

**Economic and Social Commission for Western Asia (ESCWA)**

Committee on Transport and Logistics
Twenty-fifth session
Amman, 26–27 November 2024



Item 7 of the provisional agenda

Transport and food security in the Arab region**Summary**

Recent global events have exposed significant weaknesses in food supply chains and transport systems, threatening the resilience and economic sustainability of countries. The interconnectedness of food supply and transport is crucial for socioeconomic stability, especially in the current climate of geopolitical uncertainty and supply chain vulnerabilities. High food prices and the concentration of food production have heightened sensitivity to disruptions, placing pressure on both food supply chains and transport networks.

In the Arab region, these challenges are exacerbated by high import dependency, making food security even more vulnerable to shocks. This underscores the urgent need for revitalization through improvements in transport infrastructure, which could boost economic development and reduce regional disparities. The present document explores the relationship between food security and transport, particularly focusing on the Arab region's unique vulnerabilities, and provides suggestions to improve transport factors that could increase food security. The Committee on Transport and Logistics is invited to review the contents of the present and comment thereon.

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Introduction

1. Food security is an integral component of national security. It exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs, and food preferences for an active and healthy life.¹ Food security has six acknowledged dimensions, namely: availability, access, utilization, stability, agency, and sustainability. Food supply is related to the availability dimension of food security, and is concerned with the level of food production, stock levels and net trade.
2. Historically, transport has shaped the degree to which food markets are integrated across regions, and has influenced the trade dynamics involved in the process. Before the Industrial Revolution and the global commercialization of food, food was primarily produced locally and seldom transported over long distances. During that era, food shortages frequently resulted in widespread famine and mass migration. The advent of railways significantly altered connectivity between burgeoning urban populations and food sources, enabling their commercialization beyond traditional subsistence farming. This transformation facilitated the development of the food system concept, encompassing agriculture through to consumption, and bolstered the importance of transport and logistics within this intricate system.²
3. In the second half of the nineteenth century, notable changes occurred with the introduction of refrigerated ships enabling the transport of temperature-sensitive goods, and in turn the initiation of cold chain logistics. In the second half of the twentieth century, the introduction of specialized bulk carriers permitted low-cost food products to be transported long distances at economically feasible costs. Consequently, transport infrastructure is an important component of agri-food value chains.
4. Transport infrastructure plays a crucial role in ensuring food security. Delays or issues at a single point in the transport network can disrupt the entire food supply chain, impacting access to food and agricultural products, and causing waste and spoilage (food loss). Moreover, the issue of food safety is heightened in correlation with the fragility of transport distribution systems. The Arab region's characteristically warm temperatures and vast amount of imported food make the food supply chain more susceptible to the quality of transport networks.
5. Transport is vital to improving food access in both rural and urban areas, especially for vulnerable populations. The availability and affordability of transport options affects food supply levels, particularly for rural or low-income groups. Moreover, a strong transport sector can have economic benefits by improving food supply chains, which helps reduce poverty and inequality. This is largely because transport networks can lower the costs involved in moving food through the supply chain.
6. In sum, the food supply's relationship to transport revolves around several main factors, including rural and income inequalities, agricultural productivity, intermediate transport costs, accessibility and diversity of food products, and food supply chain resiliency tied to conflict shocks.
7. In the Arab region, research has been conducted on both transport and food security, but these topics have been studied separately. It is therefore vital to provide an all-encompassing assessment of the status of transport and food security in the Arab region, with a focus on food supply, and assess how the two variables are correlated by utilizing data in a multidimensional manner.
8. Food supply and transport are crucial for societal productivity, well-being, economic sustainability, and resilience to shocks. Transformations in food systems are increasingly needed due to rising food demand, demographic pressures, limited access to food inputs, and inefficient distribution. Transport plays a vital role in improving food accessibility and availability, supporting socio-economic development, and facilitating international trade. Assessing a country's transport infrastructure using World Bank income classifications and

¹ Food and Agriculture Organization (FAO), [The State of food insecurity in the world](#), 2001.

² Jean-Paul Rodrigue, [The logistics of global food systems](#), 2024.

the UNDP's Human Development Index (HDI) helps determine the best strategies for improvement. Strong infrastructure can reduce deficiencies in agricultural and food value chains by enhancing opportunities and efficiency.

9. In 2024, although food supply has gradually stabilized, food prices remain near historic highs. Moreover, geo-political tensions and climate-related disruptions continue to exacerbate volatility in food and agricultural markets. Given that food supply chains tend to rely on production concentrated in specific areas, disruptions or sudden changes in prices can destabilize the entire network. It is therefore vital to mitigate disruptions to the food trade network through efficient means, with transport enhancements being an essential pathway.

10. Global transport has been impacted by socioeconomic and geopolitical events. Global shipping companies are rerouting vessels around the Cape of Good Hope to avoid the Red Sea, impacting 11 per cent of global trade and threatening Asia-Europe shipping routes. The United Nations Conference on Trade and Development (UNCTAD) reports a 42 per cent drop in Suez Canal transits from its peak. Weekly container ship transits have plunged by 67 per cent, along with significant reductions in container capacity, tanker transits, and gas carriers. Meanwhile, insurance services saw a significant increase of 17 per cent due to rising security concerns linked to disruptions in shipping routes.³ For food transport networks, the focus is on finding resilient cost-efficient multimodal transport alternatives that ensure food safety and economic efficiency, making the choice of transport modes, routes and distribution systems critical elements in the food supply chain.

I. Food supply and transport in the Arab region

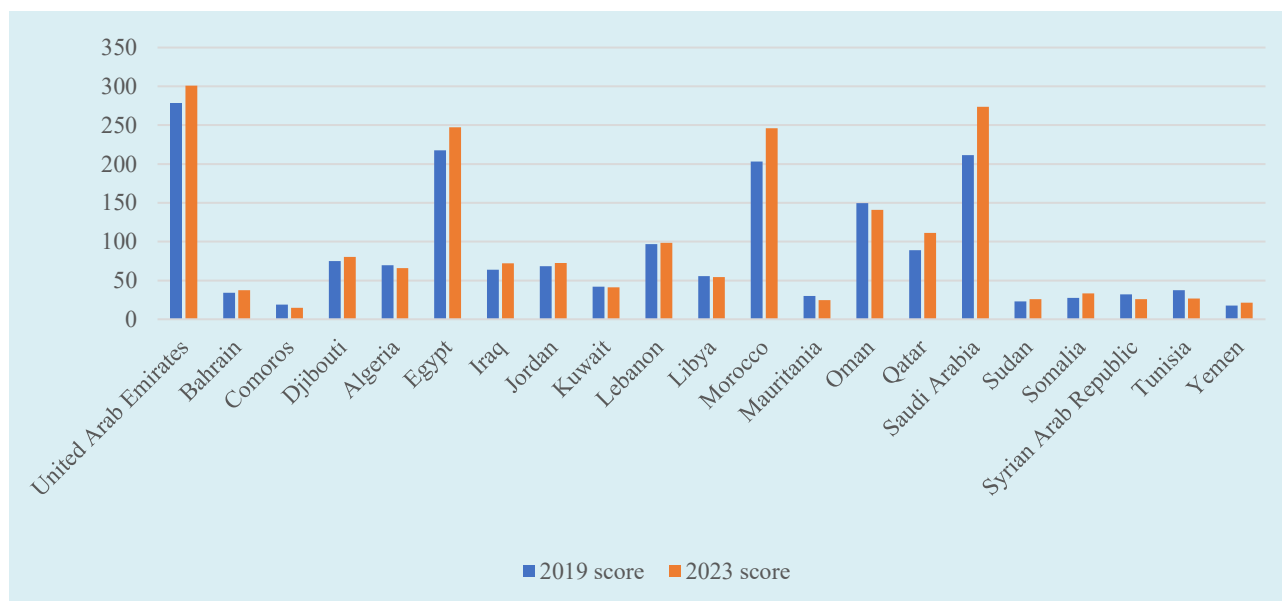
11. The Arab region's strategic geographical position makes it well-placed to leverage key international transport gateways. This positioning enhances the potential importance of Arab countries' trade and transport sectors, allowing the region to benefit from lower costs and increased trade participation. The region's strategic location includes crucial interoceanic passages and key routes like the Suez Canal and Bab el-Mandab, which handle significant commercial shipping traffic. For example, Egyptian ports handle the second-largest container throughput in Africa, while the United Arab Emirates is a leading trading partner in the region. Performance within the global liner shipping network varies significantly across Arab countries. Countries like Egypt and the United Arab Emirates rank near the twentieth position globally, with scores in the liner shipping connectivity index of 247.33 and 300.086, respectively (figure 1).⁴ In contrast, countries such as the Comoros and Mauritania are positioned much lower, around 140th, with scores of 14.73 and 24.8 in the liner shipping connectivity index. These differences stem from socioeconomic and geopolitical factors that have historically affected their international trade standing.

12. In the food supply chain, transport infrastructure and logistics are crucial determinants of food security. Maritime freight is particularly significant, as nearly 90 per cent of global traded goods in value are transported by sea.⁵ This mode of transport is vital for a country's competitiveness in international trade, particularly food trade.

³ UNCTAD, [Unprecedented shipping disruptions raise risk to global trade, UNCTAD warns](#), 2024.

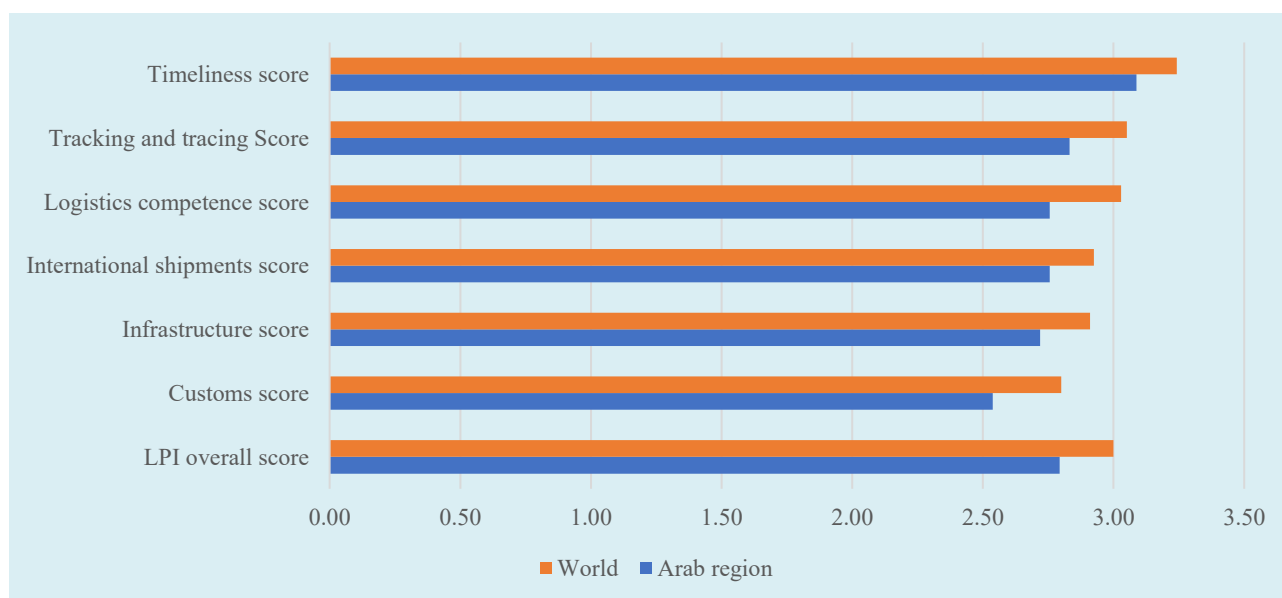
⁴ UNCTAD, [Liner shipping connectivity index](#).

⁵ World Economic Forum, [These are the world's most vital waterways for global trade](#), 15 February 2024.

Figure 1. Liner shipping connectivity index for Arab countries

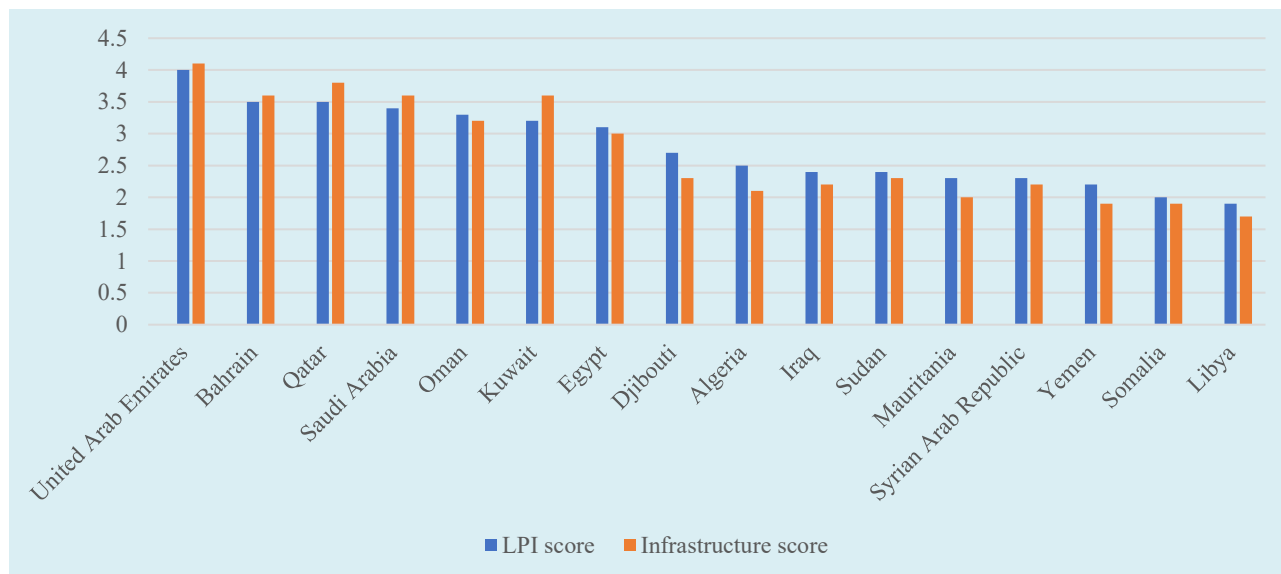
Source: UNCTAD, [Liner shipping connectivity index](#).

13. The Logistics Performance Index (LPI) provides a further assessment of the current status of transport systems. Using 2023 as a baseline, with 1 being the lowest and 5 being the highest, the Arab region's average tallies at 2.79, and the world's average at 3. Other relevant sub-metrics found within LPI are set out in figure 2, all of which are below the world's average in the Arab region, but not that far behind. Moreover, for further comparison, figure 3 highlights the main discrepancies in performance within the Arab region, showcasing overall LPI scores and infrastructure scores of specific Arab countries.

Figure 2. LPI scores, 2023

Source: World Bank, [The Logistics Performance Index and its indicators, 2023](#).

Figure 3. LPI and infrastructure scores, 2023



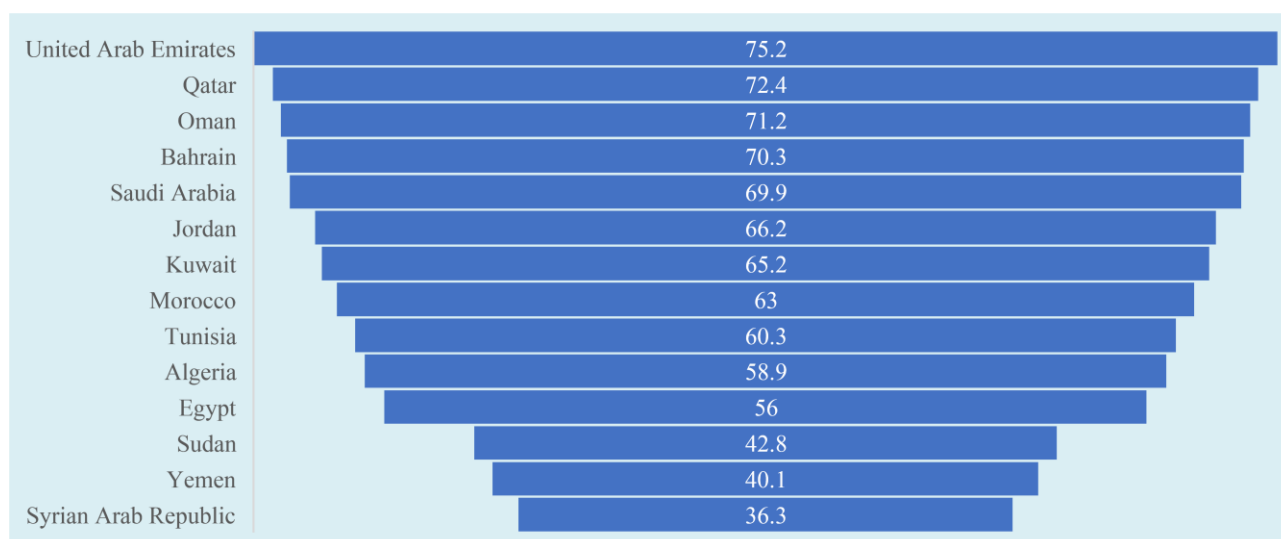
Source: World Bank, [The Logistics Performance Index and its indicators](#), 2023.

14. The Global Food Security Index (GFSI) is the leading resource for insights into the factors influencing global food security. It assesses food security in 113 countries through the following four primary pillars: affordability, availability, quality and safety, and sustainability and adaptation. It utilizes a dynamic benchmarking model built from 68 qualitative and quantitative factors related to food security.

15. GFSI reveals that the United Arab Emirates ranks first in the region with a score of 75.2, followed by Qatar at 72.4 and Oman at 71.2. These scores signify significant investments in food security initiatives, including agricultural infrastructure, domestic production, and supply chain resilience (figure 4).

16. In contrast, the Sudan (42.8), Yemen (40.1), and the Syrian Arab Republic (36.3) continue to face serious challenges. Ongoing conflicts, economic instability, and environmental issues have severely impacted food availability and accessibility in these countries. These GFSI scores highlight the need for targeted interventions to enhance food security in the region, and address the complexities faced by the most vulnerable countries.

Figure 4. Global Food Security Index, 2022

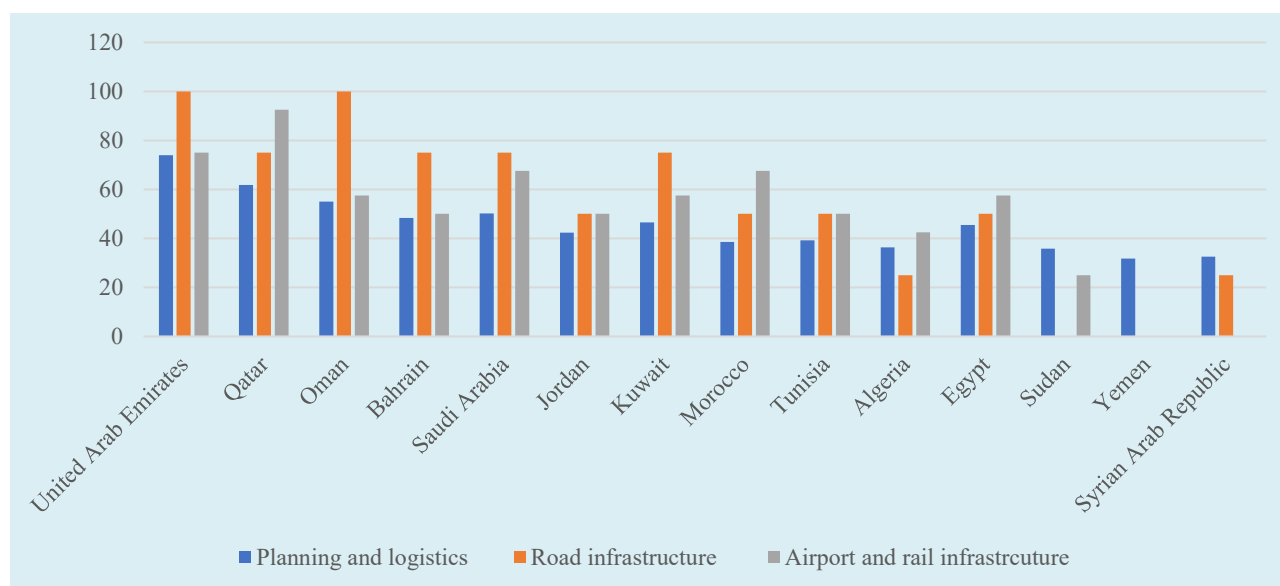


Source: Economist Impact, [Global Food Security Index](#), 2022.

17. To provide a more detailed view of the logistics aspect of GFSI, figure 5 highlights three logistics-related subcomponents: road infrastructure, airport and rail infrastructure, and planning and logistics. While these factors are crucial to food security, they are only 3 of the 68 drivers considered in the overall GFSI. Figure 5 provides an overview of how logistics infrastructure plays a role in shaping food security outcomes in the Arab region.

18. Logistics and transport are critical elements of food security, as they ensure the efficient movement of food from production areas to markets and consumers. Well-developed infrastructure, such as roads, railways and airports, enables timely and cost-effective distribution, reducing food waste and improving access. Without reliable transport networks, even countries with ample food supply can face challenges in making food accessible and affordable, highlighting the importance of logistics in maintaining a stable and secure food system.

Figure 5. Global Food Security Index: sub-indicators related to logistics



Source: Economist Impact, [Global Food Security Index](#), 2022.

19. Assessing a country's physical and economic access to food and agricultural inputs is crucial. Differences in transport infrastructure investments often reflect varying levels of accessibility among countries. For instance, according to GFSI, Egypt and the United Arab Emirates show notable discrepancies in access to agricultural inputs, with scores of 28.32 and 51.73, respectively, during the period 2012–2022. In contrast, their inequality-adjusted income index scores are 51.7 for Egypt and 68.58 for the United Arab Emirates. These differences highlight the varying impacts of infrastructure and economic conditions on food security.

A. Impact of transport networks on food supply

20. The Arab region faces several constraints impacting food security, including severe water scarcity, negative food trade balances, and geopolitical events that disrupts trade flows. These factors collectively affect the region's food security status in various ways. Furthermore, external factors, such as global inflation, have significantly impacted the Arab region. Between 2019 and 2024, there were significant increases in food prices, with grains and fertilizers seeing even sharper rises.⁶ This inflation has exacerbated the existing cost-of-living crisis, and limited agricultural production in Arab countries. Shipping costs during the COVID-19 pandemic

⁶ World Food Programme, [UN report warns of accelerating food insecurity in the Arab region due to global crises](#), 2023.

account for between 68 and 111 per cent of the increase in import price inflation, and 15 and 25 per cent of the increase in the producer price index.⁷

B. Impact of disruptions

21. Common shocks, such as global inflation and the COVID-19 pandemic, have worsened economic instability, agricultural dependencies, domestic food production issues, and transport infrastructure inadequacies. National shocks, like the olive production setback in Tunisia, internal conflict in the Sudan, and the 2020 Beirut port explosion in Lebanon, have intensified specific pressures.

22. Disruptions to transport systems in the Arab region significantly impact both regional and international food supply chains. Such disruptions hinder transport efficiency and cost-effectiveness.

23. Freight rate impacts have differed among market sectors, with container shipping for consumer and manufactured goods experiencing the steepest hikes. Container freight rates on Asia Pacific to Europe routes saw a significant rise starting in November 2023. The most notable increase occurred in the last week of December 2023, with a record weekly jump of \$500. By early February 2024, average container shipping spot rates from Shanghai, China, had more than doubled, showing a 122 per cent increase compared to early December 2023. Shipping rates from Shanghai, China, to Europe saw an even more dramatic rise, surging by 256 per cent, owing to attacks in the Red Sea.⁸ These higher costs have inevitably affected food prices for intermediaries and end users.

C. Impact of the high food import dependency

24. The Arab region is highly vulnerable to changes in the global food trade network owing to its high dependency on food imports to meet its needs.⁹ This vulnerability is compounded by ongoing geopolitical tensions, policy uncertainty, regional conflicts, and rising trade protectionism, creating a complex crisis that exacerbates risks. A significant concern is the region's high import dependency, particularly for cereals, with some countries having a 100 per cent dependency ratio, and others above 90 per cent. This dependency hampers efforts toward food self-sufficiency, with the lowest self-sufficiency ratios for cereals, vegetable oil and sugar (below 40 per cent), and higher ratios for fish, dairy, and meat (above 70 per cent).¹⁰

D. Other transport initiatives

25. Noticeable multimodal transport corridor offerings are being considered in the region, as they can drastically alter trade dynamics and benefit food supply chain systems, which could be achieved by diversifying regional trade profiles with regard to products, routes and partners. Relevant projects include the Iraq Development Road Initiative, the India-Middle East trade Corridor (IMEC) and the Gulf Railway project, which have been building momentum lately. The Development Road Initiative and IMEC both involve multimodal transport routes that provide an alternative to existing routes. The former serves to make Iraq a strategic transit hub between Asia and Europe, while the latter offers the most direct link between Europe, the Arabian peninsula, and India. On the other hand, the Gulf Railway Project strives to bolster geographical connectivity through a railway network distributed among Gulf Cooperation Council (GCC) countries. These efforts reflect regional motivations to redefine present trade patterns and bolster supply chain resiliency levels, thus creating barriers against negative factors in the food supply chain cycles of Arab countries.

⁷ Federal Reserve Bank of St. Louis, [Shipping prices and import price inflation](#), 2023.

⁸ UNCTAD, [Impact to global trade of disruption of shipping routes in the Red Sea, Black Sea and Panama Canal](#), February 2024.

⁹ ESCWA, [Arab Food Security: Vulnerabilities and Pathways](#), 2022.

¹⁰ Strategy&, [How GCC countries can ensure their food security](#), 2020.

II. Transport as a key factor in enhancing food security

A. Linking transport to food supply

26. The volatility and fragmentation of food supply and transport systems in the Arab region highlight the urgent need to address shortcomings in productivity, efficiency, market access, and well-being. Improving connectivity, access, affordability and efficiency of the food supply, particularly through enhanced transport, is crucial. Frequent shocks, both global and local, have damaged transport infrastructure, disrupting food supply chains and causing increased prices, connectivity issues, and commodity shortages. The region's reliance on food imports further strains its food supply system when transport infrastructure is inadequate. Therefore, a resilient transport system can help mitigate some of the negative impacts on food security in the region.

27. Investing in transport infrastructure can yield significant benefits by reducing time and transaction costs in food commodity transport through shorter distances or quality upgrades. Improved efficiency also enhances market connectivity for various population segments. Inefficient transport systems, on the other hand, increase transport costs, impacting both producers and consumers. Higher intermediate transport costs, such as increased fuel prices, are passed on to consumers, raising food prices and reducing affordability. For producers, increased transport costs raise the price of agricultural inputs, limiting access to essential resources and lowering farm yields. Effective transport infrastructure supports both the delivery and accessibility of food products, thus enabling more competitive pricing for both farmers and consumers.

B. Increasing public investment in transport infrastructure

28. Increasing public investment in transport infrastructure is crucial for connecting rural producers with urban markets in the Arab region, which would help improve food access, reduce food loss, and enhance nutritional availability.

29. Implementing technological advancements in transport and handling can significantly minimize food loss and waste in the Arab region. These innovations may include expensive cold chain refrigerated shipping containers, as well as simpler solutions like using tarpaulins over trucks for grain transport or ensuring proper ventilation in trucks carrying livestock or fresh produce. Moreover, promoting the transport of food during cooler evening hours can greatly decrease product spoilage, as lower temperatures and reduced traffic can help maintain food quality.

C. Connecting rural producers to urban markets

30. Enhancing road networks is vital for many Arab countries, especially in North Africa, where agriculture plays a significant role in the economy. Investing in rural road infrastructure greatly improves small farmers' capacity to transport their products to broader markets. For example, Morocco's Rural Roads Program has shown that such investments can lead to reduced travel times, better market access for farmers, and increased earnings.¹¹

31. A significant point highlighted by FAO is that low-income countries encounter far greater difficulties in achieving physical access to food via transport networks, which are crucial for maintaining active agrifood supply chains. Analysing data from 90 countries reveals that disruptions to primary transport routes could particularly hinder many low-income countries' ability to diversify food distribution or utilize alternative delivery routes. In nearly half of the countries studied, closing essential network connections would lead to a 20 per cent or more increase in local transport times, consequently raising costs and food prices for consumers.¹²

¹¹ Rabab Hteit, [Morocco's Rural Roads Program](#), 2023.

¹² FAO, [The state of food and agriculture](#), 2021.

D. Improving cold chains

32. In the Arab region, nearly 25 per cent of perishable food is lost due to inadequate refrigeration.¹³ To combat this, countries can significantly reduce losses and improve producer livelihoods by maintaining optimal temperature ranges from production to consumption. This involves measures such as precooling, cold storage, and refrigerated transport. Governments can collaborate with the private sector and development partners to invest in cold-chain infrastructure, implement regulations, and provide financial incentives.¹⁴

33. For example, Tunisia has made enhancing food safety and cold-chain development a key aspect of its national food security strategy. By creating a national cold-chain plan and offering investor incentives, the Government has increased cold-chain capacity by 65 per cent over the last decade, now operating approximately 3,000 refrigerated and 1,500 isothermal vehicles, primarily for exporting high-value crops.^{15,16}

E. Streamlining border-control procedures

34. Governments can accelerate the imports of agricultural products by streamlining border-control procedures. For example, the establishment of one-stop border posts plays a crucial role in reducing wait times for trucks transporting perishable items, allowing fresh produce to reach markets more swiftly. By simplifying customs clearance and reducing the number of checks for agricultural shipments, delays can be significantly minimized, thereby preserving the quality of imported goods.

F. Implementing electronic certificates

35. Implementing e-certification systems can significantly improve the efficiency of agricultural imports. By using e-certificates for food imports, countries can eliminate reliance on physical documentation, which frequently causes delays and bureaucratic obstacles. A good example of this is establishing an electronic import system that enables real-time tracking and verification of agricultural products. This digital method accelerates the customs process, while also enhancing transparency and traceability throughout the supply chain.

G. Strengthening regional collaboration in agricultural imports

36. Enhancing regional collaboration among Arab countries in agricultural production and exchanges can significantly improve food security and efficiency in the sector. This collaboration allows countries to share best practices, resources and technologies, which is especially beneficial for smaller countries with limited import capacity.

H. Promoting the Development Account project on transport and food security

37. UNCTAD, in partnership with ESCWA and the Economic Commission for Latin America and the Caribbean, is implementing a Development Account project that highlights the specific impact of transport on food security in the target countries. For the Arab region, the project targets Lebanon and Morocco.

38. This project directly responds to concerns underlined by the triple crises of food, energy and finance, focusing on countries and regions that are most affected by these crises. It will strengthen the capacity of target countries to leverage trade policy measures, and harness transport and logistics to be better prepared for and respond to supply chain disruptions and build sustainable and resilient food supply chains.

¹³ International Institute of Refrigeration, [Tunisia: refrigeration data](#), 2013.

¹⁴ ESCWA, [Policy briefs on food security issues in the Arab region](#), 2018.

¹⁵ International Institute of Refrigeration, [Tunisia: refrigeration data](#), 2013.

¹⁶ World Food Programme, [Draft Tunisia country strategic plan \(2022–2025\)](#).

39. The project's objective is to enhance national actions and policy coordination by supporting the development of policies and plans that promote food security and inclusive and sustainable economic growth and encourage resilient food trade and transport systems, while taking into account economic shocks like those experienced as a result of the Ukraine war and COVID-19 pandemic.

40. The project will undertake the following:

- Assessing the situation on the ground.
- Providing recommendations for addressing challenges and seizing identified opportunities.
- Providing knowledge and capacity-building products/tools.
- Offering guidance at the national and regional levels.
- Conducting other activities that support the objectives of the project.

41. The project will leverage trade policy measures, typically non-tariff measures and voluntary sustainability standards, as well as transport and trade logistics solutions to harness sustainable and resilient food supply chains.

III. Conclusions and recommendations

42. Food security, food supply and transport are interconnected, and are highly influenced by socioeconomic and geopolitical factors. These domains are crucial for a country's ability to provide a high standard of living and maintain international competitiveness. The global food supply chain is particularly vulnerable owing to the geographic concentration of food production, which amplifies disturbances and destabilizes the network. In the Arab region, these global disruptions exacerbate existing challenges related to environmental and agricultural deficiencies.

43. Transport has faced significant challenges due to both common and specific shocks, impacting its economic capacity and safety. In response, adopting a cost-effective multi-modal transport framework is essential for navigating the complex global environment. In addition, it is observable that, while noting discrepancies among the Arab countries, the region as a whole, on average, exhibits reasonable LPI scores, that just slightly lag behind the world's averages.

44. Arab countries should leverage their strengths and address weaknesses in transport infrastructure, economic conditions, and geopolitical issues. Notable transport initiatives like IMEC, the Iraq Development Road Initiative, and the Gulf Railway Project offer potential solutions to current challenges.

Policy recommendations

45. The following recommendations highlight the significant role of transport within the scope of food security, with a focus on food supply:

(a) **Focus on the distribution phase:** pay special attention to the distribution of food, particularly in regions with extreme temperatures where refrigeration is crucial;

(b) **Enhance regional trade integration:** improve regional trade agreements among Arab countries to consolidate the food supply chain and utilize regional transport facilities more effectively;

(c) **Improve transport for perishable goods:** ensure smooth transport processes, particularly for perishable food items, to minimize delays at customs;

(d) **Increase public investment in transport infrastructure:** invest in transport infrastructure to connect rural producers with consumers, thus improving access to food and enhancing nutritional availability;

(e) **Adopt a holistic approach:** implement a comprehensive strategy considering the needs of all stakeholders, and addressing the complex nature of food security and transport across Arab countries.
