylor, 2001).

According to the so-called "factor endowments hypothesis", trade opening will cause capital-abundant countries, typically developed economies, to specialize in the production of capital-intensive products, while developing countries specialize in labour-intensive production. The "factor endowment hypothesis" assumes that the pollution intensity of an economic sector tends to go hand in hand with its capital intensity. Accordingly, developed economies are assumed to specialize in carbon-intensive industries.

An alternative hypothesis, known as the "pollution haven hypothesis", assumes that climate policy, and implicitly the cost for firms to reduce or prevent carbon emissions, are the main source of comparative advantage. The hypothesis posits that trade opening will lead to the relocation of carbon-intensive production from countries with stringent climate policy to countries with relatively lax climate policy (Copeland and Taylor, 2004). Similarly, when firms slice up production along value chains, the carbon-intensive parts of production might be shifted from countries with stringent climate change regulations to those with weaker regulations, a phenomenon called "pollution outsourcing" (Cherniwchan, 2017; Cherniwchan, Copeland and Taylor, 2017; Cole, Elliott and Zhang, 2017).[2]

Additional scale and composition effects may arise if trade encourages or reallocates activities that lead to higher emissions, such as deforestation. Theoretically, the impact of trade-opening on deforestation can either be positive or negative (WTO, 2021c). Recent empirical studies find, however, a significant increase in deforestation in response to trade-opening (Abman and Lundberg, 2019; Faria and Almeida, 2016). It is estimated that around one-third of deforestation-related emissions were driven by international trade (Henders, Persson and Kastner, 2015; Pendrill et al., 2019).

(b) International trade can lower emissions through different channels

Trade can lower emissions by facilitating changes in production methods that reduce emissions per units of output, generally referred to as the "technique effect" (Antweiler, Copeland and Taylor, 2001). International trade facilitates the access and deployment of cleaner technologies, including carbon-friendly technologies that are not necessarily available in the importing countries. The increase in economic growth and per capita income associated with open trade can give rise to greater demand by the public for a cleaner environment.[3]

The demand for more climate-friendly solutions can result in more stringent climate policies that incentivize producers to reduce the carbon intensity of output, provided that policies are not influenced by industry lobbyists or otherwise compromised (Magnani, 2000; Nordström and Vaughan, 1999).

At the sector level, trade-opening may shift output shares to more productive and cleaner firms because firms engaged in trade tend to be more energy efficient than firms only servicing domestic markets.[4] This has been called the "pollution reduction by rationalization" hypothesis (Copeland, Shapiro and Taylor, 2022). Improved access to foreign intermediates due to input tariff liberalization can also trigger reductions in within-industry emission intensities.[5] The so-called "pollution halo hypothesis" further posits that multinational companies through foreign direct investment can transfer their environmental technology, such as pollution abatement, renewable energy and energy efficient technologies, to the host country (Eskeland and Harrison, 2003).

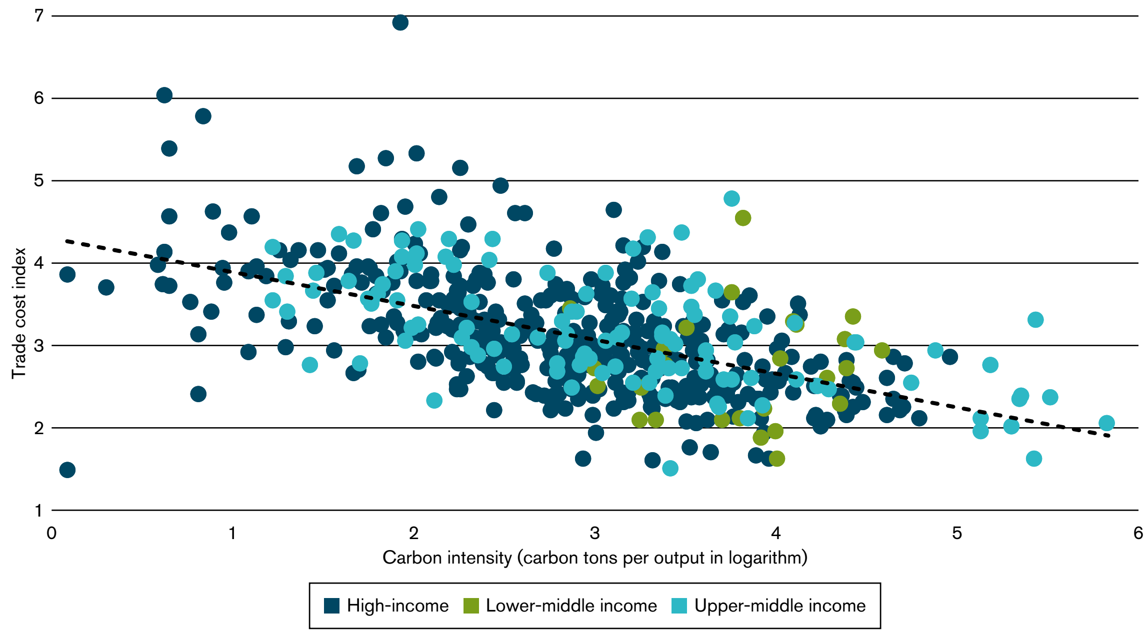
Trade openness can also stimulate innovation, including environmental innovation, through different channels (WTO, 2020a). Innovation and the adoption of energy efficient technologies can increase in response to increased competition from imports.[6] For instance, increased import competition due to tariff reductions has been found to cause Mexican production facilities to increase their energy efficiency (Gutiérrez and Teshima, 2018).[7] Similarly, export expansion due to trade liberalization in export markets can increase innovation (Bustos, 2011). For example, Indian firms exporting manufactures have been found to undergo technological upgrading in response to increased foreign demand (Barrows and Ollivier, 2021).[8]

Finally, trade policy changes also have the potential to affect emissions. Tariff and non-tariff barriers tend to be lower in carbon-intensive industries than in clean industries (see Figure E.4). Indeed, high carbon-intensive goods tend to be traded more than low carbon-intensive (Le Moigne and Ossa, 2021). This is mainly because trade barriers tend to be lower on upstream products (which are mainly used as inputs into production) than on downstream products (which are closest to the final consumption goods), and upstream products tend to be more carbon-intensive than downstream products. A recent counterfactual analysis shows that, if trade policy reform eliminated the environmental bias in trade policy by imposing the same tariff and non-tariff barrier structure in all industries, this would yield a win-win outcome: global real income would slightly increase (by 0.65 per cent), while global carbon emissions would fall by 3.6 per cent (Shapiro, 2021).[9]

(c) In the absence of international trade, welfare losses would outweigh the welfare gains due to lower carbon emissions

Several studies have empirically investigated the extent to which trade has an impact on carbon emissions through its impact on production and transport, on industry composition and on industry emission intensities (respectively, scale, composition and technique effects). Overall, the empirical literature suggests that trade-related reductions in emissions are mostly due to the technique effect, while the composition effect tends to be quite small (Copeland, Shapiro and Taylor, 2022).[10] The evidence that the composition effect is relatively small suggests that international trade driven by comparative advantage has not been responsible for a systematic relocation of pollution-intensive production out of countries with stringent environmental regulations, as would have

Figure E.4: Trade costs tend to be lower in carbon-intensive manufacturing industries



Source: Authors' calculation, based on Shapiro (2021) for carbon emission intensities in manufacturing industries and WTO Import Trade Cost Index for 2011.

Note: Each dot is an importer-industry (ISIC rev. 3.1 two-digit) combination. The trade cost index measures the cost of trading internationally relative to trading domestically.

been predicted by the "pollution haven hypothesis" (Cherniwchan and Taylor, 2022). This is because costs of abating emissions tend to represent only a small part of a firm's total operating costs, and other factors such as costs of capital, labour and proximity to the market are more important determinants of a firm's location decision.

With a relatively small composition effect, open trade may decrease or increase total carbon emissions depending on whether the technique effect overrides the scale effect. The empirical evidence on the net impact of trade on carbon emissions is mixed. The impact is sector- and country-specific and depends on a broad range of factors, including the type of pollutants, the country's level of development, energy intensity, types of energy sources used, types of products traded, modes of international transport, trading partners' location and energy and environmental policies in force.

For a global pollutant, such as carbon dioxide (CO_2), the scale effect tends to dominate, implying that trade increases emissions. However, for some local and regional pollutants such as particulate matter (PM) and sulphur dioxide (SO_2), the technique effect is likely to exceed the scale effect because governments have a greater incentive to reduce emissions of local pollutants given that the benefits of pollution abatement accrue more directly to their citizens.

In developed economies, the technique effect tends to dominate the scale effect, while the reverse is observed in developing economies because of relatively less stringent environmental regulations and limited access to pollution abatement technologies (Managi, 2006). As a result, open trade is associated with less carbon emissions in high-income economies but more carbon emissions in developing economies.

This finding corroborates the carbon accounting analysis discussed in the previous section and suggests that high income countries tend to be net importer of carbon emissions, with large amounts of carbon emissions emitted in developing countries to produce goods and services exported to high-income countries.

Several mechanisms contribute to the reduction of pollution emissions intensity underlying the technique effect. For instance, the reduction of nitrogen oxides (NOx) emissions in the manufacturing sector in the

United States has been found to be almost entirely driven by more stringent environmental regulations (Shapiro and Walker, 2018).[11] At the same time, trade can also affect emission intensity by reallocating market shares to exporting firms. Exporters in Indonesia have been found to be more energy-efficient and less reliant on fossil fuels compared with non-exporters (Roy and Yasar, 2015). In India, within-industry reallocation of market share as a result of trade produced large savings in GHG emissions (Martin, 2011).

Trade has also been found to induce a change in industry emission intensities of particulate matter (PM) and sulphur dioxide (SO_2) due to changes in the relative sizes of firms or to the entry of more productive firms and exit of less competitive firms (Holladay and LaPlue, 2021). Finally, changes in innovation activities and improved access to foreign intermediates induced by trade-opening can also contribute to reductions in industry emission intensity (Akerman, Forslid and Prane, 2021).

Given that international trade contributes to carbon emissions, there have been calls to reduce international trade by producing and consuming "locally". Such calls raise the question of what would be the level of carbon emissions if economies only produced and consumed locally while ensuring a high level of welfare. Although international trade emits GHG, it also generates trade gains and contributes to increase society's welfare by supporting economic growth, lowering prices, and increasing consumer choice and product variety, including with respect to climate-friendly goods, services and technologies.

While a situation of autarky is not observable, economists have used economic models to examine the question as a thought experiment. In a scenario where countries closed their borders to trade, domestic production of intermediate and final goods would need to rise to meet the demand for products that were previously imported. Compared with a hypothetical situation involving autarky (i.e., economic self-sufficiency) international trade would increase global CO_2 emissions by approximately 5 per cent, corresponding to 1.7 gigatons of CO_2 annually (Shapiro, 2016). This effect would be almost equally driven by production and transportation (scale effect), as, in the absence of trade, the resources used to produce goods and services for international markets would be employed in satisfying domestic demand. However, the benefits for producers and consumers from international trade, estimated at US$ 5.5 trillion, would exceed by two orders of magnitude the environmental costs from carbon emissions, estimated at US$ 34 billion.

This analysis suggests that, rather than unwinding trade integration – for example, by re-shoring production and promoting self-sufficiency – the better option would be to trade in a cleaner way, for example by reducing the carbon intensity of transportation, as well as developing and deploying environmental and carbon-friendly technologies and sourcing low-carbon inputs and products.

4. Reducing trade-related carbon emissions requires greater international cooperation

Although international trade is not the main contributor of GHG emissions, reducing trade-related GHG emissions is essential to contribute to the transition to a low-carbon economy. International cooperation is important to scale up strategies to decarbonize international trade and transport and to limit any undesired impacts that can hinder and slow down progress towards low-carbon trade.

International cooperation can contribute to a more coherent and predictable policy environment by providing a reference point for national climate change mitigation policy and help signal a more credible commitment to decarbonize international trade. Similarly, enhancing the transparency of measures aimed at reducing trade-related carbon emissions through greater international cooperation can facilitate the review and monitoring of actions and help to overcome resistance to decarbonizing some trade-related activities.

International cooperation can further help to mobilize financial and technical resources to overcome capacity constraints and facilitate access to capital and technologies that reduce trade-related carbon emissions. Technical assistance, capacity building and exchanges in knowledge and experience can also help promote a just transition to a low-carbon trade.

As discussed below, a broad range of regional and international organisations, including multilateral and regional financial institutions, address different dimensions of the decarbonization of international trade. The private sector is also active in efforts to decrease trade-related carbon emissions.

International cooperation on trade can also support efforts to reduce the carbon emissions embedded in international trade. An increasing number of regional trade agreements (RTAs) explicitly promote activities that can contribute to lower trade-related carbon emissions. Provisions explicitly promoting trade in environmental goods and services, including renewable energy and energy efficient products, are increasingly incorporated in RTAs (see Chapters C and D). A few, mostly recent, agreements specifically promote cooperation on sustainable transport, including through information and experience sharing.[12]

The WTO can also support the transition to a low-carbon trade by means of its existing framework of rules, as well as its negotiation forum, transparency requirements, monitoring system and capacity-building.

(a) Deeper international cooperation is required to facilitate carbon measurement and verification

Reducing carbon emissions associated with international trade requires accurately keeping track of the carbon emitted during the production and trade of goods and services, as well as the progress made in reducing those emissions. Different approaches have been developed to quantify the amount of carbon emissions in products and economic activities.

The scope of the carbon footprint within value chains is a particularly important criterion to define the boundary to include the full range of relevant emissions. As discussed in Chapter D, the carbon content of a product can cover the direct emissions from a production process (scope 1), the indirect emissions from the generation of purchased energy (scope 2), and the indirect upstream emissions and downstream emissions (scope 3) in a company's value chain, including investment, transportation and distribution. Relevant information, including the benchmarks of measuring carbon emissions, is essential to quantify the amount of carbon.

Several standards and guidelines have been published to provide overall guidance on calculating the carbon footprint of products and economic activities. For instance, the International Organization for Standardization (ISO) released the ISO 14067:2018, which sets out requirements and guidelines for quantification and reporting for the carbon footprint of products. The private sector has launched a number of initiatives, such as the GHG Protocol Corporate Accounting and Reporting Standard, which provides requirements and guidance for companies preparing a corporate-level GHG emissions inventory.

Although there is ongoing international cooperation on carbon measurement and verification, more global coherence is needed in this area, given the growing number of carbon measurement standards. At the national level, various standards have also been developed for carbon emissions measurement. There are also sector-specific standards that are tailored to calculate the carbon content in specific industry settings (WTO, 2022c).

As efforts to decarbonize increase, a proliferation of different standards could create unpredictability for producers and impose burdensome costs on them, and ultimately reduce the effectiveness of efforts to reduce carbon emissions. Moreover, carbon measurement methodologies should be backed by a robust system of verification. Without convergence or common understandings on carbon measurement and verification approaches, countries may encounter difficulties implementing certain trade-related climate policies aimed at decarbonizing international trade.

One important dimension of cooperation on carbon measurement and verification relates to the development and international recognition of quality infrastructure institutions. Quality infrastructure refers to the systems (both public and private), policies and practices that support and enhance the quality, safety and environmental soundness of goods that are traded. It relies on standardization, accreditation, conformity assessment, metrology and market surveillance.

The WTO supports efforts to promote a coherent carbon measurement and verification approach by providing a set of rules calling for convergence around common standards and verification procedures, and a forum where its members can cooperate to ensure that countries around the world have the quality infrastructure they need for carbon measurement and verification.

For these reasons, the manner in which international standards for measuring carbon are set will have a decisive impact on their use. The WTO supports international cooperation in this area. The use of relevant international standards is strongly encouraged under the Agreement on Technical Barriers to Trade (TBT), and the TBT Committee has developed "Six Principles for the Development of International Standards, Guides and Recommendations", namely (1) transparency, (2) openness, (3) impartiality and consensus, (4) effectiveness and relevance, (5) coherence, and (6) the development dimension, to address important areas of international standard-setting.[13] These six principles can play a significant role in the development of new international standards relating to carbon emissions quantification. For instance, observing these principles ensures that relevant information is made available to all interested parties, that sufficient opportunities for written comments are provided, that conflicting international standards are not adopted, and, importantly, that constraints facing developing countries are considered.

Aligning verification approaches with respect to the information provided by producers and exports on the carbon content of products is important to increase trust in the verification process and in carbon efficiency claims. Mutual recognition of the results of verification procedures can also contribute to a reduction in compliance costs. The TBT Agreement encourages members to accept the results of procedures adopted by other members, even if they are different from their own, if those procedures offer an equivalent assurance of conformity with applicable technical regulations or standards.

The participation of developing countries and least-developed countries (LDCs), as well as micro, small and medium-sized and enterprises (MSMEs) across the globe, in the transition to a low-emission global economy depends on their ability to measure and verify the carbon content of products. Deficient quality infrastructure in many LDCs and developing countries risks excluding them, creating bottlenecks in the decarbonization of supply chains and preventing low-carbon solutions from gaining access to the market.

Other issues that can impact developing countries include the extent to which direct and indirect land use change may have a bearing on carbon footprint calculations, as well as challenges that developing countries have in accessing accurate historical data on local land use change (Gheewala and Mungkung, 2013).

International support for developing countries is critical so that they can accurately measure and verify the carbon content of their products and participate in setting relevant international standards. A number of multilateral organizations support developing countries in improving their quality infrastructure, including in areas related to standardization and conformity assessment.[14] Further support to improve developing countries' capacities in the area of carbon standards would be beneficial.

Moreover, WTO bodies, such as the TBT Committee and the Committee on Trade and Environment (CTE) have held discussions on trade-related aspects of carbon footprint policies and methodologies.[15] In addition, the WTO could serve as a forum to hold more specific discussions at the multilateral level on trade-related aspects of carbon measurement methodologies and verification procedures, as well as on possible ways to support developing countries in this area.

(b) Reducing carbon emissions in international transport requires more international cooperation

Trade-related GHG emission abatement cannot be fully achieved without reducing carbon emissions from international transportation. As discussed above, transportation is an important contributor to the GHG emissions generated by international trade for many products (Cristea et al., 2013). Transport is also a major source of air and water pollution. Ensuring domestic and international transport is more sustainable and climate-friendly is essential to achieve a low-carbon economy.

Major decarbonization pathways for international transport include switching to lower-carbon fuels (for example, biofuels, hydrogen or renewable electricity), improving aircraft, vehicle and vessel efficiency, phasing-out high-carbon intensive vehicles and improving system-wide operational efficiency, including through the planning of efficient routes and the use of vehicle-sharing.[16] If it proves impossible to completely eliminate carbon emissions of transport at the source, remaining carbon emissions from international transport could be compensated through carbon offsets and new technologies, such as carbon capture, utilization and storage.[17]

Despite recent progress, the transition to a low-carbon international transport involves several challenges, including ensuring that the production of alternative, lower-carbon fuels does not increase emissions, managing the higher cost and lower energy density of alternative and lower-carbon fuels, and creating the necessary infrastructure such as charging facilities for electric vehicles.

Unlike domestic aviation and shipping, emissions from international aviation and shipping activities are not covered by the nationally determined contributions (NDCs) established under the Paris Agreement, because they take place, in part, beyond the territorial boundaries of states. The International Marine Organization (IMO) and the International Civil Aviation Organization (ICAO) have been tasked to find solutions to mitigate GHG emissions from international maritime and air transport, respectively.

(i) Maritime transport

Although maritime transport has relatively low carbon intensity,[18] international shipping is nevertheless estimated to be responsible for 2.9 per cent of global carbon emissions in 2018 (IMO, 2020) in large part due to the fact that it is the main mode of transport for global trade.

Annual emissions from shipping are forecast to grow by 15 per cent by 2030 in the absence of ambitious climate targets. Various commitments and initiatives to decarbonize maritime transport have been adopted and launched by both public and private actors at the international and regional levels.

At the international level, the IMO's Initial GHG Strategy, adopted in 2018, provides a policy framework and guiding principles to reduce carbon intensity of international shipping (CO_2 emissions per transport work) by at least 40 per cent by 2030 and pursuing efforts towards 70 per cent by 2050, and to reduce GHG emissions from international shipping by at least 50 per cent by 2050, compared to 2008 levels.[19] The IMO Initial GHG Strategy also seeks to strengthen the energy efficiency design requirements for ships.

The shipping industry supports the IMO's Initial GHG Strategy through a number of initiatives. For example, the Getting to Zero Coalition, an alliance of more than 150 companies across the shipping value chain supported by governments and intergovernmental organizations, aims to get commercially viable zero-emission vessels operating along deep-sea trade routes by 2030.[20]

Regional cooperation is also active in supporting the decarbonization of international maritime transport. For instance, the Pacific Blue Shipping Partnership launched by Fiji, Kiribati, the Marshall Islands, Samoa, the Solomon Islands, Tuvalu and Vanuatu, commits to a 40 per cent reduction in carbon emissions for Pacific shipping by 2030 and full decarbonization of the sector by 2050.[21] More recently, 22 developed and developing countries signed in 2021 the Clydebank Declaration with the aim of establishing six zero carbon emission maritime routes between two or more ports around the world by 2025.[22]

International cooperation is also critical to secure the large amount of financing required for decarbonizing shipping (Christensen, 2020). In this context, the IMO and Norway launched the Green Voyage 2050 project to support developing countries, including small-island developing states (SIDS) and LDCs, in meeting commitments to climate change and energy efficiency goals in shipping (IMO, 2019b).[23] Similarly, the Pacific Blue Shipping Partnership is seeking US$ 500 million from multilateral and bilateral development finance and the private sector to retrofit existing cargo and passenger ferries with low-carbon technologies and to buy zero-emission vessels.[24]

The WTO can also support the efforts to decarbonize international maritime transport, for example, by facilitating reductions in barriers to trade in goods and services involved in the production process of low-emission fuels for shipping (see Chapter F); by ensuring that trade-related regulatory changes, including energy efficiency requirements, are non-discriminatory; and by ensuring that the views of interested parties, including developing countries, are taken into account in discussions at the WTO on the trade impacts of decarbonizing shipping.

Moreover, as discussed in Chapter C, WTO rules can help to ensure that trade-related climate change mitigation measures, such as taxes, support measures and regulatory measures, applied in shipping for decarbonization purposes are transparent and do not distort the shipping market. For example, notifications under the General Agreement on Trade in Services (GATS) and the exchange of information in the Council for Trade in Services could increase regulatory transparency with respect to shipping-related decarbonization measures (e.g., tonnage and bunker taxes), and could contribute to further increase the predictability of trade policy and the credibility of policy commitments to decarbonize the sector.

(ii) Air transport

International aviation is the most carbon-intensive mode of transport and is estimated to be responsible for 1.3 per cent of global CO_2 emissions (ICAO, 2017).[25] Emissions from international aviation are expected to increase through 2050 by a factor ranging from approximately 2 to 4 times the 2015 levels, depending on the type of emissions and the scenario used (ICAO, 2019). Although decarbonizing aviation remains challenging, it has become an integral part of business strategies in the sector. Several international and regional initiatives are being introduced or implemented by both public and private stakeholders to support the transition to a low-carbon aviation industry.

The International Civil Aviation Organization (ICAO) adopted in 2016 the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) to allow aircraft operators to buy emissions reduction offsets from other sectors to compensate for any increase in their own emissions above 2020 levels, thereby achieving carbon neutral growth from that year.[26] The mandatory phase of CORSIA will start in 2027. In addition, ICAO also promotes aircraft technology improvements, operational improvements and sustainable aviation fuels to contribute to the global aspirational goals of 2 per cent annual fuel efficiency improvement for the international aviation sector through 2050 and carbon neutral growth from 2020 onwards.

OPINION PIECE

By Sophie Punte
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Building momentum for zero-emissions freight movement

International trade is indispensable. Yet the vital role played by freight transportation and logistics is often forgotten. Only now are leaders waking up to how vulnerable the supply of essential goods is in times of crises, whether as a result of pandemics, international conflicts, or climate-related disasters. A sector that contributes around 11 per cent of both global CO_2 emissions and global GDP and constitutes a reliable and sustainable transport system can play a critical role in the transition to a decarbonized future as well as in adaptation to the impacts of climate change.

The key to delivering a zero-emissions freight industry lies in international cooperation based on the Paris Agreement and the UN Sustainable Development Goals.

First, to reduce emissions and respond to supply chain shocks or disruptions, we need increased transparency in the logistics supply chain. Carbon emissions are an indicator that does not lie. Price can be negotiated up or down but you cannot negotiate the actual CO_2 footprint, and that makes it a more reliable indicator than prices on which to base decisions. Smart Freight Centre's Global Logistics Emissions Council (GLEC) Framework – a methodology for harmonizing the calculation and reporting of the logistics GHG footprint across supply chains – and soon the ISO 14083 standard, allow for consistent calculation and reporting of global logistics emissions. If coupled with blockchain technology, the sector could deliver a transparency revolution. This trend will go even further with the upcoming International Sustainability Standards Board (ISSB) standard, as well as and EU and US regulations requiring companies to disclose sustainability and climate information that is relevant to investors and stakeholders.

Second, we must go all out to decarbonize freight transport. Solutions range from sustainable aviation fuel and zero-emission ships and trucks, to fleet efficiency, a shift to less carbon-intensive transport modes and reducing freight demand. A complex but fortunately increasingly aligned number of initiatives is bringing stakeholders together to deliver these solutions. The 50+ companies of the First Movers Coalition, supported by initiatives such as the Mission Possible Partnership, Smart Freight Centre and Climate Group, send market demand signals for zero-emission aviation, shipping and trucking. Carbon offsetting and CO_2 removal should be used as a last resort where mitigation is not (yet) possible, but not as an alternative to action. A much-preferred service now offered by several logistics service providers is "carbon insetting": customers' emissions are reduced within the logistics sector, helping to drive investment into greener technologies and strategies.

Third, collaboration and supportive policy is critical, and can take various forms. For example, the Sustainable Trade Initiative works with 600 companies and governments on new sustainable production and trade models in emerging economies across 12 sectors, all of which involve transport. Policies that cut across trade and climate include carbon border adjustment mechanisms, fossil fuel subsidy reforms, renewable energy trading and technology transfer. The We Mean Business Coalition focuses on raising policy ambition with the backing of leading businesses that are setting science-based targets and taking action.

Governments, businesses and civil society all have every reason to work together in pursuit of carbon neutrality and sustainability in international transport. The benefits for international trade and the climate will be felt for generations to come.

The International Air Transport Association (IATA), the trade association of the world's airlines, approved in 2021 a resolution for the global air transport industry to achieve net-zero carbon emissions by 2050.[27] The financial sector is also active in supporting the decarbonization of the aviation industry. For instance, the Aviation Climate-Aligned Finance Working Group, launched in 2022 by several international lenders to the aviation sector, commits the participating financial institutions to annually disclose the degree to which GHG emissions from aircraft, airlines, and lessors they finance align with the 1.5°C climate targets.[28]

The WTO can also support the transition to a low carbon aviation industry. As noted in Chapter F, reducing barriers to trade in climate-friendly aircraft components, such as electric and hybrid-electric engines, could contribute to decarbonizing the sector and stimulate carbon-abating innovations. Improved access to software platforms, particularly if bound under the WTO Agreements, could help optimize available seats or air freight capacity in aircrafts by shifting traffic onto lower load flights by relying on real-time data to dynamically adjust prices, which would contribute to decarbonization (ITF, 2021b). Moreover, carbon emissions could also be reduced by fostering trade in digital services, such as teleconferencing, to reduce demand for business-related flights (Munari, 2020).[29]

Cooperation at the WTO could also improve the operational efficiency of the sector. Although air transport is largely excluded from the scope of the GATS,[30] the GATS does apply to measures affecting three aviation sub-sectors: aircraft repair and maintenance, computer reservation system services, and the selling and marketing of air transport services.[31] Further liberalization of aircraft repair and maintenance services could enable airlines to gain access, both domestically and in foreign destinations, to a wider range of suppliers able to deal with climate-friendly aircrafts. Similarly, opening up access to foreign airport operators and the capital injections they could potentially bring could help invest in new and retrofitted energy-efficient infrastructures, electrified ground-handling services, low-energy vehicles and equipment, and zero-cargo energy and fuel sources (ATAG, 2020; ITF, 2021b; Nieto, Alonso and Cubas, 2019).[32]

(iii) Road transport

Road freight transport is critical for the entire logistics chain. International road freight transport is estimated to account for 3.7 per cent of global carbon emissions (OECD, 2022d). Road freight is also estimated to account for 53 per cent of carbon emissions in global trade-related transport, a share that could rise to 56 per cent by 2050 if current trends continue (WEF, 2021).

Decarbonizing the road freight transport sector is particularly challenging and requires coordinated actions. For instance, no single fuel solution can meet operators' needs and therefore a variety of technologies must be pursued in parallel to achieve a decarbonization of road freight transport (IRU, 2020). International cooperation on low-carbon road transport remains, however, more fragmented than other modes of international transport.

At the 2021 United Nations Climate Change Conference (COP26), a large number of governments, vehicle manufacturers, shippers and financial institutions, signed the Glasgow Declaration on Zero-Emission Cars and Vans, committing to ensuring that new cars and vans being sold by 2035 in leading markets, and by 2040 for the rest of the world would be zero-emission.[33] In addition, 15 high-income economies signed a Global Memorandum of Understanding on Zero-Emission Medium- and Heavy-Duty Vehicles to work together toward increasing sales of new zero-emission trucks and buses to 30 per cent by 2030 and to 100 per cent by 2040.[34] In 2021, the International Road Transport Union (IRU), which represents the road transport industry in over 80 countries, launched a Green Compact to achieve carbon neutrality by 2050 (IRU, 2021).

These initiatives complement other projects, such as the World Economic Forum's (WEF) Road Freight Zero initiative established in 2020 and designed to help industry leaders jointly develop solutions, including action plans for scaling up finance mechanisms and new lending and investment products.[35]

Like the decarbonization of other modes of international transport, the WTO can support efforts to reduce carbon emissions from road freight transport by facilitating the access and deployment of renewable energy and energy-efficient goods, services and technologies, including electric cars and trucks (see Chapter F), and by promoting non-discriminatory trade-related regulations, including energy efficiency requirements. Trade-related transport emissions could, to some extent, also be reduced by minimizing delays when clearing customs (Duval and Hardy, 2021; Reyna et al., 2016).[36]

In this context, the implementation of the WTO's Trade Facilitation Agreement (TFA), especially its provisions on single windows (i.e., single entry points at which traders can lodge standardized information and documents required for trade and transport), pre-arrival processing, electronic payment, and separation of release from final determination of customs duties, taxes, fees and charges, can speed up customs clearance, possibly reducing some carbon emissions from international trade.[37]

(c) International cooperation is needed to ensure that the decarbonization of supply chains limits market fragmentation

As discussed previously, decarbonizing supply chains can be achieved in different ways (see also Chapter C). However, much of the value of decarbonizing supply chains will likely come from the ability of economic operators to demonstrate and communicate their emissions reduction efforts to potential stakeholders. In that context, sustainability certification and labelling schemes can be important instruments to further incentivize firms to pursue the decarbonization of their value chains.

The multiplication of sustainability certification and labelling schemes is a visible sign of the rapidly expanding global market for sustainable products. In recent decades, many governments, producers, retailers and non-governmental organizations around the world have promoted such schemes to strengthen the market incentives for producers to opt for more sustainable production, while cultivating consumer awareness of environmental and social issues. For instance, in agriculture, the use of sustainability certification and labelling schemes has increased markedly. The value of the global organic food market has more than quadrupled since 2000, exceeding 120 billion Euros in 2020 (FiBL, 2022).

However, the proliferation of sustainability schemes in recent years has raised concerns about their effect on trade costs and possible impacts on market access for exporters, particularly from developing countries. Costs increase when the schemes multiply across geographic or thematic areas, fail to converge or recognize each other's equivalence, or when they do not include opportunities for collaboration in areas such as training or inspection (WTO and UNEP, 2018).

Trade could play an important role in strengthening the markets for sustainable products and in expanding related economic opportunities. For trade to do so, it must, however, be underpinned by an open, transparent, rules-based and inclusive trading system. As part of this, it is important to ensure that sustainability requirements are transparent, and are based on relevant international standards, while not creating any unnecessary barriers to trade (WTO and UNEP, 2018).

Thus, while vigorous action is needed to improve the sustainability of global supply chains, it is also important to take into account the concerns of various stakeholders, including in developing countries.

The WTO plays an important role in contributing to a better understanding of the trade impact of environmental policies, sustainability certification and labelling schemes and can help to identify best practices. For example, the CTE has been an important forum for members, including developing ones, to present and comment on recent climate proposals related to various sectors, including agriculture and forestry.[38] Other aspects of sustainable supply chains have also been discussed in the CTE, such as the need to enhance the availability of comparable and reliable information on the environmental impact of products.[39]

Ongoing initiatives at the WTO could further contribute to support the decarbonization of supply chains. For instance, the Trade and Environmental Sustainability Structured Discussions (TESSD), launched in 2021, intend to identify and compile best practices and explore opportunities to ensure that trade and trade policies contribute to promoting sustainable supply chains and addressing the challenges and opportunities arising from the use of sustainability standards, particularly for developing members. The Informal Dialogue on Plastics Pollution and Environmentally Sustainable Plastics Trade could also promote low carbon supply chains by contributing to efforts to reduce plastics pollution and promoting the transition to more environmentally sustainable trade in plastics.

5. Conclusion

Trade, like any economic activity, generates GHG emissions. Carbon emissions released by the production and transport of traded products are estimated to represent about one-third of global carbon emissions, a share that has been slowly declining in recent years. While estimating the amount of carbon emissions associated with international trade is important to identify climate mitigation priorities, it is also important to determine what impacts trade actually has on GHG emissions.

International trade affects GHG emissions in several different ways. Trade generates GHG emissions through the production, transportation, distribution and consumption of traded products, and it increases emissions by stimulating economic activity through increased income. On the other hand, trade can facilitate changes in production methods that reduce emissions per units of output, and modify the sectoral composition of the economy by allowing the production and consumption of goods and services to take place in different regions.

Overall, international trade has been found to lead to a relatively limited net increase in carbon emissions relative to a counterfactual "autarky" situation which would be associated with a significantly lower welfare level. Decarbonizing international trade is, however, essential to support the transition to a low carbon economy.

A successful decarbonization pathway for international trade requires adequately measuring and verifying carbon emissions resulting from trade, improving carbon efficiency in production and transportation, and developing environmentally sustainable supply chains. International trade cooperation, including through the WTO, can play an important role in supporting and scaling up these efforts.

Endnotes

1 Due to a lack of data, available estimates of carbon emissions embedded in international trade cover mostly high- and upper-middle-income countries. Estimates are only available for a few lower-middle income countries. Estimates for LDCs are not available (OECD, 2022d).

2 The literature distinguishes between the "pollution haven effect" and the "pollution haven hypothesis". The pollution haven effect assumes that an increase in environmental standards reduces exports (or increases imports) of carbon-intensive goods. The "pollution haven hypothesis" assumes a reduction in trade costs results in production of carbon-intensive goods shifting towards countries with lower environmental standards. The existence of "pollution haven effects" is a necessary, but not a sufficient condition, for the "pollution haven hypothesis" to hold. While some studies find evidence of "pollution haven effects", there is no empirical evidence of the "pollution haven hypothesis" (Copeland, Shapiro and Taylor, 2022).

3 The relationship between environmental pollution and income level might not be linear, but inverted U-shaped, as described by the Environmental Kuznets Curve. See Stern (2017b) for recent evidence of a decoupling of emissions and GDP growth in many advanced economies over recent decades, consistent with the Environmental Kuznets Curve.

4 Evidence that exporters have lower emission intensities than other firms is provided by Richter and Schiersch (2017) for German manufacturing firms, and by Banerjee, Roy and Yasar (2021) for Indonesian firms.

5 Evidence that becoming an importer of foreign intermediates boosts energy efficiency is provided by Imbruno and Ketterer (2018) for the Indonesian manufacturing sector in the period between 1991 and 2005. Similarly, an analysis of the impact of China's accession to the WTO shows that a 1 per cent reduction in input tariffs decreased the sulphur dioxide (SO_2) emission intensity of Chinese firms by 6 to 7 per cent (Cui et al., 2020).

6 A large body of literature has shown that this mechanism is relevant in developing countries (Gorodnichenko, Svejnar and Terrell, 2010; Shu and Steinweider, 2019), but also in EU countries in response to Chinese import competition (Bloom, Draka and Van Reenen, 2016). These studies, however, do not explicitly focus on environmental innovation.

7 Gutiérrez and Teshima (2018), however, also find evidence of a reduction in Mexican production facilities' investments in pollution abatement.

8 Barrows and Ollivier (2021) find that, while foreign demand growth increased carbon emissions growth rates for Indian firms exporting manufactures over the period between 1998 and 2011, technological upgrading in response to increased foreign demand mitigated roughly half of this increase.

9 Shapiro (2021), however, also shows that eliminating the environmental bias in trade policy would imply substantial carbon emissions increases in Europe and very slight increases in China, while other regions would see their emissions decrease.

10 See Antweiler, Copeland and Taylor (2001), and subsequent contributions including Cole and Elliott (2003), Grether, Mathys and de Melo (2009), Levinson (2009, 2015), Managi, Hibiki and Tsurumi (2009), and Shapiro and Walker (2018).

11 Conversely, trade liberalization following the North American Free Trade Agreement (NAFTA) was found to decrease particulate matter (PM) and sulphur dioxide (SO_2) intensities of production in the United States through within-plant changes, including the adoption of new technologies and fragmentation of production in response to differences in environmental regulation across the United States and Mexico (Cherniwchan, 2017).

12 For example, United States-Mexico-Canada RTA and European Union-United Kingdom RTA.

13 See "Decisions and Recommendations Adopted by the WTO Committee on Technical Barriers to Trade since 1 January 1995", WTO official document number G/TBT/1/Rev.14, pages 62-64, which can be consulted at https://docs.wto.org/.

14 A list of the organizations operating at the international and regional levels in promoting quality infrastructure and that are part of the International Network on Quality Infrastructure can be found here: https://www.inetqi.net/about/members/.

15 See, for instance, Minutes of the Meeting of the Committee on Trade and Environment, November 2020, WT/CTE/M/70, para 2.24; and Minutes of the Meeting of the Committee on Technical Barriers to Trade, November 2021, G/TBT/M/85: paras 2.171- 2.175, which can be consulted at https://docs.wto.org/.

16 Although not discussed in detail here, international cooperation on international rail transport is also important to decarbonize part of international trade.

17 Carbon offsetting allows airlines and passengers to compensate for the carbon released by the aircraft by investing in carbon reduction projects in other areas (e.g., planting trees). Direct air carbon capture is a new technology which can remove carbon emissions directly from the ambient air.

18 Maritime transport emits other types of air pollution, including nitrogen oxides (NOx), sulphur oxides (SOx) and particulate matter, and contributes to marine pollution, such as oil spills and littering.

19 See https://www.imo.org/en/MediaCentre/HotTopics/Pages/Cutting-GHG-emissions.aspx.

20 See https://www.globalmaritimeforum.org/getting-to-zero-coalition.

21 See https://www.councilpacificaffairs.org/news-media/pacific-blue-shipping-partnership/.

22 See https://www.gov.uk/government/publications/cop-26-clydebank-declaration-for-green-shipping-corridors/cop-26-clydebank-declaration-for-green-shipping-corridors/.

23 See https://greenvoyage2050.imo.org/.

24 See https://www.mcttt.gov.fj/decarbonising-domestic-shipping-industry-pacific-blue-shipping-partnership/.

25 According to the IEA, CO_2 emissions from domestic and international aviation accounted for about 2.8 per cent of global CO_2 emissions from fossil fuel combustion in 2019.

26 Only emissions from international flights, which account for around 65 per cent of the aviation industry's CO_2 emissions, are covered by ICAO, whereas emissions from domestic aviation are covered by national pledges under the 2015 Paris Agreement (https://www.un.org/en/climatechange/paris-agreement).

27 ICAO's plan is to abate CO_2 as much as possible from in-sector solutions such as sustainable aviation fuels, new aircraft technology, more efficient operations and infrastructure, and the development of new zero-emissions energy sources such as electric and hydrogen power. Any remaining emissions would be addressed through carbon capture and storage and carbon offsets.

28 See https://climatealignment.org/.

29 While digitalization acts as an important driver of decarbonization, digital technologies contribute to between 1.4 per cent to 5.9 per cent of GHG emissions (The Royal Society, 2020). This figure is expected to rise given the increasing internet use. Improving energy efficiency in data centers and data transmission network and switching to renewable energy sources can contribute to low-carbon digitalization.

30 For example, the GATS does not cover traffic rights (i.e., the right for airlines to operate and/or to carry passengers, cargo and mail from, to, within, or over the territory of a WTO member) and services directly related to the exercise of traffic rights.

31 Moreover, developments in the sector are meant to be kept under regular review, with a view to «considering the possible further application of the Agreement» (GATS Annex on Air Transport Services, paragraph 5, available at https://www.wto.org/english/docs_e/legal_e/26-gats_02_e.htm#annats).

32 Some WTO members are of the view that the coverage of the GATS should extend to ground-handling and airport management services. See, for instance, "Review of the GATS Annex on Air Transport Services - Communication by the European Union and its Member States" (WTO official document number S/C/W/280, accessible via https://docs.wto.org/.).

33 See https://www.gov.uk/government/publications/cop26-declaration-zero-emission-cars-and-vans/cop26-declaration-on-accelerating-the-transition-to-100-zero-emission-cars-and-vans/.

34 See https://globaldrivetozero.org/mou-nations/.

35 See https://www.weforum.org/projects/decarbonizing-road-freight-initiative/.

36 It should be emphasized, however, that reducing delays in clearing customs could also increase trade (a scale effect) and therefore trade-related transport emissions.

37 Other complementing trade-related initiatives include the United Nations Economic Commission for Europe (UNECE) Customs Convention on the International Transport of Goods under Cover of TIR (International Road Transport) Carnets which provides a global transit system that streamlines procedures at borders and reduces administrative burdens for international road transport and logistics firms.

38 Various climate proposals have been discussed recently in the CTE, including the Forest, Agricultural and Commodity Trade (FACT) Initiative co-chaired by the United Kingdom and Indonesia, which seeks to break the links between commodity production and net deforestation globally (see Minutes of the Meeting of the Committee on Trade and Environment, October 2021, WT/CTE/M/73, para. 1.77); and the European Union's new strategy to reduce habitat loss and promote deforestation-free supply chains (see Minutes of the Meeting of the Committee on Trade and Environment, November 2020, WT/CTE/M/70, para 1.73). Paraguay also shared experiences on its agricultural system of soil rotation and biotechnology, which increased agricultural productivity without modifying land use, thereby preserving forests (see Minutes of the Meeting of the Committee on Trade and Environment, November 2020, WTO official document number WT/CTE/M/70, para 1.60, accessible via https://docs.wto.org/).

39 See, for instance, the discussion of the European Union's Single Market for Green Products Initiative (see Minutes of the Meeting of the Committee on Trade and Environment, October 2014, WTO official document number WT/CTE/M/58, para 1.1, accessible via https://docs.wto.org/).