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Sustainable and resilient transport and trade facilitation in times of pandemic and beyond: Key challenges and opportunities*

Note by the UNCTAD secretariat

Summary

The disruption from the coronavirus disease (COVID-19) and uncertainty about a lasting recovery are stark reminders of how unprepared transport and logistics are in the face of disruptions. Pandemic-induced shifts in supply, consumption and demand patterns, the rise in logistical bottlenecks, port congestion and delays, the surge in shipping rates and costs, and the deterioration in service reliability have all become a feature of the transport and logistics landscape.

The short-term outlook remains one of compounding disruptions amid shifting virus variants and new waves of infections, as well as a riskier geopolitical landscape. Several trends are making a rapid return to “normal” more challenging, while at the same time generating opportunities for transport and logistics, including trade facilitation. These opportunities include multiple imperatives, such as digitalization, climate change mitigation and adaptation, transition to low carbon fuels, environmental sustainability and promoting energy and food security. Reconciling the underlying challenges and opportunities calls for adequate policies and strategies that prioritize the future proofing of transport and logistics.

In this note, some of the key issues arising from the COVID-19 disruption and its aftermath are presented. These key issues could amplify existing challenges but also pave the way for innovative solutions and opportunities that could be leveraged by all, including developing countries. Redefining policies and strategies in the field of transport and logistics is critical to keep pace with these developments and ensure that the sector effectively adapts to new realities.

Experts are invited to reflect on the various imperatives facing transport and trade facilitation and provide recommendations on the best way forward, identify priority action areas and define the role of relevant stakeholders, including from industry, Government, the public and private sectors and relevant development partners.

* The present document was scheduled for publication after the standard publication date owing to circumstances beyond the control of the UNCTAD secretariat.



I. Introduction

1. Global supply chains have become highly sophisticated and interlinked. They are also more vulnerable to wide-ranging risks, with a growing number of potential points of failure. The disruption caused by COVID-19 has tested existing supply chains and the underlying business models, which factor in considerations of transport, logistics networks and trade facilitation capabilities.

2. After the initial shock, signs of a multi-paced recovery emerged in late 2020 and continued into 2022. Merchandise trade, in particular containerized trade of consumption goods bounced back faster than expected with momentum remaining strong. However, cross-currents in supply chains, workforce availability, equipment and transport capacity and the seafarers' crisis, as well as shipping costs, are weighing on the prospects of transport chains and logistics and on the long-term sustainability and resilience of the sector. These trends are happening against a backdrop of heightened climate change mitigation and adaptation requirements, as well as energy transition pressures, disruptive natural disasters and weather patterns, uncertain pandemic and vaccination paths, diverging economic recoveries and heightened geopolitical threats, such as the war in Ukraine affecting the Black Sea region.

II. Maritime transport and logistics in times of pandemic and growing uncertainty

3. The COVID-19 pandemic underscored the importance of transport and logistics for global supply chains, trade and interdependent economies. The health crisis has shown how vulnerable the sector is to shocks and disruptions. Moving to a post-pandemic world brings to the fore questions about the role of transport and logistics, with a view to a different future where low carbon and resilient and agile supply chains become the default mode.

4. With over 80 per cent of world merchandise trade by volume being seaborne, and more than half of its value being shipped in ocean containers, the focus of this chapter is on the maritime supply chain and its hinterland connections. In addition to impacts, responses introduced during the crisis to mitigate immediate impacts and ensure business continuity are discussed.

5. Key takeaways can be summed up in a few thematic areas, namely sustainability, low-carbon and climate resilient transport systems underpinned by preparedness, and a good understanding of risk management principles and of the role of technology, timely information, good communications and data as critical enablers of building resilience.

A. The COVID-19 disruption: Impact and responses

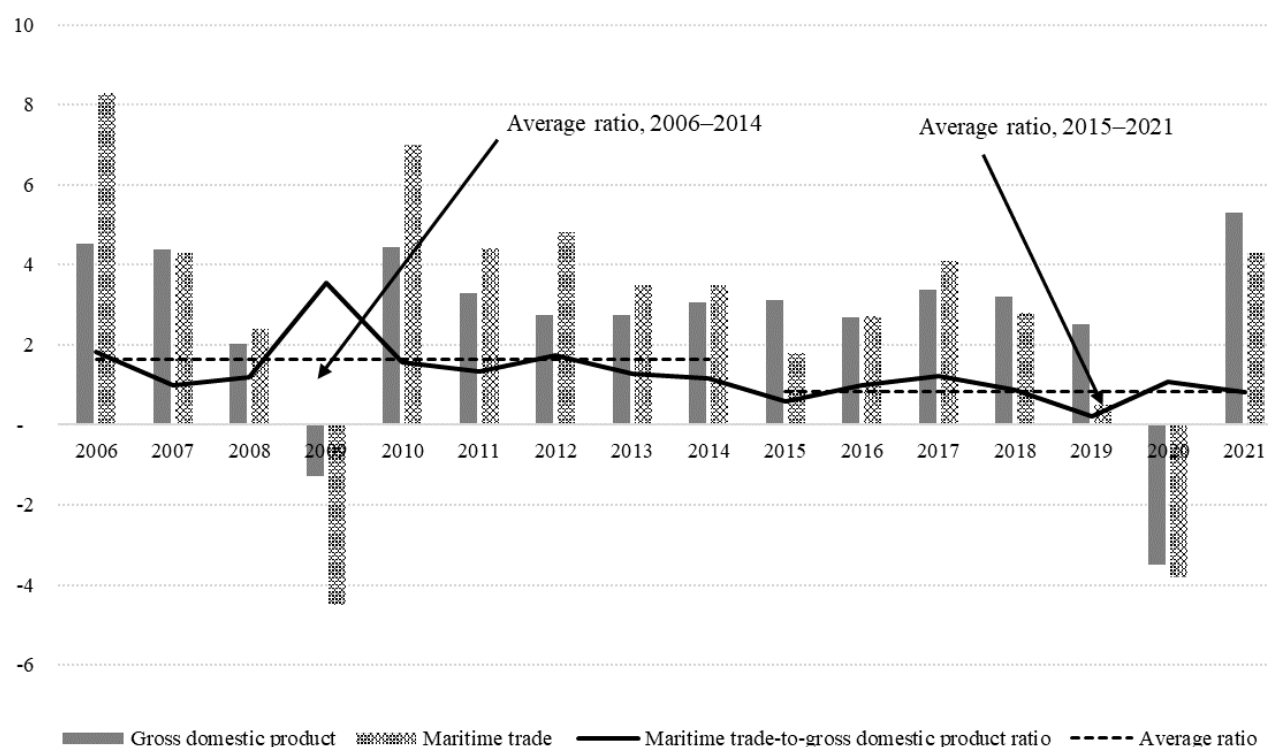
Trade flows, port calls and connectivity

6. The COVID-19 pandemic weighed on international maritime trade as it disrupted operations and caused supply chain pressures. While the sector performed better than initially anticipated, in 2020, maritime trade volumes and container port traffic declined by 3.8 per cent (figure 1) and 1.0 per cent, respectively.¹ Growth is expected to moderate in the medium term, in line with trends in the world economy and persistent uncertainty.

¹ UNCTAD, 2021a, *Review of Maritime Transport 2021* (United Nations publication, Sales No. E.21.II.D.21, Geneva).

Figure 1
International maritime trade, world gross domestic product and maritime trade-to-gross domestic product ratio

(Percentage annual change and ratio)



Source: UNCTAD, 2021a.

7. Many ports suffered a cut in vessel calls due to the rescheduling or cancellation of itineraries. Improved connectivity in some ports reflected a change in container shipping deployment patterns and an upsizing of vessels. These have offset the negative impact of “blank sailings”, that is, the decision by shipping companies to cancel scheduled services in the light of the pandemic. In 2020, small island developing States continued to suffer the lowest connectivity levels; of the 25 least connected countries, 18 were small island developing States.

8. Stakeholders across the maritime supply chain took immediate action to secure the continuation of port operations and shipping services. General rules and protocols imposed on all economic activities were also applied in shipping and ports. Pre-existing plans and guidelines on how to respond to crises have proved helpful. Ensuring effective communication among all relevant actors and access to transparent, accurate and correct information were key. Initiatives to support workers and personnel and the adoption of “supply chain” approaches that help all stakeholders across the chain have also played a role.

9. Public administrations were instrumental in facilitating initiatives and fostering dialogue and collaboration with industry. Sustaining hinterland transportation has been a major challenge in many parts of the world, and efforts to maintain hinterland connectivity have also been part of the response. Coordination at borders to facilitate trade flows and efforts towards coordination of customs, as well as of border controls and inspections, have been a game changer (see chapter III).

10. Technology emerged as another silver bullet, going hand in hand with efficiency improvement and trade facilitation gains. Digital tools at the port, shipping and hinterland access levels emerged as a critical crisis mitigation tool and a resilience-building lever. Ports that had “smart port” features generally fared better during the disruption caused by COVID-19. Ports that had invested in digital infrastructure and connectivity and promoted

data exchange among port authorities, shippers and freight forwarders have manoeuvred more smoothly through the disruption. Digital platforms have facilitated the submission and processing of documentation, permits, operations, certificates and the like, while improved coordination between stakeholders and responsible public authorities have kept information flowing and actions aligned. Yet, some underlying challenges became apparent, including in terms of access to technical expertise and funding sources for small players, as compared to larger stakeholders, such as carriers operating on a global scale.

Supply chain crisis, market imbalance and soaring costs

11. An asymmetric maritime trade recovery in late 2020 stumbled on crippling supply chain bottlenecks that may have bolstered liner shipping profitability and increased pressure on supply chains, ports, shipping and trade. A surge in electronic commerce (e-commerce), combined with capacity constraints, equipment shortages, renewed virus infections in some parts of the world, including in a critical international container terminal in China (Yantian terminal) and a one-week-long blockage of the Suez Canal, put supply chains under extreme pressure in 2021.

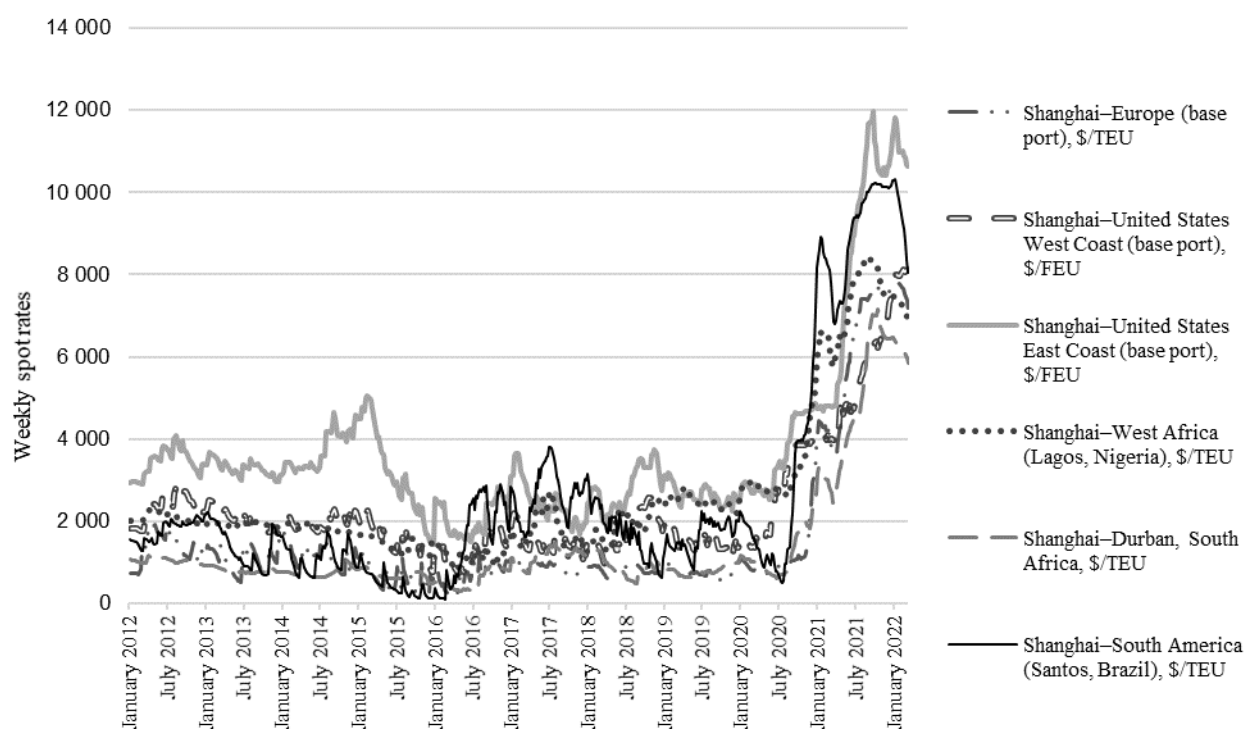
12. Pressure has continued, with the first quarter of 2022 still exhibiting high port congestion and constrained logistics and transport networks. While the surge in e-commerce may have sustained trade, it also required distribution centres and transport capacity. Conservative estimates project that cross-border e-commerce in goods will expand to around \$1 trillion in merchandise value by 2030, from its current value of approximately \$300 billion.² It is said that five to seven years of e-commerce growth has been compressed into one single year. Severe congestion meant that up to an estimated 15 per cent of the carrying capacity of ships was affected by idling at anchor or slow steaming.³

13. Freight rates surged, surcharges proliferated, and service reliability declined, while delays and dwell times went up. By the end of 2020, container rates were over five times their 2019 levels (figure 2) and have remained elevated since then. New disruptions, such as the closing down of Chinese manufacturing activities and ports in March 2022 due new cases of COVID-19 infections, as well as the war affecting the Black Sea region, could further disrupt the system.

² McKinsey and Company, 2022, Uncertainty returns – but this time, the cause is not COVID-19, COVID-19: Briefing Note No. 97.

³ IHS Markit, 2022, The great supply chain disruption: Why it continues in 2022, January.

Figure 2
Shanghai containerized freight index, selected routes



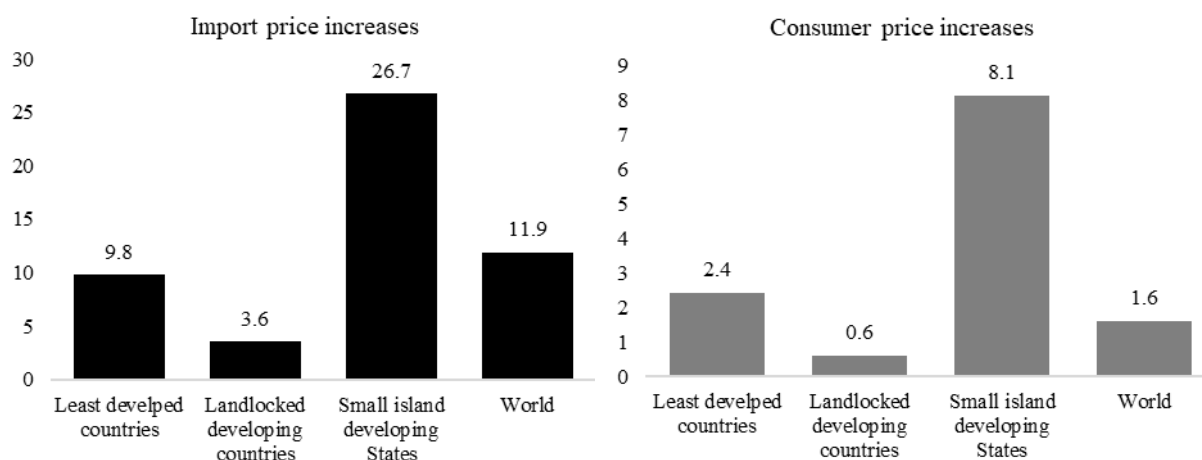
Source: UNCTAD secretariat, based on 2022 data from Clarkson Shipping Services, Clarkson Research Network. (Mention of any firm or licensed process does not imply the endorsement of the United Nations.)

Abbreviations: TEU, 20-foot equivalent unit; FEU, 40-foot equivalent unit.

14. Increased costs are a challenge for all traders and supply chains, in particular smaller shippers who are less able to absorb the additional expense and are disadvantaged when rates are negotiated, and space is booked on ships. An UNCTAD simulation model suggests that global import price levels would increase, on average, by 11.9 per cent as a result of sustained freight rate increases. Hardest hit would be small island developing States, given their reliance maritime transport (figure 3). Import prices for small island developing States would face a cumulative increase of 26.7 per cent, with a time lag of about one year.

Figure 3
Simulated impact of the container freight rate surge on import and consumer price levels

(Percentage)

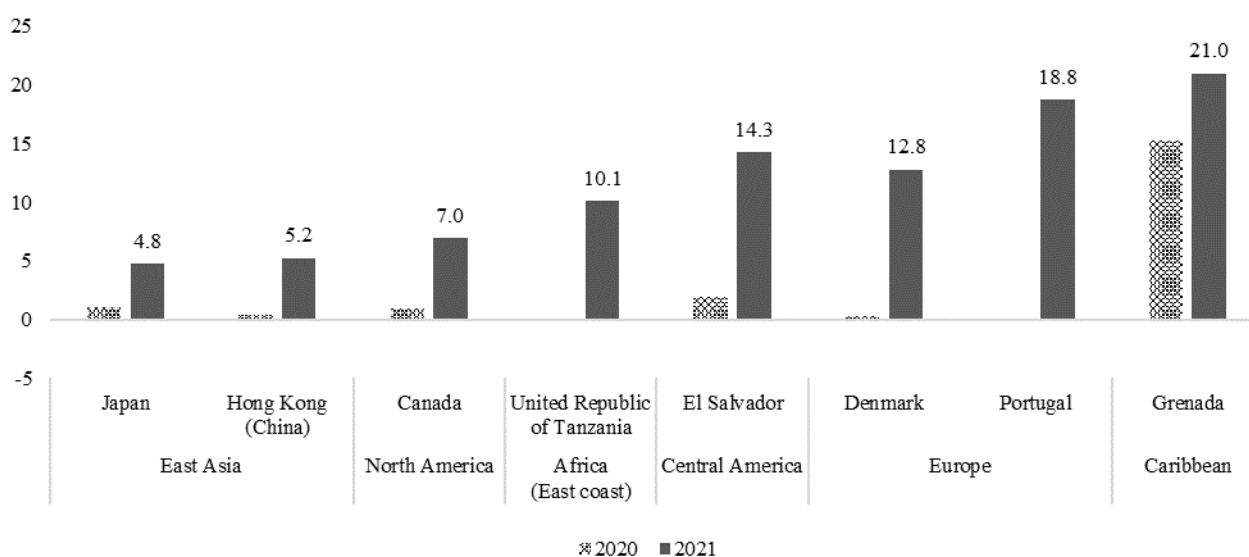


Source: UNCTAD, updated simulation, based on the *Review of Maritime Transport 2021* (UNCTAD, 2021a).

15. Global consumer prices are projected to be 1.6 per cent higher in 2023 than they would have been without the freight rate surge. In small island developing States, the cumulative increase in consumer prices is expected to be 8.1 per cent and, in the least developed countries, 2.4 per cent. The latest data available for selected countries indicate import price increases ranging from about 5 per cent to 21 per cent in 2021, with Grenada experiencing the highest increase (figure 4).

Figure 4
Changes in import prices of containerized goods imported from China by selected economies*

(Percentage)



* For which 2021 data are available.

Source: UNCTAD, based on the United Nations International Trade Statistics Database.

Notes: The definition of containerized goods is based on Maritime Transport Costs database of the Organisation for Economic Co-operation and Development. The percentage changes indicated reflect a median of import price changes across commodities.

16. The war in Ukraine affecting the Black Sea region is also expected to add costs throughout the food supply chain and transport, as well as weigh on global food security and net-food importing countries and the least developed countries. Tanker and dry bulk freight rates are also rising, owing to increased demand and the disruption, in addition to uncertainty arising from the war.

Crew change crisis of seafarers⁴

17. Throughout the ongoing COVID-19 pandemic, the world's 1.9 million seafarers, many of whom are from developing countries, have been playing a vital role in ensuring the flow of critical goods along supply chains and keeping world shipping and trade moving. Due to public health and travel-related restrictions put in place by countries to contain the spread of COVID-19, many seafarers have been unable to leave ships, remaining stranded at sea far beyond the expiration dates of their contracts and the default 11-month maximum period of continuous service on board, as required by the Maritime Labour Convention, 2006, as amended, under the International Labour Organization. For the same reasons, some seafarers have been unable to join ships to replace stranded crews, leading to a significant loss of income and resulting in hardship for seafarers and their families.

18. This humanitarian crew change crisis has resulted in significant mental strain and fatigue and, consequently, increased the risk of accidents, imperilling working conditions in the shipping sector. While the number of seafarers that remain stranded has decreased, it remains considerable, and further collective efforts are required to address the continuing crisis. Moreover, the full impact of the Omicron variant and related response measures on crew changes is not yet clear, and further variants of concern may yet emerge.

Implications of the pandemic for commercial contracts

19. The pandemic is causing delays and unprecedented supply-chain disruptions that are affecting the performance of a wide range of contractual obligations and can lead to costly litigation, involving complex jurisdictional issues in a global context. Unless common approaches are found to reduce the incidence of disputes and facilitate their resolution, including through contractual clauses that provide for balanced risk allocation, as between parties and in efforts at informal dispute resolution and mediation, the need for costly litigation could be at a scale that overwhelms administration of justice systems, with implications for governance and the rule of law.

20. Industry and traders are encouraged to show some restraint and flexibility in exercising their rights, where appropriate. Governments should consider where intervention or financial assistance may be required and formal and informal dispute resolution mechanisms and institutions may need to be strengthened, to ensure these are able to cope with a likely increase in contractual disputes in the context of the COVID-19 pandemic. Coordinated efforts by Government and industry may be required to address the emergence of potentially unfair practices and excessive charges, as well as to promote the development and use of commercial risk allocation through standard form contractual clauses, drafted to address contractual rights and obligations in the light of the circumstances associated with the pandemic.

21. Additional considerations arise from a greater reliance on electronic trading in a physically constrained world. While e-commerce related to goods is growing significantly, commercial contracts need to be executed in the real world, that is, goods need to be manufactured, stored, distributed, transported and delivered. All of this requires physical networks and infrastructures, with the pandemic and related disruptions continuing to pose major challenges. To facilitate food security and medical supplies, ensure provisioning of the population and harness the potential economic benefits from growth in e-commerce, physical supply chains need to be secured in a coordinated fashion across the globe.

⁴ International Labour Organization, International Maritime Organization, UNCTAD, World Health Organization, 2022, Joint statement urging continued collaboration to address the crew change crisis, safeguard seafarer health and safety, and avoid supply chain disruptions during the ongoing COVID-19 pandemic, available at https://unctad.org/system/files/non-official-document/un-joint-statement-on-crewing-crisis_en.pdf.

Climate change adaptation and resilience building for transport infrastructure should be a part of this strategy and may be critical for the most vulnerable developing countries. Collaborative approaches by Governments and industry will be required in this respect, as well as policy coherence and synergy.

22. Cyberrisks are likely to grow significantly as a result of an increasing shift to virtual interactions at all levels. This increases vulnerabilities across the globe, with the potential for crippling effects on critical supply chains and services. Coordinated efforts at developing protection against cybercrime and cyberattacks should therefore be pursued as a matter of urgency. This may require significant scaling up of investment and capacity-building, including in respect of skilled human resources.

Sustainable and smart shipping and ports

23. While the pandemic has been an overriding theme for the past two years, other global concerns remain a priority, in particular climate change mitigation and adaptation, low carbon shipping and the greening of ports. In June 2021, new mandatory measures to cut the carbon intensity of international shipping were adopted by the International Maritime Organization. While the new regulatory developments are crucial to advancing the decarbonization agenda, they also entail adjustment costs. As argued in a recent UNCTAD report, regulatory measures aimed at low-carbon shipping can have an uneven impact on economies.⁵ Supporting vulnerable economies in energy transition and maritime transport decarbonization will enable a fair transition towards a sustainable and resilient global maritime supply chain.⁶ That said, linkages and synergies between environmentally sustainable and resilient transport and logistics are undeniable. Unsustainable transport and logistics patterns enhance risks and heighten vulnerability in the face of disruptions. Cutting carbon emissions from shipping and accelerating the energy transition away from fossil fuels remain a pressing imperative and key to key resilience-building strategies.

Climate change adaptation, resilience building and disaster risk reduction for critical transport infrastructure

24. Climate-related extreme events and disasters can result in significant damage to critical transport infrastructure assets, as well as operational disruptions and delays throughout the supply chain, giving rise to extensive economic costs.⁷ In its latest assessments, published in 2021 and 2022, the Intergovernmental Panel on Climate Change gave clear warnings of increasingly extreme heatwaves, droughts and flooding that could have devastating consequences, making effective adaptation action a matter of increasing urgency. It is projected that, depending on the given scenario, the mean global temperature increase of 1.5°C relative to pre-industrial times is likely to be reached by 2040; if emissions are not slashed in the next few years, this threshold may be reached even earlier.⁸ While impacts are set to increase in line with growing hazards, many of these can be avoided or mitigated if the world acts quickly with essential measures for adaptation and mitigation.

⁵ UNCTAD, 2021b, *UNCTAD Assessment of the Impact of the [International Maritime Organization] IMO Short-Term [Greenhouse Gas] GHG Reduction Measure on States* (United Nations publication, Geneva).

⁶ Ibid.

⁷ World Meteorological Organization, 2021, *WMO Atlas of Mortality and Economic Losses from Weather, Climate and Water Extremes (1970–2019)*, WMO-No. 1267, Geneva; see also, RTI International, 2022, *Act now or pay later: The costs of climate inaction for ports and shipping* (authored for the Environmental Defense Fund).

⁸ Intergovernmental Panel on Climate Change, 2021, *Climate Change 2021: The Physical Science Basis*, Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, available at <https://www.ipcc.ch/report/sixth-assessment-report-working-group-i/>; Intergovernmental Panel on Climate Change, 2022, *Climate Change 2022: Impacts, Adaptation and Vulnerability*, Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (Pörtner H-O, Roberts DC, Tignor M, Poloczanska ES, Mintenbeck K, Alegría A, Craig M, Langsdorf S, Lösschke S, Möller V, Okem A, Rama B (eds.)), Cambridge University Press, in press, available at <https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/>.

25. Addressing the impacts of climate change remains a major challenge, even in times of the pandemic, in particular for the most vulnerable groups of countries, such as small island developing States. Critical coastal transport infrastructure in these countries, notably ports and airports, are lifelines for external trade, food and energy security, as well as tourism, and in the context of disaster risk reduction. These assets are projected to be at an increasing risk of coastal flooding, from as early as in the 2030s, unless effective adaptation action is taken.⁹

26. In addition, these risks are growing. Extreme sea levels are set to increase almost everywhere, and projections from global models indicate that extreme sea-level events of a certain magnitude that presently have a low recurrence frequency (e.g. one event in 100 years) are expected to become more frequent in most locations.¹⁰

27. Even in a 1.5°C warmer world, perhaps as soon as in the 2030s, extreme sea levels, of a magnitude so far expected to occur once a century, may occur as frequently as once every 10 years in many South American, African, Persian Gulf, South-East Asian and Pacific ports. These projections have important implications for the adaptation of ports to climate change. Ports are assets with long lifespans, which means that changes in the recurrence (return period) of extreme sea-level events (and associated waves) over the course of the twenty-first century affect the risk of flooding at facility level and the choice and design of requisite climate change adaptation measures.

B. Beyond the crisis: Planning for resilient and sustainable transport and logistics

28. While some of the supply and demand imbalances and immediate impacts on maritime transport and logistics may dissipate as global demand patterns normalize and logistical bottlenecks fade away, structural factors, such as globalized versus regionalized trading and shipping networks, changing consumption patterns, the rise of e-commerce, growing sustainability imperative and rapid digitalization, are also currently shaping the longer-term outlook. These trends underscore the need to adopt a far-sighted vision through the early mainstreaming of sustainability and resilience criteria into transport and trade logistics planning and investment decisions.

29. To tackle the shifts accelerated by the pandemic and the challenges arising from latest geopolitical risks, rising energy prices, inflation and concerns over food and energy security, it will be important for the sector to embrace risk management, preparedness, digitalization, decarbonization and resilience. Effective management of these trends will be a critical metric in the resilience building and future-proofing of transport and logistics systems.

⁹ Monioudi IN, Asariotis R, Becker A, Bhat C, Dowding-Gooden D, Esteban M, Feyen L, Mentaschi L, Nikolaou A, Nurse L, Phillips W, A-Y Smith D, Satoh M, O'Donnell Trotz U, Velegrakis AF, Voukouvalas E, Voudoukas M and Witkop R, 2018, Climate change impacts on critical international transportation assets of Caribbean small island developing States: The case of Jamaica and Saint Lucia, *Regional Environmental Change*, 18:2211–2225; Intergovernmental Panel on Climate Change, *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development and efforts to eradicate poverty* (Masson-Delmotte V, Zhai P, Pörtner H-O, Roberts D, Skea J, Shukla PR, Pirani A, Moufouma-Okia W, Péan C, Pidcock R, Connors S, Matthews JBR, Chen Y, Zhou X, Gomis MI, Lonnoy E, Maycock T, Tignor M and Waterfield T (eds.)); Intergovernmental Panel on Climate Change, 2019, *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* (Pörtner H-O, Roberts DC, Masson-Delmotte V, Zhai P, Tignor M, Poloczanska E, Mintenbeck K, Alegría A, Nicolai M, Okem A, Petzold J, Rama B and Weyer NM (eds.)), Cambridge University Press, Cambridge, United Kingdom of Great Britain and Northern Ireland and New York, New York, United States of America.

¹⁰ See <https://unctad.org/news/climate-change-impacts-seaports-growing-threat-sustainable-trade-and-development>.

30. As part of a “One United Nations” response to trade and transport connectivity challenges due to the COVID-19 pandemic, a project funded by the United Nations Development Account, on the theme of transport and trade connectivity in the age of pandemics, brought together UNCTAD and the five regional commissions. Under the joint project, these entities aimed at preparing United Nations solutions that promote contactless solutions, seamless connectivity and collaborative approaches, while leveraging United Nations standards and tools, and mobilizing advisory services and cooperation platforms.¹¹ Relevant outputs include, among other things, global and regional impact assessment reports and webinars that disseminated key findings regarding the impact of COVID-19 on the maritime supply chain and response measures introduced to mitigate those impacts. Additionally, a handbook on how to future-proof the maritime supply chain has been prepared for wide dissemination and access through a web platform.¹² Capitalizing on synergies with the Sustainable Development Goals, this work on resilience building also develops existing technical assistance work by UNCTAD on sustainable freight transport.¹³

31. The UNCTAD port management programme under the Train for Trade programme developed a special course titled “Building port resilience against pandemics”.¹⁴ Two sessions of the course were delivered in 2021. Participants were invited to suggest recommendations to help draft policy advice related to the pandemic response in port communities. Over 240 proposals were received, and the policy recommendations resulting from this work were published recently.¹⁵

Continued cooperation to address the ongoing seafarer crisis

32. Seafarers and maritime workforce can make or break the resilience of maritime transportation. Smooth delivery of merchandise trade by means of shipping and efficient handling of cargo by ports depend mainly on the labour force to fulfil its role in an efficient, safe and sustainable manner. The seafarer crew change crisis threatens both the smooth flow of goods across supply chains and the health, well-being and human rights of seafarers. Addressing the ongoing crew change crisis therefore remains an important priority for further collective action by Governments and industry stakeholders alike. As requested in United Nations General Assembly resolution 75/17, adopted in December 2020, UNCTAD has monitored and reported on relevant developments related to the crew change crisis in chapter 5 of the *Review of Maritime Transport 2021*.¹⁶ In addition, a related UNCTAD policy brief,¹⁷ containing updated data and information, was published in December 2021. Both documents highlight areas where industry, Governments and international organizations can cooperate to protect seafarers’ human and legal rights and implement relevant labour standards, including those agreed in the Maritime Labour Convention, 2006, as amended, and in particular alleviate the plight of seafarers resulting from the COVID-19 pandemic.¹⁸ In addition, in February 2022, UNCTAD, together with the International Maritime Organization, International Labour Organization and World Health Organization, issued a related joint statement¹⁹ urging continued collaboration to address the crew change crisis, safeguard seafarer health and safety, and avoid supply chain disruptions during the ongoing COVID-19 pandemic. Recognizing the critical role of the maritime sector in keeping trade flowing during the global fight against COVID-19, the

¹¹ See <https://unctad.org/project/transport-and-trade-connectivity-age-pandemics>.

¹² See <https://unttc.org/stream/maritime-supply-chain-resilience-tracker-and-kpis>.

¹³ See <https://unctadsftportal.org/>.

¹⁴ See <https://tft.unctad.org/port-management/building-port-resilience/>.

¹⁵ UNCTAD, 2022, Emerging strategies for ports during the pandemic, Policy Brief No. 93.

¹⁶ UNCTAD, 2021a.

¹⁷ UNCTAD, 2021c, Strengthening international response and cooperation to address the seafarer crisis and keep global supply chains open during the ongoing COVID-19 pandemic, Policy Brief No. 91.

¹⁸ Related activities included an online event on seafarer issues, organized by UNCTAD in cooperation with the International Labour Organization, on the occasion of World Maritime Day on 30 September 2021, and a maritime webinar series entitled “The crewing crisis: Seafarers’ concerns in times of the pandemic and beyond (see <https://unctad.org/meeting/maritime-webinar-series-crewing-crisis-seafarers-concerns-times-pandemic-and-beyond>).

¹⁹ Available at https://unctad.org/system/files/non-official-document/un-joint-statement-on-crewing-crisis_en.pdf.

four entities call on Governments, national and local authorities, and all relevant stakeholders, including employers, to take 10 critical actions (see box).

Call for 10 critical actions

1. Provide seafarers with immediate access to medical care as well as facilitate their medical evacuation when the required medical care cannot be provided on board.
2. Designate seafarers as “key workers”, providing an essential service, to facilitate maritime crew changes and safe movement across borders, and recognize relevant documentation for this purpose.
3. Prioritize the vaccination of seafarers, as far as practicable, in national COVID-19 vaccination programmes and exempt them from any national policy requiring proof of COVID-19 vaccination as the only mandatory condition for entry, in accordance with World Health Organization recommendations.
4. Provide or administer COVID-19 tests and appropriate personal protective equipment to seafarers, including polymerase chain reaction tests where necessary, to facilitate the identification of cases on board or at the port and to facilitate the movement of seafarers, including shore leave and crew changes.
5. Ensure the consistent application of internationally agreed protocols and standards, including those for seafarers’ travel and vaccination documents, coordinate appropriately and take measures to avoid punitive measures, fines and excessive costs.
6. Adopt the latest legal instruments, including the Maritime Labour Convention, 2006, and the Seafarers’ Identity Documents Convention (Revised), 2003 (No. 185), and ensure their implementation.
7. Implement the recently updated World Health Organization sector-specific guidance for the management of COVID-19 on board cargo ships and fishing vessels, published in December 2021, which, among other issues, highlights the importance of non-medical interventions, such as the use of face masks irrespective of vaccination status.
8. Provide, where relevant, public key certificates associated with any health proof to relevant trust networks, such as the International Civil Aviation Organization, for international travel.
9. Continue to collaborate to ensure that relevant guidance is regularly updated, in line with developments and evolving scientific insights, and that mechanisms are in place to reduce and effectively respond to medical emergencies at sea.
10. Undertake concerted collaborative efforts to keep seafarers safe and limit disruption to supply chains, as well as prevent the unchecked spread of emerging “variants of concern”, which could prolong the pandemic and its wide-ranging socioeconomic consequences.

Source: International Labour Organization, International Maritime Organization, UNCTAD, World Health Organization, 2022, Joint statement urging continued collaboration to address the crew change crisis, safeguard seafarer health and safety, and avoid supply chain disruptions during the ongoing COVID-19 pandemic.

Transport costs and rates

33. Freight rates are expected to remain high. Disruptions and uncertainties with the ongoing geopolitical crisis are straining already stretched supply chains. If global trade is to continue flowing, and maritime transport is to thrive and efficiently get through the disruptions, targeted and considered actions will be required. In this respect, learning from experience and the takeaways derived from the unprecedented supply crisis induced by the COVID-19 pandemic will be important. Key actions may include the following:

(a) Monitor markets to ensure a fair transparent and competitive commercial environment. Governments will need to monitor freight rates, as well as fees and charges applied by carriers and port terminals.

(b) Strengthen maritime transport competition authorities so that they can better understand market development and provide the requisite regulatory oversight. Regulatory bodies, such as the Federal Maritime Commission in the United States of America, are under pressure from shippers to take a look at the causes of liner shipping profitability in the midst of a pandemic.

(c) Share information and strengthen collaboration to enhance transport efficiency and operations. The benefits of greater collaboration and sharing of data between various stakeholders along the maritime supply chain, including carriers, ports, inland transport providers, customs and shippers, cannot be overestimated.

(d) Further and strengthen research and data collection to inform policies and intervention measures that aim at cutting transport costs and enhancing efficiency.

(e) Discuss and devise options for immediate and time-bound response measures to be introduced as emergency response mechanisms that would help alleviate any severe surges in the transport costs of food and other essential goods, especially for net food import-dependent economies, small island developing States and the least developed countries.

Addressing the implications of the pandemic for commercial contracts

34. Effectively addressing the commercial law implications of the pandemic and related response measures will be critical for traders, both during the ongoing crisis and beyond. To respond to the need for urgent advice in this regard, two substantive briefing notes were prepared by UNCTAD, as part of its COVID-19 related technical cooperation,²⁰ one on cargo claims²¹ and another on international sale of goods,²² as well as an analytical report with a focus on carriage of goods by sea and multimodal transport.²³ In these documents, consideration is given to the legal implications of the pandemic for the performance of different types of contract, as well as some of the existing standard form clauses that have been developed by industry associations for incorporation into charter parties to provide for commercial risk allocation, as between the parties. Some recommendations are also provided for commercial parties and related considerations for policymakers are set out. Further work, including related virtual training and capacity-building, is in preparation.

35. One issue that has clearly come to the market's attention during the pandemic is that of delays in documentation. It is hoped that the experience gained may provide an impetus for more commercial parties to adopt secure electronic solutions that are already available and have been accepted by the market. UNCTAD is actively involved in related work at the United Nations Commission on International Trade Law on negotiable multimodal transport documents, as well as on harmonizing multimodal legal frameworks in Asia and the Pacific at the Economic and Social Commission for Asia and the Pacific.

Mainstream risk assessment and preparedness

36. Carriers, ports, infrastructure managers, shippers and supply chain managers should mainstream risk criteria into their decisions and plans. They need to diversify business partners and suppliers, improve forecasting of demand and volumes, plan for capacity needs including transport and equipment, better manage inventories and safety stocks, and carefully rethink the trade-offs between just-in-time and just-in-case supply chain business models.

²⁰ See <https://unctad.org/project/transport-and-trade-connectivity-age-pandemics>.

²¹ UNCTAD, 2021d, COVID-19 implications for commercial contracts: Carriage of goods by sea and related cargo claims (UNCTAD/DTL/TLB/INF/2021/1).

²² UNCTAD, 2021e, COVID-19 implications for commercial contracts: International sale of goods on [cost insurance and freight] CIF and [free on board] FOB terms (UNCTAD/DTL/TLB/INF/2021/2).

²³ Contracts for the carriage of goods by sea and multimodal transport: Key issues arising from the impacts of the COVID-19 pandemic (UNCTAD/DTL/TLB/INF/2022/1).

37. Investors, rating agencies, and regulators are expecting more and more that ports and shipping companies integrate risks into their plans. Devising and implementing risk management and business continuity strategies, building strong relationships with key partners (e.g. shipping, ports, shippers and inland transport providers) and ensuring visibility across the extended supply network are key measures.

Digitalization

38. Investing in digital infrastructure is crucial to enable improved information sharing and effective resource planning. Automation and smart technologies can solve many of the challenges. Technologies that enable end-to-end visibility, collaboration, responsiveness, agility and optimization of operations can be leveraged to build resilience, while remaining competitiveness. Greater attention should be paid to the hinterland and inland hubs to facilitate digitalization uptake. Efforts to implement digital tools to advance environmental sustainability, economic efficiency and resilience in developing regions should be supported.

39. If solutions such as those offered by robotics and intuitive “smart” systems and components are implemented, they would better connect port users, enhance efficiency and cut costs. However, digital solutions also entail some risks and a new vulnerability to security breaches. Investing in cybersecurity and ensuring the integrity of transport and logistics, and the supply chains that they serve, would therefore be crucial.

Energy transition and sustainability

40. Smart and sustainable shipping and ports are at the forefront of the global decarbonization, sustainability and digitalization agendas. Therefore, the ongoing energy and environmental transition in maritime transport are key strategic goals that should not be neglected on the back of the urgency of fending off the pandemic. An important step in the right direction is to ensure that post-pandemic spending and recovery plans are also linked to environmental sustainability, greening of supply chains, promotion of low-carbon fuels and speeding up of digitalization uptake across regions.

41. Shipping companies will need to expand their fleets and scale up investment to match demand but also to achieve decarbonization targets through retrofitting and replacement. This would require a more predictable regulatory environment and greater certainty when scaling up alternative fuels. Ports are embracing new strategies, capitalizing on e-commerce opportunities and preparing for a low-carbon future by embarking on greener industrial port activities. Ports have a role to play as catalytic hubs for revenue generation and industrial growth, while supporting green shipping and alternative fuels.

42. Upscaling capacity for decarbonizations, energy efficiency and renewable energy generation may bring major co-benefits, in terms of climate change mitigation and adaptation (e.g. in response to impacts of heat extremes), as well as in terms of reduced dependency on energy imports and related expenditure. This is particularly critical for small island developing States and other countries that are facing longer term supply-chain disruptions and a reduction in earnings potential as a result of the impacts of the pandemic on major economic sectors, such as tourism.

Addressing the impacts of climate change remains a major challenge

43. While the extensive socioeconomic impacts of the COVID-19 pandemic give rise to new priorities that may challenge efforts in building resilience to and adaptation to climate change, the pandemic may also be considered a cautionary tale that underlines the critical importance of preparedness, risk assessment and resiliency building. Lessons learned should provide renewed impetus for timely climate risk/vulnerability assessments and foster long-term planning, essential to enhancing resiliency and to achieving broader common sustainable development objectives, as reflected in the 2030 Agenda for Sustainable Development and related international agreements. Changing circumstances arising from the impacts of the COVID-19 pandemic (e.g. the need for health and safety measures at ports of entry, changes to tourism markets/patterns and greater reliance on

local/national resources/supplies) will need to be taken into account, as part of any strategy for infrastructure adaptation and resilience building.

44. During the COVID-19 pandemic, there was a significant fall in investment in transport infrastructure. However, major scaling up of investment and capacity-building for developing countries will be critical to “building back better” after the pandemic. There is an urgent need to step up climate adaptation finance. Estimated adaptation costs in developing countries are 5 to 10 times greater than current public adaptation finance flows, and the adaptation finance gap is widening.²⁴ Also, further ambition is needed to make progress worldwide in national-level adaptation planning, finance and implementation.²⁵ The Organisation for Economic Co-operation and Development estimates that achieving the Sustainable Development Goals by 2030 will require \$6.9 trillion in infrastructure investment annually. There is an urgent need for better availability and access to green and blue infrastructure financing, including in the form of grants, rather than loans, to avoid increasing debt burdens further.²⁶ This could bring enormous economic benefits. The World Bank estimates that investing in resilient infrastructure in developing countries could bring returns of \$4.2 trillion over the lifetime of new infrastructure, a four-dollar benefit for each dollar invested.²⁷

45. To assist in the process of transport infrastructure adaptation and resilience building, the Marrakech Partnership for Global Climate Action has developed a number of recommendations focused on resilient transport systems, infrastructure and vehicles, together with milestones towards 2050 (for 2025, 2030 and 2040).²⁸ Accordingly, by 2025, all new transport infrastructure, systems and, where necessary, vehicles should be climate-resilient to at least levels reflecting the projected climate conditions in 2050. By 2030, this should extend to all critical transport infrastructure and systems. By 2040, all critical infrastructure and systems should be climate-resilient to at least levels reflecting the projected climate conditions in 2100. Translating this timely ambition into action will require a major acceleration of efforts, as well as technical and human capacity-building and finance, particularly for developing countries.

46. Effective adaptation will need to be underpinned by strong legal and regulatory frameworks, along with strategies, policies and plans to reduce vulnerability. One example in this regard is the Climate Change Adaptation and Strategy and Action Plan 2021–2026 of the Organisation of Eastern Caribbean States, endorsed at the eighth meeting of the Council of Ministers on Environmental Sustainability in May 2021.

47. Standards, guidance and tools for stakeholders also have an important role to play. Some examples are a methodology developed by UNCTAD as part of its technical cooperation for Caribbean small island developing States²⁹ and recent industry guidance on climate change adaptation planning for ports and inland waterways,³⁰ developed by the World Association for Waterborne Transport Infrastructure, in collaboration with partners, including UNCTAD. Also relevant is a new International Organization for Standardization standard, ISO 14091:2021, “Adaptation to climate change – Guidelines on vulnerability, impacts and risk assessment”,³¹ which covers vulnerability to climate change and highlights

²⁴ United Nations Environment Programme, 2021, *Adaptation Gap Report 2021: The Gathering Storm – Adapting to Climate Change in a Post-Pandemic World*, Nairobi.

²⁵ Ibid.; see also TD/541/Add.2, paras. 86–87.

²⁶ Organisation for Economic Co-operation and Development, 2017, *Investing in Climate, Investing in Growth*, OECD Publishing, Paris.

²⁷ Hallegatte S, Rentschler J and Rozenberg J, 2019, *Lifelines: The Resilient Infrastructure Opportunity*, Sustainable Infrastructure Series, World Bank, Washington, D.C.

²⁸ United Nations Framework Convention on Climate Change, 2021a, Climate action pathway: Transport, Action table, available at

https://unfccc.int/sites/default/files/resource/Transport_ActionTable_2.1.pdf;

ibid., 2021b, Climate action pathway: Transport, Vision and summary, available at

https://unfccc.int/sites/default/files/resource/Transport_Vision%26Summary_2.1.pdf.

²⁹ See <https://SIDSport-ClimateAdapt.unctad.org>.

³⁰ See <https://www.pianc.org/publications/envicom/wg178>.

³¹ See <https://www.iso.org/standard/68508.html>.

the importance of risk assessments and of monitoring and evaluating any organization, regardless of size, type or nature.

III. Growing demand for transport and trade facilitation solutions

48. The disruption to trade flows as a result of COVID-19 has, inter alia, showcased the importance of simple, harmonized, standardized, transparent, coordinated and automated cross-border procedures. Reducing the time, cost and complexity to import, export and transit goods across borders is the essence of trade facilitation.

A. Advances in the implementation of the Agreement on Trade Facilitation of the World Trade Organization

49. One hundred and fifty-four members of the World Trade Organization have ratified the Agreement on Trade Facilitation to date. The obligations set out in the Agreement are now being implemented by each World Trade Organization member, according to their notified implementation schedule. According to the Agreement, each developing country and least developed country member of the World Trade Organization has the opportunity to determine their respective deadlines for implementation and can, if needed, seek assistance from donors and international organizations, including UNCTAD. Full implementation of the Agreement on Trade Facilitation is expected to considerably boost international trade and contribute to the sustainable development of developing and least developed countries, as well as to the achievement of the Sustainable Development Goals.

50. In addition to the Agreement on Trade Facilitation, trade facilitation measures, including transit, have been included in many regional and subregional trade agreements, thus complementing the Agreement on Trade Facilitation and strengthening the focus on the importance of trade facilitation implementation. At the same time, the plethora of trade facilitation obligations between international, regional and subregional agreements can be confusing to navigate if these are not aligned. Therefore, it is essential that clear rules and regulations are implemented at national levels to ensure compliance across such regulations and provide a transparent and logical national framework for trade facilitation.

51. According to various international studies, developing and least developed countries, in particular, can benefit from implementing efficient trade procedures. Implementing trade facilitation reforms, including transit, is important for developing and least developed countries in the context of achieving the Sustainable Development Goals.

52. However, harvesting these benefits has been disrupted by COVID-19 and, subsequently, by the war in Ukraine. Supply and value chains have been severely impacted in a negative way. COVID-19 led initially to a near lockdown of many borders for goods exchanges for long periods, with a view to reducing the risk of transmission of the virus.

53. The impact on the implementation of trade facilitation on these disruptions has been mixed. On the one hand, it has been observed that, for many developing and least developed countries, human resources have been stretched and coordination has been difficult. For example, many national trade facilitation committees have not been able to continue work during COVID-19, as physical meetings have been impossible and virtual meetings have been very difficult, with staff working from home without the required options to connect virtually.

54. At the same time, in a number of countries, the fact that border procedures were operated under a number of restrictions, with a view to avoiding human contact between transport personnel on the one hand and border compliance personnel, such as customs, on the other hand, has led to an acceleration of implementation or upgrade of digitalized solutions, such as automated customs processing, use of single window solutions or web-based trade information portals to provide transparency and communicate new rules and regulations. As a result, in spite of the human suffering and mainly negative impacts on trade caused by COVID-19, the pandemic has triggered a wave of automation that possibly

would not have taken place with such speed. This will likely lead to both immediate and long-term efficiency gains in international trade processes as well as within Governments.

55. In addition to the above, businesses are increasingly considering how to plan for the uninterrupted continuation of their supply chains. This has led to considerations such as reshoring of manufacturing processes of previously outsourced processes, an increased focus on establishing regional supply chains and so on. The impact of these considerations and the decisions that will be taken by the business sector will depend on the existing trade facilitation environments and on the new trade facilitation solutions that take shape. Similarly, the growth of e-commerce, which has further accelerated during COVID-19, will also impact the need for additional trade facilitation acceleration.

B. Responses to COVID-19

56. UNCTAD supports developing countries and least developed countries in improving their national and/or regional capacity to better respond against future crises, such as the COVID-19 pandemic as well as ensure the minimum disruption of trade flows by providing a focused yet rapid look into the available national emergency regulations pertaining to trade facilitation and its application in times of crisis.

57. This includes providing a rapid assessment to the National Trade Facilitation Committee (NTFC) and other relevant authorities involved in cross-border trade and transit of the national preparedness in times of crisis, such as the COVID-19 pandemic or similar, to mitigate the impact of crises by ensuring the continuation of supply and value chains and maintaining the flow of imports, exports, and transit, including essential goods, while ensuring compliance controls such as Customs, health, sanitary etc.

58. The rapid scan initiative also aims to identify and understand the effectiveness of trade measures and regulations in times of crisis, particularly by assessing the awareness of the existence of the measures, how they are implemented, coordination structures and partnerships, timely information availability and transparency of available solutions as well as the real impact they have in alleviating the negative trade effects of a crisis.

59. Based on the above mentioned UNCTAD technical cooperation delivered during the COVID-19 pandemic, UNCTAD developed a project for 2023–2026 with the objective to strengthen the capacity of countries in the Pacific region to facilitate and expedite the processing of international relief consignments to address humanitarian crises, natural disasters, or complex emergencies such as the COVID-19 pandemic. The project will lead to innovative management of relief consignments and trade facilitation coordination in times of disaster in the Pacific Region.

C. Solutions for cross-border trade

60. During the COVID-19 pandemic and any emergency crisis, cross-border movements of goods become challenging in the face of either border closing or disruption and bottlenecks due to new customs protocols and health controls that increase time and costs in trade procedures. Though border agencies implemented emergency guidelines fairly quickly after the first lockdown, flows of goods were still affected and resulted in delays for emergency goods and medical equipment and a reduction in economic performance of trade in goods, increasing economic vulnerability, particularly for small and medium-sized traders.

61. Trade facilitation measures can enhance the resilience of the private sector by, among other thing, increasing access to information (see article 1, Agreement on Trade Facilitation, World Trade Organization) through transparency, digitalizing clearance processes (see article 10.4, Agreement on Trade Facilitation) of border agencies and increasing coordination and collaboration at borders (articles 10.7 and 23.2, Agreement on Trade Facilitation). UNCTAD has developed a range of digital solutions to increase cross-border trade, such as trade information portals, a reform tracker for national trade facilitation committees and customs single windows, along with capacity-building

programmes on crisis management to the national trade facilitation committees, delivered remotely during the crisis.

62. The Automated System for Customs Data (ASYCUDA) programme assists developing and transition countries in the facilitation of trade and modernization of customs agencies, as well as in computerizing and digitalizing goods clearance processes through its fourth generation of customs management information-technology system, ASYCUDA World. In 2021, ASYCUDA systems were used daily in approximately 100 countries and territories, including 39 least developed countries, 34 small island developing States and 21 landlocked developing countries. At the request of member States, the ASYCUDA programme has broadened its scope to include advising Governments in the development and implementation of customs-centric single window systems for international trade, offering an integrated platform to trade-related stakeholders (e.g. ministries, commercial banks, regulatory border agencies, etc.) and information sharing. Eleven member States are currently running or implementing the ASYCUDA-based single window system. In recent years, ASYCUDA has developed partnerships with several international entities and trade and development agencies, such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the German Agency for International Cooperation, the United Nations Office for the Coordination of Humanitarian Affairs and the shipping industry.

63. Since 2020, ASYCUDA and the German Agency for International Cooperation have been collaborating on the development of a specialized data integration solution called ASYHUB.³² The ASYHUB solution operates between the ASYCUDA World system and the information and communications technology (ICT) systems of shipping data providers. It enhances the efficiency of customs clearance processes and risk management systems by facilitating pre-arrival processing of sea cargo manifests. It also integrates and processes data related to pre-arrival/pre-departure maritime cargo information. In 2021, the ASYHUB solution was fine-tuned and optimized. It is being tested in the pilot countries, Cambodia and Sri Lanka. Data can now be exchanged and flow between a data and document-sharing platform,³³ ASYHUB and ASYCUDA World in both pilot countries. Also, in Sri Lanka, multiple platforms can currently automatically exchange data and vessel information using the vessel registration feature. The ASYHUB solution is expected to be launched in both Cambodia and Sri Lanka in 2023.

64. The Conference on International Trade of Endangered Species of Wild Fauna and Flora and ASYCUDA jointly developed a cloud-based electronic permit system, called eCITES, that offers automated support for permit application, processing and issuance for the international trade of endangered species. The system was piloted in Sri Lanka in February 2020. Mozambique is to deploy the solution in 2022.

65. Under the United Nations Development Account project on transport and trade connectivity in the age of pandemics, the ASYCUDA programme has participated in tackling the impact of COVID-19. In 2020, the programme issued guidelines for customs administrations to adapt their use of ASYCUDA World to the COVID-19 situation,³⁴ helping them to cope with related measures at the workplace and reduce direct interaction. The guidelines deal with implementing and promoting further paperless processing, tailoring the ASYCUDA World risk management module, reviewing organizational arrangements, implementing tax policy changes, adjusting the ICT infrastructure and performing trade data analysis to monitor the impact of the pandemic. In addition, the ASYCUDA programme surveyed customs administrations to rapidly assess operational conditions and to facilitate the implementation of UNCTAD guidelines for coping with COVID-19 measures. Forty-six ASYCUDA systems user-countries participated in the survey.

³² See <https://unctad.org/news/digitizing-global-maritime-trade-project-launched>.

³³ See <https://www.tradelens.com/>.

³⁴ UNCTAD, 2020, Adapting the use of ASYCUDA World to the COVID-19 situation: Guidelines to customs administrations (UNCTAD/DTL/ASYCUDA/INF/2020/1).

66. In 2021, in cooperation with the Office for the Coordination of Humanitarian Affairs, the ASYCUDA programme developed the Automated System for Relief Consignments. This tool provides for the smooth and efficient coordination of humanitarian relief imports. It ensures that the humanitarian response to an emergency crisis proves logistically timely and effective. In the context of COVID-19, the Automated System for Relief Consignments enables the prioritization and clearance of consignments of medicines and medical equipment.

67. The ASYCUDA programme has mobilized efforts to offer quality training materials to ASYCUDA systems users around the world through the implementation of an electronic learning platform. Since 2020, distance virtual training and electronic learning have become the cornerstone of capacity-building. The platform offers high-quality video tutorials, documentation and exercises for mastering the use and configuration of ASYCUDA systems, such as ASYCUDA World, the Automated System for Relief Consignments and eCITES.

IV. Conclusions and way forward

68. Against the backdrop of a challenging global economic, trade policy and geopolitical landscape, the COVID-19 disruption has highlighted and amplified the vulnerabilities of global supply chains, including the transportation networks that support them. “Building back better” requires policies and initiatives that integrate risks, environmental sustainability and technology as prerequisites for a sustainable and resilient post-pandemic world.

69. Experts are invited to identify the priority actions areas for helping transport and logistics to navigate the varied global concerns and achieve a lasting recovery, while building resilience and advancing the sustainability agenda. They may wish to consider, inter alia, the following issues:

(a) Freight rate surges, market concentration and regulatory oversight as well as the merit/feasibility of developing an emergency response mechanism to alleviate the immediate impact of rising transport costs and prices on small island developing States with a view to food and energy security.

(b) Shipping decarbonization, energy transition and smart and sustainable ports, as well as climate-smart trade and transport facilitation.

(c) Accelerated action to ensure and facilitate climate change impact assessments, adaptation, resilience building and disaster risk reduction for ports and other critical transport infrastructures, in particular in vulnerable developing countries.

(d) Preparedness in the face of disruptions, risk assessment and management, and resilience building in transport and logistics.

(e) Continued collaboration to address the crew change crisis, safeguard seafarer health and safety, and avoid supply chain disruptions during the ongoing COVID-19 pandemic.

(f) Technology and digitalization as a leverage for sustainability and resilience building in transport and logistics.

(g) Specific technical assistance and capacity-building gaps and needs as well as the role of Government, public and private sectors and development partners in addressing the sustainability and resilience imperative and persistent challenges in transport and logistics.

(h) Actions and needs to accelerate the implementation of trade facilitation measures, in particular considering the experiences of recent disruptions to global supply chains.