Forum: United Nations Conference on Trade and Development (UNCTAD)

**Issue #2:** Addressing the effects of climate change on trade infrastructure and disruptions to critical choke points.

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# Introduction

The negative effects of climate change have risen to an alarming level in the past decades. Now, it is impacting not only people but also the well-functioning of trading. Weather events of massive scales, sea levels, and unpredictable climate patterns have negatively impacted trade and affected important trade routes and necessary

infrastructure. Critical choke points have been affected, including the Panama Canal, Suez Canal, Malacca Strait, and the Turkish Straits. These choke points take in the majority of the trading around the globe, showing how if negatively impacted by climate change, trading could collapse alongside many economies. The negative impacts of climate change aren't minor; they are massive. By 2030, it is expected that 34 billion dollars in annual GDP will be lost due to the impacts of climate change on trading. This will majorly affect nations, especially nations with mid to low income, including areas like Sub-Saharan Africa, the Middle East, and North America (Mele). Climate Change has severe natural consequences, such as floods, hurricanes, and droughts. These consequences can hurt ports, railways, and roads, leading to a less efficient trading system, with delays, shortages, and a higher cost of transportation. An example of this is the Panama Canal, where, due to an increase in droughts, the water levels have lowered. Due to this, trading is slower because of delays and new restrictions to reduce cargo weight, so now there is a smaller amount of goods transported. On the contrary, sea level rise threatens a massive number of ports, causing partial inundation in places like Asia, making it hard to operate export hubs effectively(Mikaelsson and Dzebo).

The main sector affected due to these disruptions is agriculture. Canal closures due to the consequences of climate change have caused agricultural products to increase in price. This affects lower-class people, as now basic agricultural goods are more expensive, leading to other issues like hunger and even more poverty. Additionally, another sector affected is manufacturing and transportation. The Thailand Floods in 2011, widely recognized as one of the most catastrophic floods in recent history, contributed to 46 billion dollars lost, an alarming number that completely affects the alobe as a whole. In detail, the more affected industries were electronics and

automotive, which suffered a lot due to the horrific floods (Mikaelsson and Dzebo).

Landlocked nations, developing countries, and small island states are the ones who suffer the most from these impacts. As climate change gets worse, these nations are unable to adapt quickly and invest to keep up with the changing climate. In the future, these nations will truly be unable to keep up, and when that happens, infrastructure and industries will be damaged to the point of no return. With these conditions, international cooperation will be needed to help these struggling nations set up a strong system of trade and global supply chains. Countries will need to find a way to manage financing for the adaptation to climate change, and infrastructure that can keep up with demanding conditions, to protect global trade.

# **Definition of Key Terms**

Maritime Chokepoints: Strategic narrow waterways or passages (straits, canals) that connect two larger bodies of water and are critical for international maritime trade. Examples include the Suez Canal, Panama Canal, Strait of Malacca, and Turkish Straits.

**Critical Chokepoints:** Geographic points in trade routes where the flow of goods is highly concentrated and vulnerable to disruption. These points act as hubs in global supply chains, where any blockage or damage can cause significant delays and economic impacts.

**Trade hubs:** Major ports or logistics centers where goods are consolidated, transferred, or redistributed. These hubs are often located near chokepoints and are essential nodes in global supply chains.

**Canals:** Man-made waterways such as the Panama Canal and Suez Canal that serve as shortcuts for maritime trade, reducing transit times between oceans but are vulnerable to climate impacts like drought or blockage.

**Straits:** Naturally occurring narrow passages connecting two larger bodies of water, critical for global energy and goods transport.

**Ports:** Facilities located along coastlines or inland waterways where ships dock to load and unload cargo and passengers. Ports are critical nodes in global trade infrastructure, providing storage, customs processing, and logistical support for the movement of goods.

**Infrastructure:** The physical structures and facilities (like ports, roads, railways, bridges, airports, and canals), that support the transportation and distribution of goods and services. Trade infrastructure must be resilient to climate impacts to ensure continuity and efficiency in global supply chains.

# **General Overview**

# Climate Change and Global Trade

Climate change is increasingly recognized as a critical factor influencing global trade dynamics. The physical impacts of climate change, such as rising sea levels, more frequent and intense extreme weather events (hurricanes, floods, droughts), and shifting climate zones, directly affect trade infrastructure and transport routes. Since over 80% of global goods trade by volume depends on maritime shipping, disruptions to ports, canals, and coastal infrastructure can cause significant delays and cost

increases. For example, drought conditions in 2023 temporarily reduced traffic through the Panama Canal, impacting about 5% of international trade. These disruptions ripple through supply chains, increasing uncertainty and operational costs for businesses and consumers worldwide (Dellink et al).

Moreover, climate change also influences trade patterns indirectly by altering agricultural productivity, labor efficiency, and regional comparative advantages. Some regions may see reduced crop yields or labor productivity due to heat stress, while others might gain new opportunities, such as the opening of Arctic shipping routes. However, the net effect is expected to slow the pace of trade growth relative to GDP, as climate damages impose economic costs globally. Trade policies and tariffs remain key tools that interact with these climate impacts, affecting market access and competitiveness, especially in developing countries.

# The Threat to Critical Choke Points

Critical maritime chokepoints (narrow passages like the Panama Canal, Suez Canal, and Turkish Straits) are vital arteries for global trade but are highly vulnerable to climate-induced disruptions. These chokepoints concentrate large volumes of goods, including essential commodities like food and energy, making any blockage or operational disruption potentially catastrophic for global supply chains and commodity prices.

Climate change accelerates risks at these chokepoints through droughts, reducing water levels, extreme storms damaging infrastructure, and rising sea levels affecting port operations. The economic consequences are profound: estimates suggest climate-related disruptions at chokepoints could cause global economic losses up to

\$34 billion by 2030, with cascading effects on GDP and trade flows. These chokepoints also represent geopolitical flashpoints, where environmental stress can amplify tensions and complicate international cooperation on trade and climate resilience (Dellink et al).

# **Disproportionate Impact on Developing Countries**

Developed and least developed countries (LDCs) face disproportionate challenges from climate change impacts on trade infrastructure and chokepoints. These countries often have weaker infrastructure, limited financial resources for adaptation, and higher exposure to climate hazards. For example, many African and Asian economies depend heavily on agricultural exports and are more vulnerable to disruptions in maritime transport and chokepoints.

Trade barriers such as high tariffs on agricultural and manufactured goods further constrain the ability of developing countries to diversify and upgrade their exports, limiting economic resilience. South trade faces particularly high tariffs, averaging around 15% in some regions. The unequal distribution of climate impacts and limited access to climate finance only worsen existing inequalities, making it harder for developing countries to recover from trade disruptions and invest in climate-resilient infrastructure ("Global Trade Update (March 2025): The Role of Tariffs in International Trade | ").

This distinction calls for international cooperation to support climate adaptation financing, technology transfer, and trade policy reforms that facilitate market access and resilience for vulnerable economies.

#### The Need for Climate-Resilient Infrastructure

Building climate-resilient trade infrastructure is essential to safeguard global supply chains and economic development. This involves upgrading ports, roads, railways, airports, and inland waterways to withstand hydro-meteorological hazards such as floods, storms, and sea level rise. Climate-proofing infrastructure includes incorporating adaptive design standards, investing in early warning and monitoring systems, and enhancing maintenance regimes.

Given the scale of global trade, reaching \$33 trillion in 2024-annual investments in sustainable infrastructure must reach trillions of dollars to meet climate and development goals. Resilience also requires diversifying transport routes and supply chains to reduce dependency on vulnerable chokepoints and adopting flexible logistics strategies, such as dual sourcing and regionalization (*Trade in Transition 2025 Global Report*).

# **Major Parties Involved and Their Views**

# **United States**

The United States has a huge presence in the issue. The nation depends on marine trade, specifically through the Panama Canal, from which about 40% of the United States' container traffic comes. Disruptions in the Panama Canal impacted United States supply chains, brought delays, increased the likelihood of shortages, and higher prices for American industries such as automotive and electronics(Freedman). Overall, the United States has a big influence on global trade. Still, they are also vulnerable to climate change effects, such as damage to their infrastructure, like ports and railroads,

due to sea-level rise and hurricanes, and their dependence on external chokepoints.

# China

China also has a strong presence in the issue, due to its big influence on important chokepoints. China, through its Belt and Road Initiative (BRI), has invested in ports near chokepoints such as the Panama Canal, the Malacca Strait, the Suez Canal, and the Bab el-Mandeb Strait, to control and develop these areas, to further pursue global economic growth. These investments aim to reduce the effect of climate change in these chokepoints, to maintain economic growth (Haralambides and Merk). Moving forward, China looks forward to continuing to invest in the infrastructure of chokepoints, to maintain control, and make as much profit as possible.

#### Panama

The Panama Canal, located in Panama, is one of the world's most important Maritime chokeholds, where a large amount of global trade happens. The Panama Canal depends on freshwater to function efficiently, but recent droughts have prevented there being sufficient water to run properly. This brings issues such as delays, increased prices, and less efficiency due to new restrictions on cargo weight. The inability to improve the conditions of the Panama Canal due to climate change could jeopardize the global trade scene, as the consequences would be of a massive magnitude.

### Indonesia

Indonesia holds the Malacca Strait, a fundamental chokepoint in trading as it connects the Indian Ocean to the Pacific Ocean. A vast majority of traded goods go through this chokepoint, and not only is it essential for Indonesia's economy, but for the region and all across the world. Major Asian countries use it to their advantage, such as China,

Japan, and South Korea. The Malacca Strait is narrow, meaning that it is negatively affected by the consequences of climate change, such as sea level rise and extreme weather events. Due to these consequences, navigating the Malacca Strait is difficult, and the infrastructure gets worse, making its effectiveness decrease. The Malacca Strait holds the economic situation in Asia balanced, as well as the international supply chain, so efforts must be made to maintain its effectiveness.

#### **Mauritius**

Mauritius is located in a very important geographical place for the issue, it is near chokepoints. Mauritius's job is to make sure everything is in order at these shipping routes; if not, then the consequences could affect trading at a global level. Mauritius is a small island nation, so it is very vulnerable to the effects of climate change. Consequences such as extreme weather events and sea level rise have affected the country's infrastructure, and due to that, trading routes near the nation could also be affected. Due to its geographical location, Mauritius must make struggling effort to keep chokepoints as prepared as possible, to maintain stability in global trade.

# **Timeline of Events**

Date	Description of event
1973	The International Convention for the Prevention of Pollution from Ships
	(MARPOL) was introduced, a treaty that targeted marine pollution
	caused by ships ("Maritime Law and Climate Change - Law and Climate
	Atlas").
2011	The Thailand Floods took place, alarming the world about the risk of
	climate change, severely affecting the supply chains of global

#### Panama Model United Nations 2025 | XXXIII Annual Session

electronics and automotive ("International Trade in the Time of Climate Crisis"). The Paris Agreement was signed, the famous global climate treaty in which countries aimed to reduce greenhouse gas emissions. The Paris 2015 Agreement mentioned for the first time how trade infrastructure was impacted due to climate change ("Maritime Law and Climate Change -Law and Climate Atlas"). A study warned Suez Canal operations of climate change impacts, such 2020 as rising sea levels and heat(GT Review). Clydebank Declaration at Conference of the Parties 26, where countries discussed maritime trade routes with zero emissions, these ideas would 2021 be put into action by developing green shipping corridors. ("Maritime Law and Climate Change - Law and Climate Atlas"). A Suez Canal report visualizing future climate change risks was released, 2022 showing how by 2050/2100, increased flooding and impacts due to heat would be devastating (GT Review). The Panama Canal experienced serious droughts, this made the amount of ships that passed through decrease, which caused ship delays and 2023 trade disruptions around the globe ("Trade and Climate: An Effective Multilateral Cooperation? - IRIS"). Attacks and climate impacts in the Red Sea impact Suez Canal transit 2023 and disrupt global trade, decreasing efficiency and proper function. Water shortages continue in the Panama Canal, its function becomes less efficient, and regulations have to be set in order to limit weight 2024 capacity, raising trade worries around the globe ("Trade and Climate: An Effective Multilateral Cooperation? - IRIS").

2024

UNCTAD and IMF create PortWatch Platform, climate and other rare occurrences can now be seen using this new tool that can monitor and simulate trade disruptions ("Trade and Climate: An Effective Multilateral Cooperation? - IRIS").

2025

Environmental goods and sustainable trade are promoted through a new pact set, the Agreement on Climate Change, Trade and Sustainability(ACCTS). The agreement helps integrate climate and trade policies to combat the issue("Agreement on Climate Change, Trade, and Sustainability: A Landmark Pact for Trade and Sustainability").

#### UN Involvement, Relevant Resolutions, Treaties, and Events

# United Nations Convention on the Law of the Sea (UNCLOS, 1982)

The United Nations Convention on the Law of the Sea (UNCLOS, 1982) is often called "the Constitution of the Seas" and sets the legal framework for all maritime activities. It guarantees the freedom of navigation through international waters and strategic straits, which keeps global shipping lanes and trade routes open. As the UN General Assembly President noted, UNCLOS balances national sovereignty and navigation rights "without which global value chains would be broken and international trade (would be) frozen" ("General Assembly Adopts Two Resolutions on Oceans, Highlighting Mounting Threats to Marine Resources, Need to Tackle Rising Sea Levels, Damage to Ecosystems | Meetings Coverage and Press Releases"). This treaty also requires countries to protect the marine environment, a duty that becomes important as climate change alters coastlines and sea levels. Overall, UNCLOS provides the rules that help ensure ships can reach key ports and passages, and it illustrates that nations must work together to address threats that could otherwise disrupt maritime trade.

# Paris Agreement (2015)

The Paris Agreement (2015) is a global climate treaty where countries pledged to limit warming to about 1.5 °C and strengthen their resilience to climate impacts. Under this treaty, nations submit climate plans that include not only emission cuts, but also actions to adapt infrastructure and communities. The agreement also sets up a framework for finance and technology support, meaning wealthier nations help poorer ones invest in adaptation. This can fund projects like elevating ports, reinforcing flood barriers, or improving drainage for roads to keep trade routes operational. By encouraging adaptation, finance, and technology transfer, the Paris Agreement helps protect critical trade infrastructure and choke points against climate extremes, reducing the risk that storms or sea level rise will halt global supply chains (Nations).

# Sendai Framework for Disaster Risk Reduction (2015-2030)

In 2015, UN member states adopted the Sendai Framework for Disaster Risk Reduction (2015-2030), which aims to substantially reduce disaster losses. The Framework explicitly calls for protecting and strengthening critical infrastructure so that communities can withstand extreme events. This is vital for trade: UN disaster experts not that over 80% of global trade by volume moves by sea, and many ports are already at the front line of climate threats (UNDRR Inputs -Report of the Secretary General on "Sustainable Development of the Caribbean Sea for Present and Future Generations"). By promoting early warning systems and resilient design standards, Sendai encourages governments to upgrade ports, roads, and bridges. In practice, this means building higher flood walls or reinforcing docks to keep goods flowing during floods or storms.

# UNGA Resolution 76/300 - Right to a Healthy Environment (2022)

In July 2022, the UN General Assembly adopted Resolution 76/300, recognizing a human right to a clean, healthy, and sustainable environment. The resolution explicitly noted that climate change and environmental degradation are among "the most pressing threats to humanity's future," and it urged governments to ensure people can enjoy a stable climate and pollution-free surroundings. Although this resolution is not legally binding, it reflects strong global agreement on linking human rights and environmental protection. By affirming the right to a healthy environment, the Assembly sent a clear message that infrastructure development should consider environmental and climate impacts (https://www.facebook.com/unep).

#### COP28 and the Loss and Damage Fund (2023)

At the 2023 UN Climate Conference (COP28), parties agreed on the first-ever dedicated Loss and Damage Fund to help countries pay for climate-related harms. The fund is meant to support vulnerable nations after extreme events by providing financial aid. Within hours of the COP decision, donors pledged over \$600 million, signaling strong international support. By creating a global Loss and Damage Fund, COP28 recognizes the economic cost of climate disasters and gives vulnerable countries a way to rebuild and protect critical trade infrastructure (Nations).

# Evaluation of Previous Attempts to Resolve the Issue

### Paris Agreement and Clydebank Declaration

Attempts have been made in the past to resolve this issue, however, it is still an issue with a solution in progress. The first treaty to mention the impacts of climate change on trade was the Paris Agreement in 2015, where trade resilience was addressed through

climate action measures. However, the Paris Agreement did not target specific measures, those being critical choke points that are crucial in resolving the issue. Later on, the Clydebank Declaration in 2021 was made, where the establishment of green shipping corridors was planned and set for fulfillment by nations. This process has been rather slow, with 24 corridors announced by 2023, with none of them operational yet(Mikaelsson and Dzebo).

Regarding addressing major chokepoints in the issue, the Panama Canal water shortages were resolved in a very resilient manner. 2.5 billion dollars were invested in watershed restoration and new reservoirs to combat the droughts (Mikaelsson and Dzebo). This initiative has proven to be a stepping stone in the right direction to combat the issue, showing how it is a small step that needs to be taken for simple but critical issues to be resolved.

# **UN Initiatives**

The United Nations has taken recent measures to combat this alarming issue, one of them being in 2024, with a collaboration between UNCTAD and the IMF to create the previously mentioned technology, PortWatch, allowing for climate and other rare occurrences. This technology is effective at the moment, but other solutions should be implemented that can hold up long term. In addition, developing countries and small island nations are supported by the UN and their partners through the Aid for Trade initiative, which supports these nations' trade infrastructure to be secure from climate change risks(CLIMATE CHANGE ADAPTATION and TRADE Policy Brief 2 Climate Change Adaptation and Trade -Policy Brief). To find more solutions, UN agencies like UNCTAD have repeatedly brought attention to how climate change negatively impacts critical chokepoints like the Panama Canal and Suez Canal, and how, if infrastructure and

diversification of shipping routes are not improved, the consequences could be detrimental to global trade (UNCTAD).

# **Possible Solutions**

# Establishing a Global Resilient Infrastructure Fund

Creating a UN-backed financing mechanism that would directly address the vulnerability of trade infrastructure in developing nations. This fund could prioritize projects that protect key trading systems from floods, storms, and sea-level rise, especially in nations located near maritime chokepoints. By offering low-interest loans, the fund would motivate weaker countries to invest in long-term resilience, reducing the frequency and severity of global trade disruptions.

# **Promoting Regional Early Warning Systems**

Climate-related disasters often occur with little warning, particularly in regions with limited forecasting capacity. By enhancing regional early warning systems, countries can improve plans for extreme weather that threatens trade networks and ports. This solution strengthens cooperation among neighboring states and helps governments and companies reroute or safeguard goods before disasters strike, preventing economic losses and delays in supply chains.

# **Enforcing Green Standards in Infrastructure Planning**

Mandating Environmental and Climate Resilience Impact Assessments (ECRIAs) for all large-scale trade infrastructure projects ensures that new ports, roads, bridges, and shipping terminals are built to withstand climate change. This policy would be particularly effective if introduced through national legislation supported by UN

technical guidelines. It ensures governments and private firms consider long-term environmental risks like rising sea levels or increased storm intensity. By doing so, it helps avoid costly replacements or breakdowns in critical infrastructure, protecting trade flows and reducing future climate-related disruptions.

# Sustainable Development Goal (SDG)

This issue is closely related to Sustainable Development Goal(SDG) #9, Industry, Innovation, and Infrastructure. The goal aims to promote quality, reliable, sustainable, and resilient infrastructure, to support economic progress and human well-being. One of the major problems with this situation is that developing countries face harsher challenges related to the impacts of climate change on trade infrastructure, making the consequences and disruptions more severe. Ensuring every nation has resilient infrastructure for trade is a prerequisite for success; otherwise, consequences would be alarming and massively affect critical choke points, which have the potential to disrupt trade and economies as a whole (UNCTAD). Two targets of SDG 9 are specifically important to the issue: targets 9.1 and 9.a. Target 9.1 focuses on building and improving infrastructure to avoid being affected by climate change disruptions and make sure global trade can run smoothly, while target 9.a focuses more on ensuring that international cooperation happens for developing countries and small island states to change their trade infrastructure, protecting the nations from climate change risks.

# **Appendix**

This section is dedicated to providing significant data and information that you can and should utilize in your research to help you better understand the topic.

https://www.globalguardian.com/global-digest/global-chokepoints

**Source A:** All about Chokepoints: what they are and current chokepoints.

https://www.earth-scan.com/blog/climate-impact-supply-chain

**Source B:** This link provides an infographic that shows the different impacts on global supply chains

https://www.imf.org/en/Blogs/Articles/2023/11/15/climate-change-is-disrupting-global-trade/

**Source C:** This link provides information on climate change disrupting global trade, specifically about the Panama Canal drought.

# https://www.youtube.com/watch?v=UOfIIXdluZw

**Source D:** A short video that covers climate and conflict impacts on key trade routes like the Suez Canal and Panama Canal.

https://www.lse.ac.uk/granthaminstitute/explainers/how-does-climate-change-impact-on-international-trade/

**Source E:** A Great source to understand more in detail about how extreme weather disrupts trade and transport infrastructure.

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