



# Trade and Transport Costs in the Arab Region



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**Economic and Social Committee for Western Asia**

# **Trade and Transport Costs in the Arab Region**



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# Executive Summary

Trade costs are a major issue in international trade. They determine competitiveness, which is fundamental to participating in international trade activities. With various developments around international trade rules resulting from successive trade agreement negotiations at the global, regional and bilateral levels, tariffs for international trade have fallen to historically low levels, leaving non-tariff barriers such as logistics and customs procedures as the main stumbling blocks to international trade.

While estimating the effect of tariff and other policy measures on trade costs is relatively straightforward, estimating the cost and effect of non-policy barriers is a complex undertaking, especially at the sectoral level. Some effort has been made to estimate trade costs at national levels but much less so at the sectoral level.

The Arab region is less integrated in the global economy and at the regional level. Much of this deficiency is attributed to a lack of

competitiveness arising from various issues, including trade costs. This report estimates trade costs, revealing interesting results at the national and sectoral level in most of the region, where data are available. While the region trades competitively with some partners, it remains uncompetitive with others and within itself as well. Transport and logistics costs are believed to be partly responsible as revealed by the region's performance on various indicators.

This effort to estimate trade costs, although an important contribution to understanding the nature and effect of costs in terms of competitiveness in the Arab region, is only a first step. It needs to be complemented by accounting for the structure of trade costs through decomposing these to their basic components. This will make clear the real magnitude of the various factors affecting trade costs and inform accurate policies to address them.



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# Acronyms

<b>AMU</b>	Arab Maghreb Union
<b>ASEAN</b>	Association of Southeast Asian Nations
<b>AUS/NEZ</b>	Australia and New Zealand
<b>COMTRADE</b>	United Nations International Trade Statistics Database
<b>ESCAP</b>	United Nation Economic and Social Commission for Asia and the Pacific
<b>ESCWA</b>	Economic and Social Commission for Western Asia
<b>EU</b>	European Union
<b>GAFTA</b>	Greater Arab Free Trade Agreement
<b>GCC</b>	Gulf Cooperation Council
<b>GTT</b>	Goods total trade
<b>HS</b>	Harmonized System
<b>INDSTAT2</b>	Industrial Statistics Database 2
<b>ISIC</b>	International Standard Industrial Classification
<b>Lat/Cen Amerca</b>	Latin America and the Caribbean
<b>LPI</b>	Logistic Performance Index
<b>LSCI</b>	Liner Shipping Connectivity Index
<b>NAFTA</b>	North America Free Trade Agreement
<b>PAFTA</b>	Pan Arab Free Trade Agreement
<b>SDG</b>	Sustainable Development Goal
<b>TEU</b>	Twenty-foot equivalent unit
<b>UNCTAD</b>	United Nation Conference on Trade and Development
<b>UNIDO</b>	United Nation Industrial Development Organization



# Introduction

International trade is an engine for growth and development, and a source of global integration, peace and prosperity. Job creation, the transfer of technology, shared interests and global partnership result from international trade. The importance of trade increases with time. In recent years, the world has become like a small village where people can acquire goods and services from any part of the world based on similar or semi-similar conditions to those of local consumers, thanks to international trade rules.

International trade takes place among economic agents in different geographical locations. This trade directly induces many costs, usually called trade costs. These include all costs incurred in getting a good to a final user other than the marginal cost of producing the good itself. As such, trade costs could be divided in two principal groups: policy-made trade costs (e.g., tariffs, tariff equivalents of non-tariff measures such as quotas and licences, etc.) and non-policy-made trade costs, which include mainly transport, insurance and customs procedures.

Following trade liberalization in the second half of the 20th century, with the entry into force of a number of multilateral and bilateral free trade agreements around the world, trade costs became less linked to trade restrictions imposed by tariff policies. They are increasingly linked to geography and other non-tariff measures. Examples of import trade costs include those related to transport (both freight and time

costs), cumbersome customs procedures, the use of different currencies, financing, etc. On the export side, the previously mentioned costs prevail as well, in addition to those to penetrate markets, align products to the standards imposed by foreign markets, etc. There are also general trade costs that are frequently present in both types of transactions, such as enforcement, legal and regulatory, and local distribution costs.

All these costs together (whether policy-induced or not) greatly undermine the gains that countries could make if such constraints were reduced. Their negative impacts on national competitiveness in turn hamper the development of a country's trade at the regional and global levels. Some studies have investigated the impacts of trade costs on welfare or on other macroeconomic aggregates. For example, Anderson and van Wincoop (2002) argue that trade costs are often worth more than 10 per cent of national income. Obstfeld and Rogoff (2000) have stated that all the major puzzles of international macroeconomics hang on trade costs. An interesting study done by Bernard et al. (2006) examined the response of manufacturing industries and plants in the United States of America to changes in trade costs using a unique new dataset on industry-level tariff and transportation rates. They found that industries experiencing relatively large declines in trade costs exhibit relatively strong productivity growth.

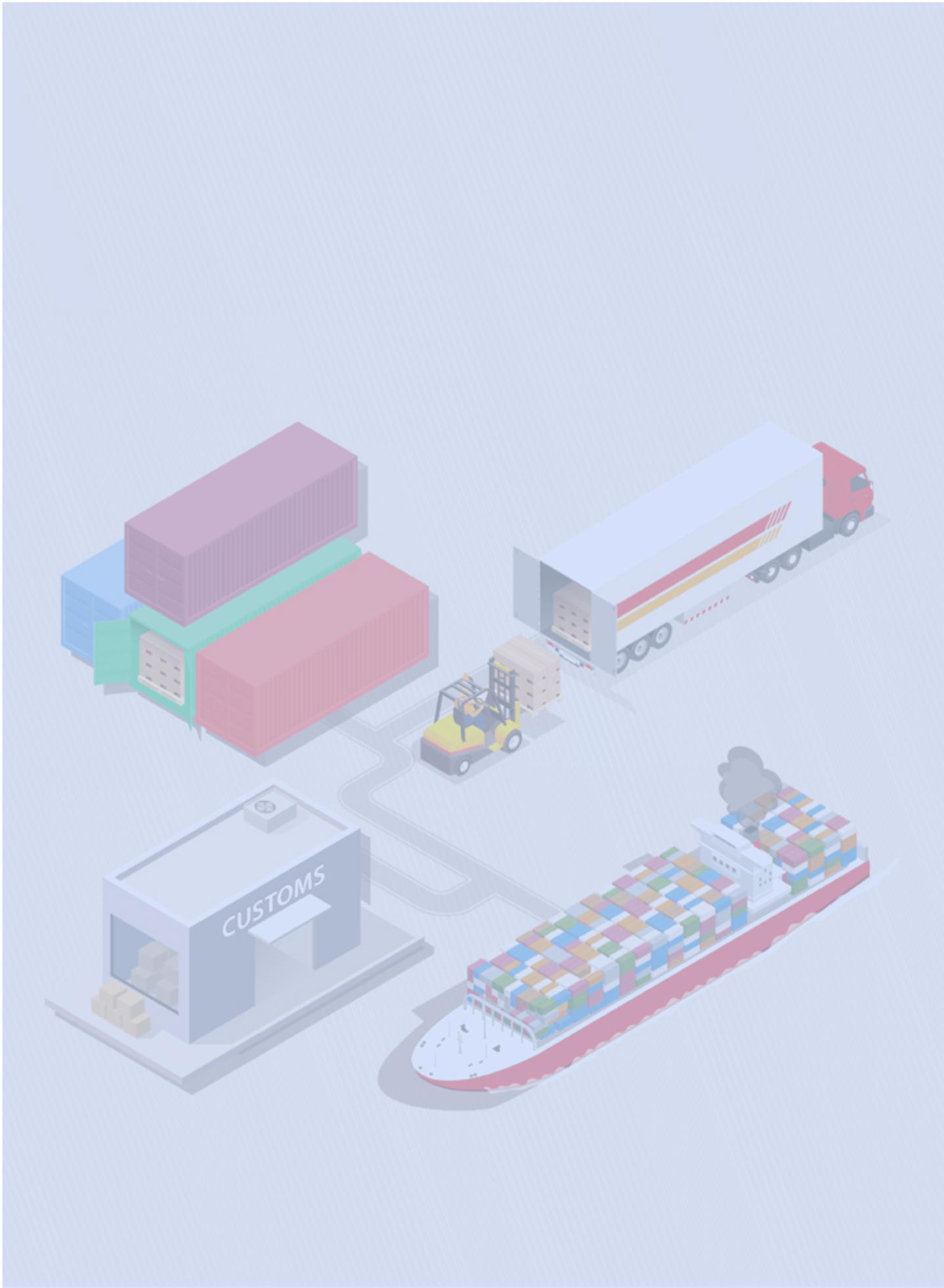
For the Arab region, it is widely acknowledged that high trade costs resulting from various policy and non-policy factors constrain competitiveness. Estimating trade costs is therefore an important first step to identifying their magnitudes and roles in hindering trade growth and competitiveness, and crafting proposals to address them.

To begin filling the knowledge gaps on trade costs for Arab imports and exports, this report offers quantitative estimates by sector, and by origin and destination for each Arab country. Estimating trends in trade costs is another important dimension of the report, as changes may be exclusively due to exogenous factors including exchange rates, insurance premiums, energy prices, etc. Overall, the report's findings represent a first step in understanding the magnitude of trade costs.

The report is organized as follows. Chapter 1 provides an estimation of trade costs both at the national level, broken down by origin and destination, and at the sectoral level. The estimation has been made for a relatively long period, from 2000 to 2015. Chapter 2 provides an overview of the reasons behind the region's high trade costs by reviewing the performance of Arab countries on major indexes relating to factors directly linked to trade costs. It highlights a specific case study to show the actual costs for transporting a shipment from the origin country to the destination country. The chapter concludes by shedding some light on the relevance of trade costs on cross-cutting issues, including the Sustainable Development Goals (SDGs), gender equality and climate change. The report concludes with a series of recommendations.

# 1. Estimating Trade Costs in the Arab Region





# 1. Estimating Trade Costs in the Arab Region

Identifying and quantifying trade costs is a difficult exercise especially at the sectoral level. In other terms, computing trade costs related to exporting a conditioned bottle of olive oil from Tunisia to France, for example, is not as hard as computing trade costs for Tunisia for its imports or exports to the European Union for a given sector and year. For the first example, a direct approach that inventories all costs associated with the transaction is relatively feasible. The deduction of an ad valorem equivalent of these costs could be done with some effort. Of course, such computation may not be perfectly accurate because of the difficulty in identifying and quantifying everything, but at least one could get a robust result that might not diverge much from reality. For the second example, this direct approach becomes very difficult. Indirect methods must be used to bypass technical challenges. An example of these indirect methods is the inverse gravity approach implemented by Novy (2013), which will be used in the rest of this chapter (see also annex 1).

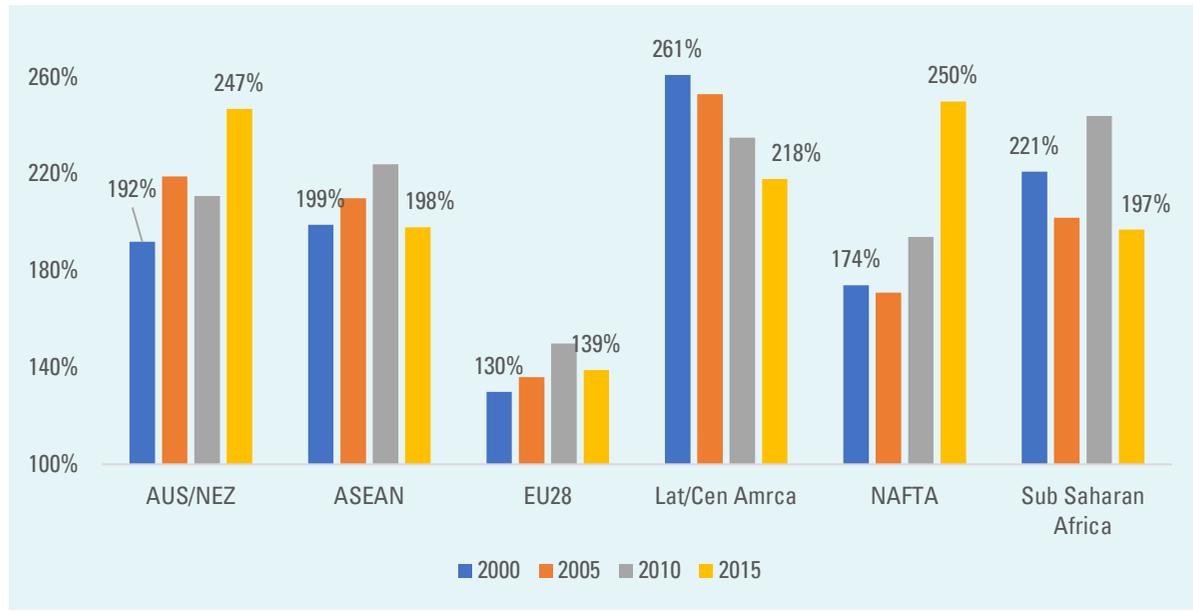
Computing trade costs at the sectoral level for given periods could be a first

step to comprehending their extent. This in turn could lead to an understanding of their decomposition, towards finding a way to mitigate them and take advantage of hidden potential benefits.

## A. Trade costs for the Arab region

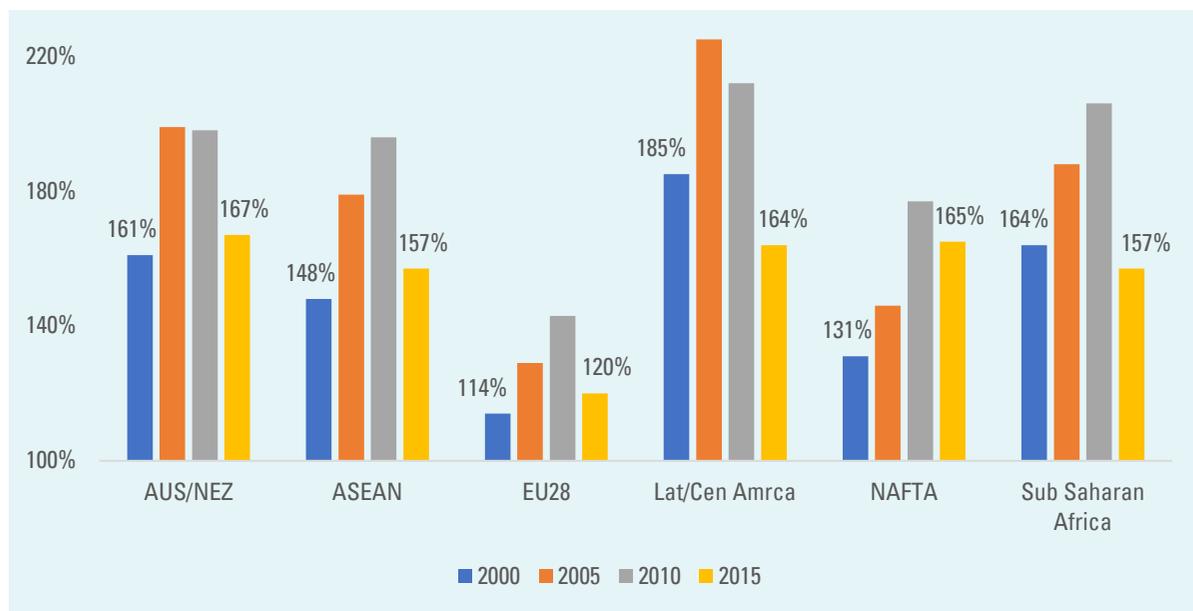
The Arab region's trade costs with all regions examined seem to decline over the years. Overall, the lowest trade costs are with the European Union, although these increased slightly from 130 per cent in 2000 to 139 per cent in 2015.<sup>1</sup> The highest trade costs are with Latin America and the Caribbean, although these fell by around 20 per cent, from 261 per cent in 2000 to 218 per cent in 2015. This region is followed by sub-Saharan Africa, where costs have also declined by around 10 per cent, from 221 per cent in 2000 to 197 per cent in 2015. Export costs with countries in the North American Free Trade Agreement (NAFTA) increased sharply from 174 per cent in 2000 to 250 per cent in 2015, a rise of 44 per cent, marking the highest cost increase for Arab exports to any region (figure 1).

**Figure 1. Export costs for Arab countries to selected regions**



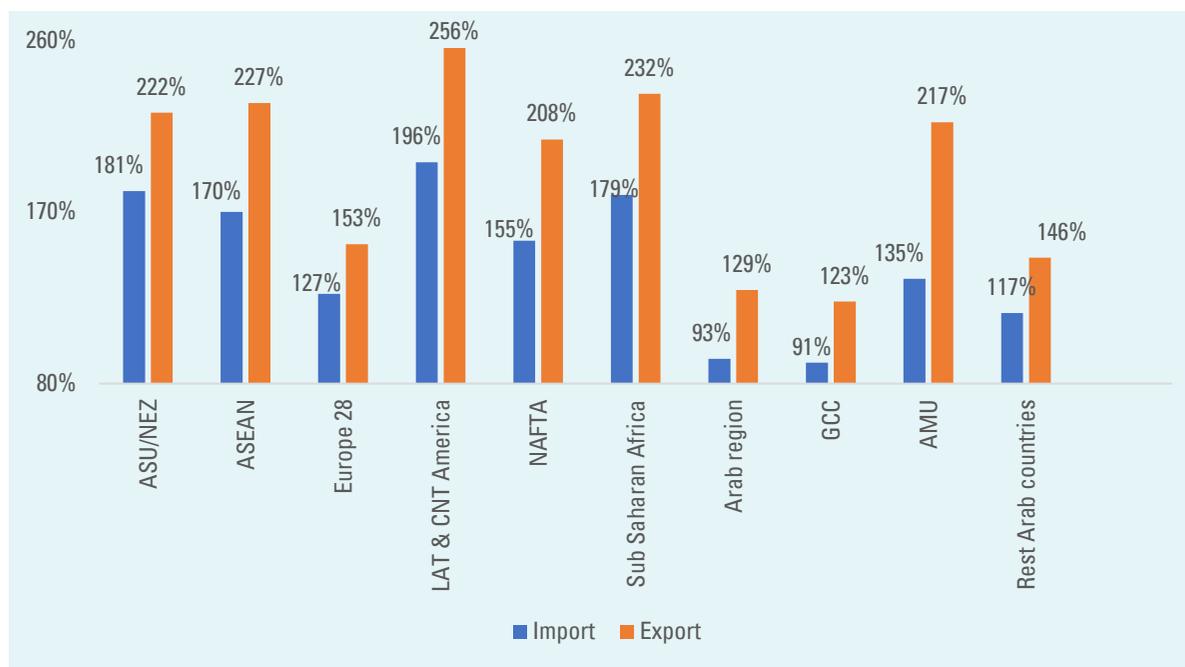
**Source:** ESCWA calculations based on the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)/World Bank database on trade costs and the United Nations International Trade Statistics Database (COMTRADE) database on trade flows.

**Figure 2. Import costs for Arab countries from selected regions**



**Source:** ESCWA calculations based on the ESCAP/World Bank database on trade costs and the COMTRADE database on trade flows.

**Figure 3.** Import and export costs for Arab countries, averages for 2000-2015



**Source:** ESCWA calculations based on the ESCAP/World Bank database on trade costs and the COMTRADE database on trade flows.

Turning to Arab region imports, figure 2 shows that the lowest costs are for imports originating from the European Union, with overall costs ranging from 114 per cent in 2000 to 120 per cent in 2015. Imports from NAFTA members show interestingly low costs, ranging from 131 per cent in 2000 to 165 per cent in 2015, the lowest costs among examined partners after the European Union. Trade costs for imports from the Latin America and the Caribbean region remain the highest among all regions, although they dropped slightly in 2015. They are comparable to export costs. Import costs from countries in the Association of Southeast Asian Nations (ASEAN) remain high.

Taking a general look at both sides of trade costs, figure 3 shows clearly that export costs are higher for the Arab region than import costs for all trade partners, including Arab subregions, probably due to higher barriers to exports both at home and in destination countries. Import and export costs within the Arab region as a whole are the lowest among all examined regions, contrary to the perception that high costs explain low intra-Arab trade. Export costs are alarmingly high with the Arab Maghreb Union (AMU), however, and with Latin America and the Caribbean as well as with sub-Saharan Africa.

## B. Subregional focus

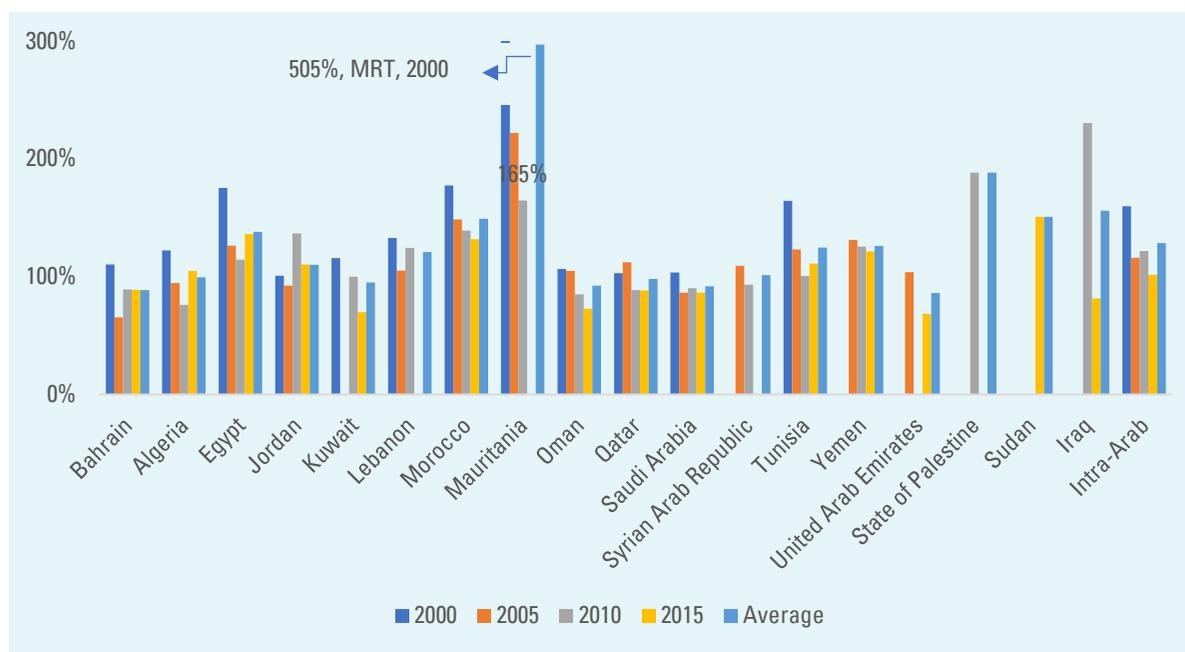
Trade costs among Arab countries are an important catalyst for or hindrance to trade growth. Over the years, high trade costs have been blamed for low intra-Arab trade. Intra-Arab export costs averaged 129 per cent from 2000 to 2015, with a peak in 2000 at 160 per cent before dropping to 102 per cent in 2015, a decrease of 36 per cent. The highest intra-Arab export cost was with Mauritania in 2000, at more than 500 per cent before it dropped to 165 per cent in 2010, averaging around 297 per cent for the whole period. It is still the highest among all Arab countries. Nearly all countries in the region have seen a decrease in export costs between 2000 and 2015, although modestly in

most cases. Jordan stands out with an increase of around 9 per cent between 2000 and 2015 (figure 4).

At the subregional level, the Arab Maghreb countries exhibit high trade costs when exporting to each other. Algeria recorded the lowest export cost to the group followed by Tunisia and Morocco, while Mauritania recorded the highest export cost (figure 5).

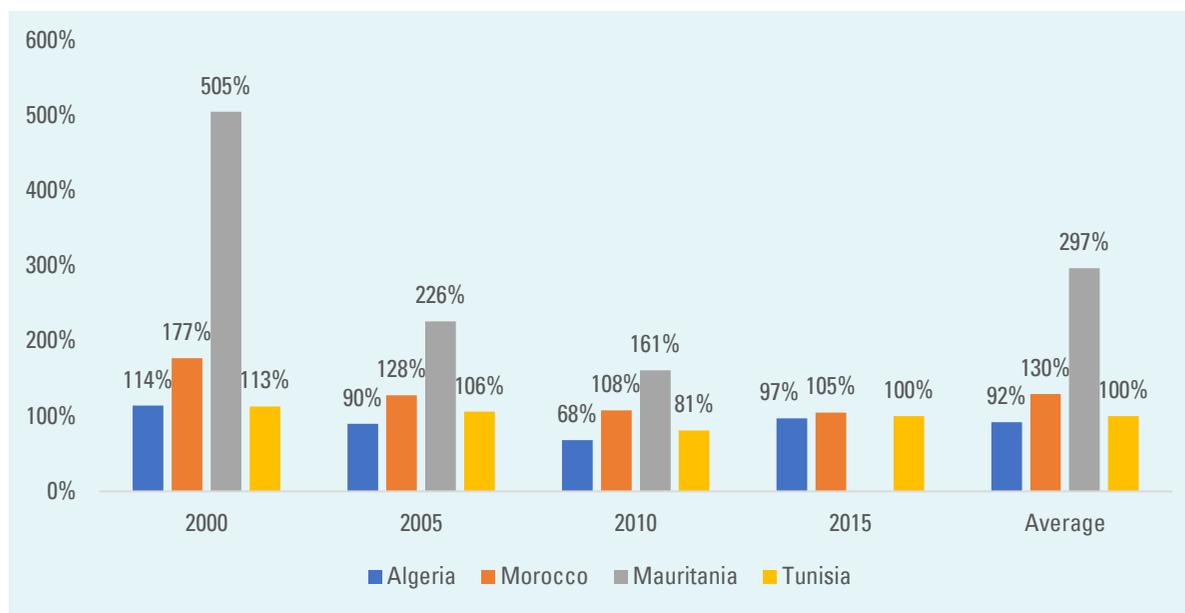
The AMU region's export costs are lowest with the European Union, followed by the Gulf Cooperation Council (GCC) countries and the Arab region as whole. Export costs remain highest with ASEAN, followed by sub-Saharan Africa and NAFTA members (figure 6).

**Figure 4. Intra-Arab export costs**



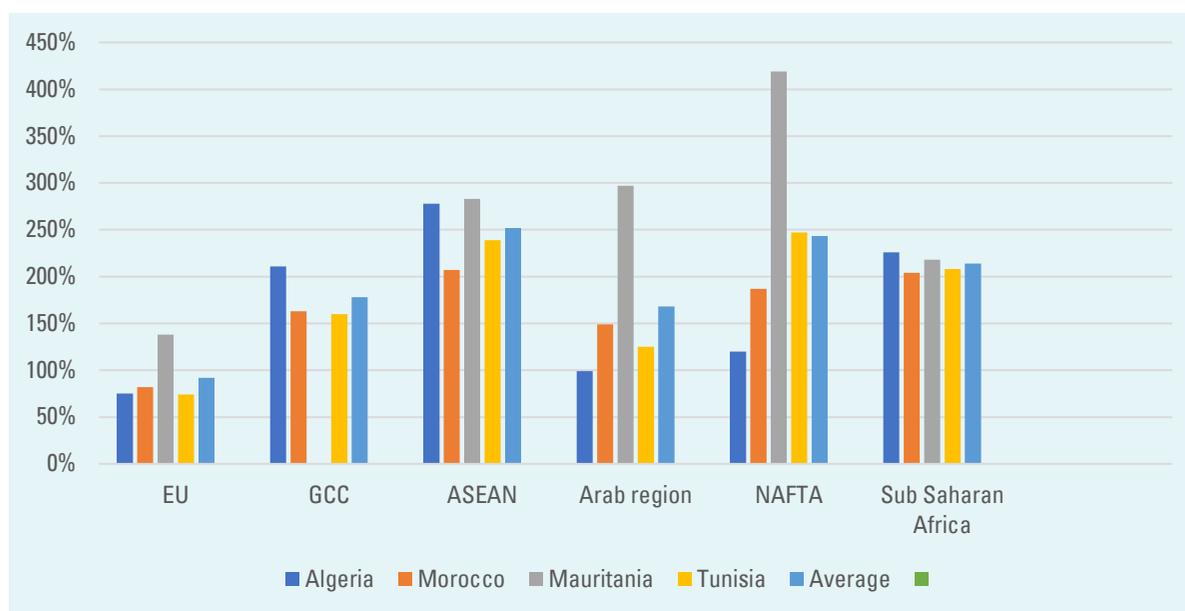
**Source:** ESCWA calculations based on the ESCAP/World Bank database on trade costs and the COMTRADE database on trade flows.

**Figure 5. Intra-AMU export costs**



**Source:** ESCWA calculations based on the ESCAP/World Bank database on trade costs and the COMTRADE database on trade flows.

**Figure 6. Export costs of Maghreb countries, averages for 2000-2015**



**Source:** ESCWA calculations based on the ESCAP/World Bank database on trade costs and the COMTRADE database on trade flows.

## Case studies

### (a) The case of Tunisia

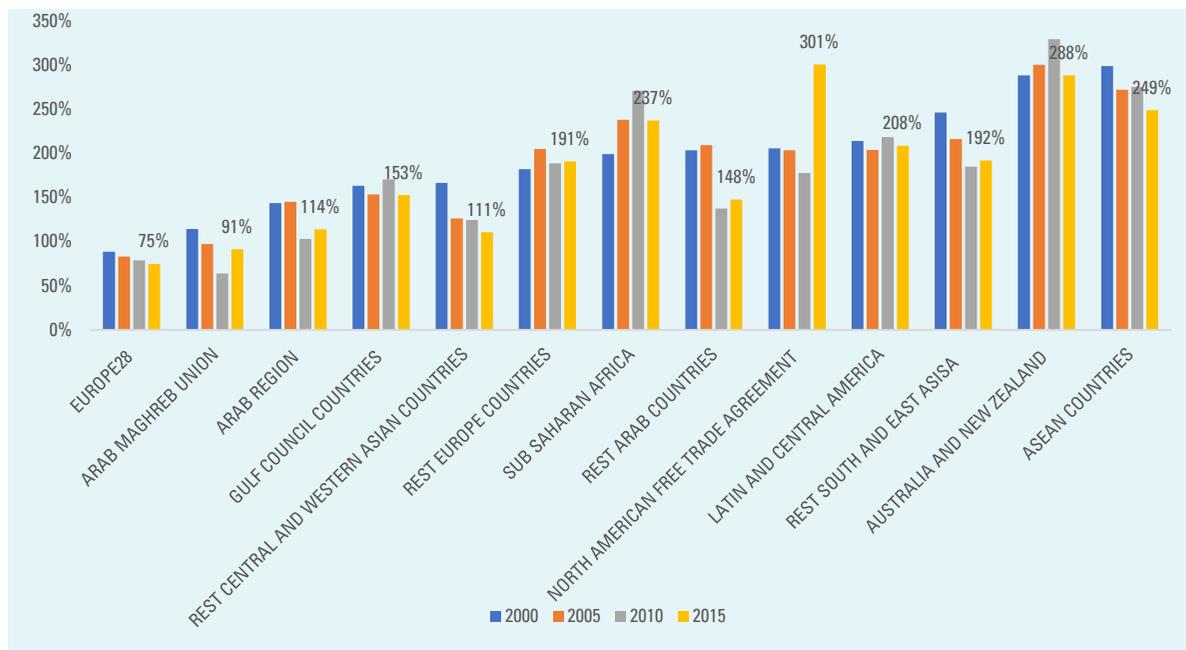
Tunisian imports are relatively expensive compared to those in many Arab countries (figure 7). The most expensive imports are from ASEAN, Australia and New Zealand, and NAFTA members.

Tunisia’s cheapest imports still originate from the European Union, which remains the most efficient partner. This explains the importance of the European Union in the total volume of Tunisian foreign trade. Within the Arab region, and despite the geographical proximity of some countries, Tunisia’s trade costs remain relatively high and sometimes very high. In

2015, results show an average trade cost of 153 per cent with GCC countries and 148 per cent with the rest of the Arab countries, almost twice the level with the European Union at 75 per cent.

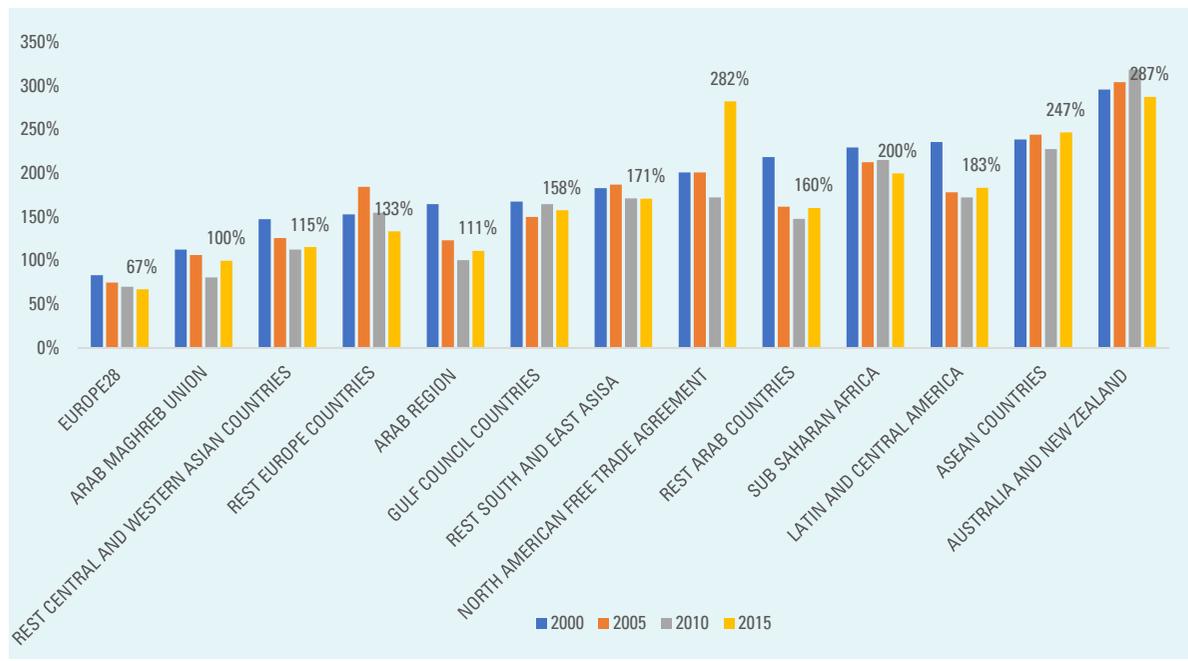
Tunisian export costs are quite similar to import costs, except for exports to the rest of the European countries group, which is among the top five cheapest export destinations for Tunisian products (figure 8). For other non-traditional markets, access by Tunisian exports is still constrained by very high trade costs that in 2015 amounted to 287 per cent for Australia and New Zealand, 282 per cent for NAFTA countries, 247 per cent for ASEAN countries, 183 per cent for Latin America and the Caribbean, and 200 per cent for sub-Saharan Africa.

**Figure 7.** Tunisian import costs



Source: ESCWA calculations using an augmented gravity model.

**Figure 8. Tunisian export costs**



**Source:** ESCWA calculations using an augmented gravity model.

With regard to changes in trade costs between 2000 and 2015, the variation does not follow a clear trend but remains highly dependent on a variety of exogenous factors. These comprise the exchange rate, the cost of energy and insurance premiums, as well as the structure of competition in each of the sectors considered. The market power (markup) remains one of the characteristics of several economic sectors in Tunisia. It absorbs a significant part of trade costs, representing not a real cost but an additional margin for importers or exporters. A closer decomposition of these costs should be undertaken to identify the role of each category, and policy and non-policy factors and instruments as listed above.

In the energy sector, transportation is among the important determinants of trade costs, which are highly linked to energy costs.

In many cases, however, there is not a clear relationship between trade cost and energy price, which confirms that many other factors contribute to trade costs, such as insurance, tariff and non-tariff measures, and market power. For example, in 2010, the average Brent barrel price was \$79.47 compared to \$52.35 in 2015, a drop of 34 per cent. Despite this fact, trade costs for Tunisian exports to the AMU rose from 81 per cent to 100 per cent over the same period, from 148 per cent to 160 per cent with the rest of the Arab countries, from 172 per cent to 183 per cent with Latin America and the Caribbean, and from 172 per cent to 282 per cent with NAFTA countries.

#### (b) The case of Jordan

Jordan has the lowest costs on imports from the Arab region and the rest of Central and Western

Asia (figure 9). The more expensive origins are Latin America and the Caribbean, sub-Saharan Africa, and Australia and New Zealand. Some improvement is evident in lowering import trade costs during the examined period, especially with GCC countries, the rest of Central and Western Asia, NAFTA members, the rest of the European countries, and the rest of South and East Asia.

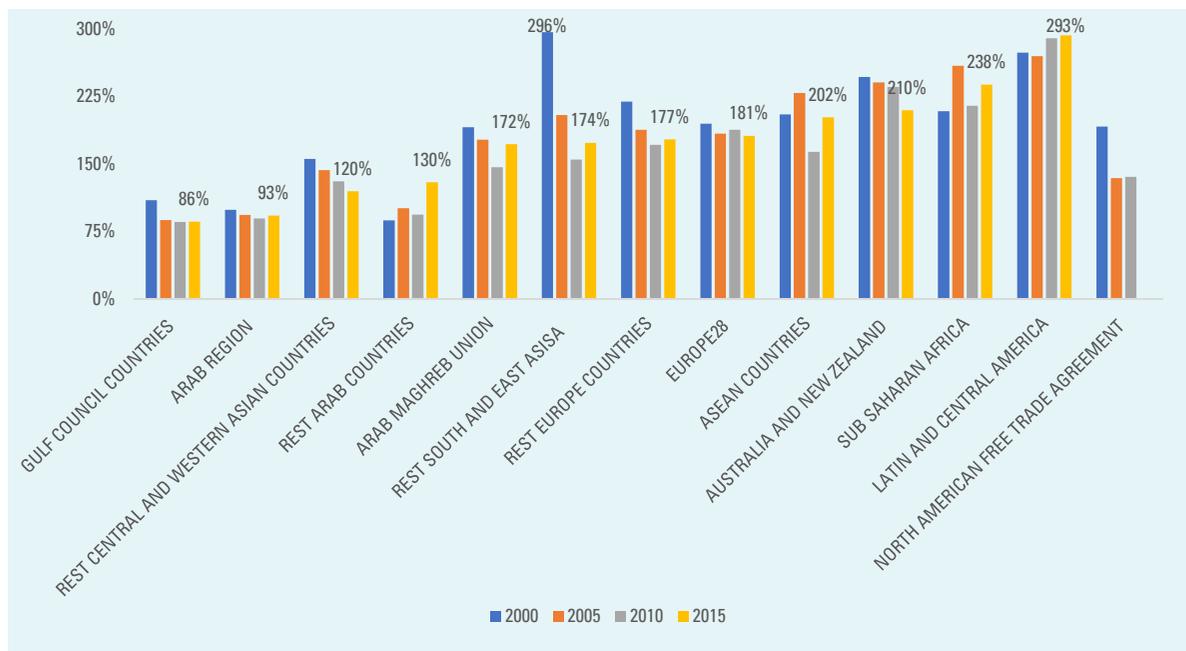
The extent of trade costs with the EU-28 countries is remarkable despite the relative geographical proximity with Jordan. The average with the EU-28 is about 187 per cent, more than double what has been recorded with Tunisia.

With regard to exports (figure 10), Arab trading blocs are by far the best partners in terms of

trade costs for Jordanian exports. The sharp rise for the rest of the Arab countries in 2010 and 2015 deserves mention, however. The right part of the figure is less abrupt than the one related to Jordanian imports, suggesting that Jordanian exports to non-traditional markets face cheaper costs than Jordanian imports from these same markets. The same remarkable improvement in import trade costs with NAFTA countries is observed for exports, apart from 2015, which should be considered an outlier with a value of 347 per cent.

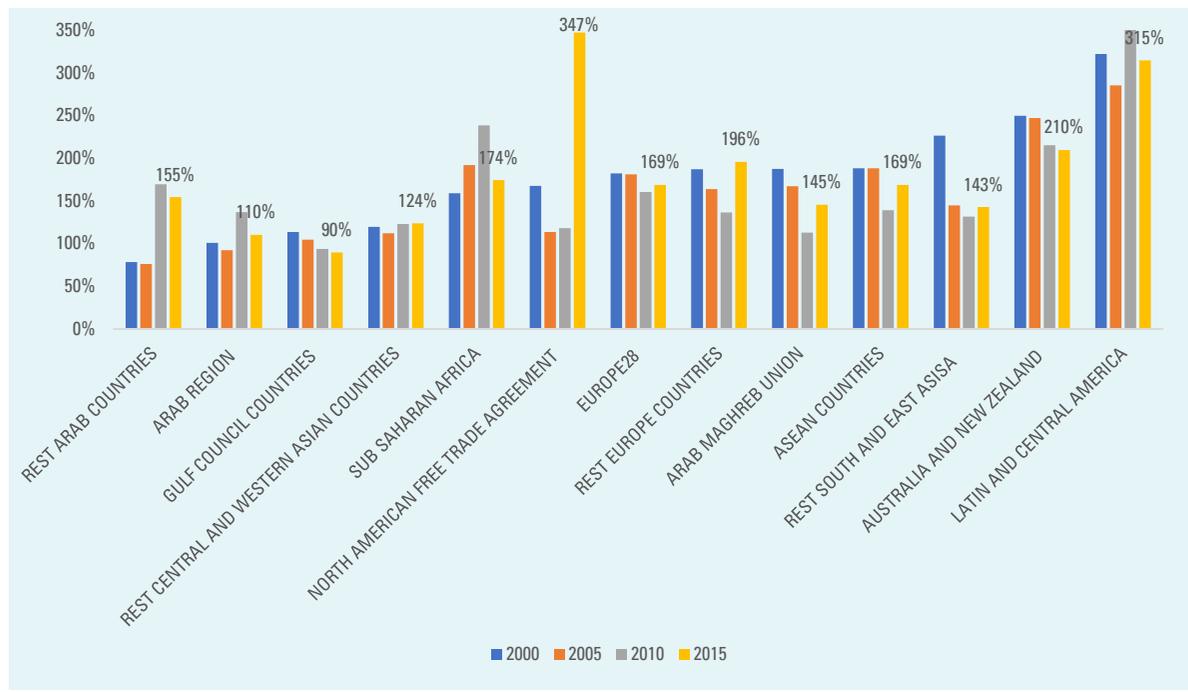
In general, like the Tunisian case, trends over the studied period are ambiguous, preventing a conclusion that trade costs for imports or exports have either generally improved or deteriorated.

**Figure 9.** Jordanian import costs



**Source:** ESCWA calculations based on the ESCAP/World Bank database on trade costs and the COMTRADE database on trade flows.

**Figure 10.** Jordanian export costs



**Source:** ESCWA calculations based on the ESCAP/World Bank database on trade costs and the COMTRADE database on trade flows.

## C. Sectoral analysis of trade costs

Although overall trade cost analysis sheds light on a country's competitiveness, generalities limit a precise picture of specific aspects of competitiveness. This is mainly due to differences between the cost factors of trading different goods. For instance, the cost of importing or exporting a container of biscuits is different from the cost of importing or exporting a similar container of books and other paper products. Taking the analysis down to the sectoral level, however, is essential for gauging actual trade costs for different sectors and providing policy advice for addressing the hurdles.

## Sectoral trade costs at the subregional level

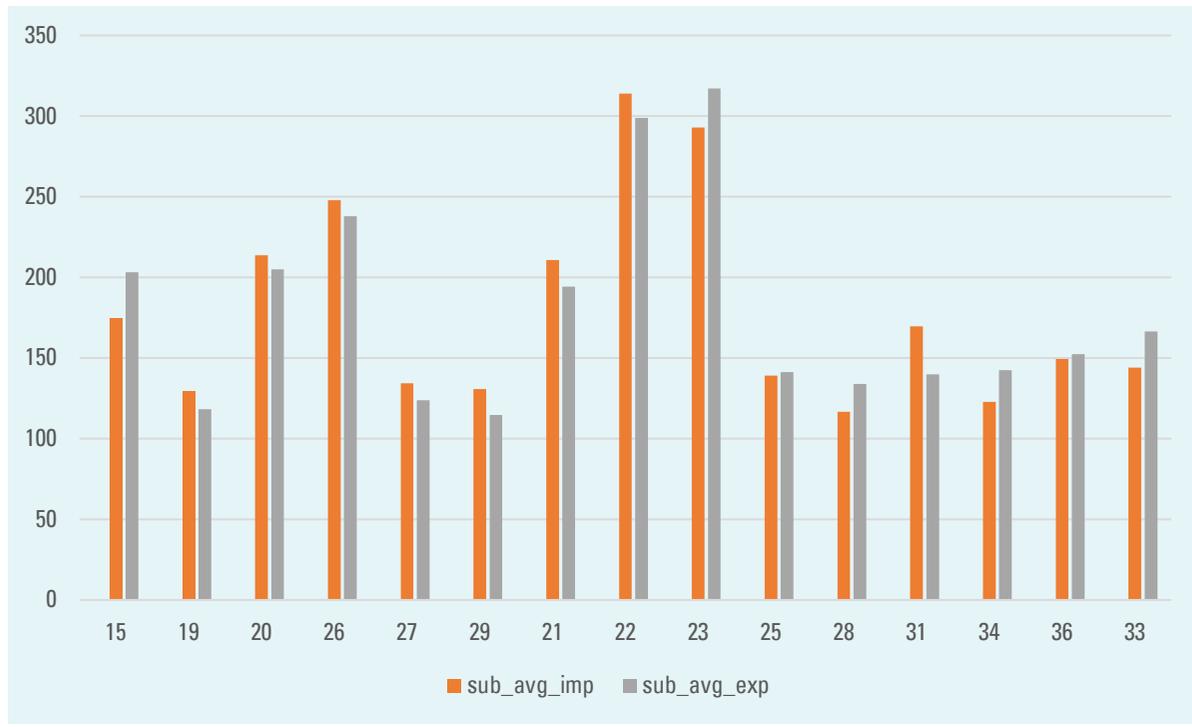
Aggregation by subregion reveals interesting results, where every subregion manifests a different pattern of trade costs. This proves that the Arab region as a whole is very heterogeneous; thus, lowering trade costs requires applying policy interventions at different levels. Overall, results suggest that the most expensive sectors for both exports and imports (all trading blocs combined) are sectors 22, "printing and publishing"; 23, "coke, refined petroleum products and nuclear fuel"; and 26, "non-metallic and mineral products". The Maghreb subregion is the source of the highest trade costs among other subregions, while

sectors with the lowest trade costs are 19, “leather, leather products and footwear”, and 31, “electrical machinery and apparatus”.

Figure 11 shows that the most expensive sector in the GCC countries (Bahrain, Kuwait, Oman and Qatar) are 23, “coke, refined petroleum products and nuclear fuel”, with costs of 317 per cent for exports and 293 per cent for imports, followed by 22, “printing and publishing”, and 26, “non-metallic and mineral products”. Sectors with the lowest trade costs are 19, “leather, leather products and footwear”, with costs of 118

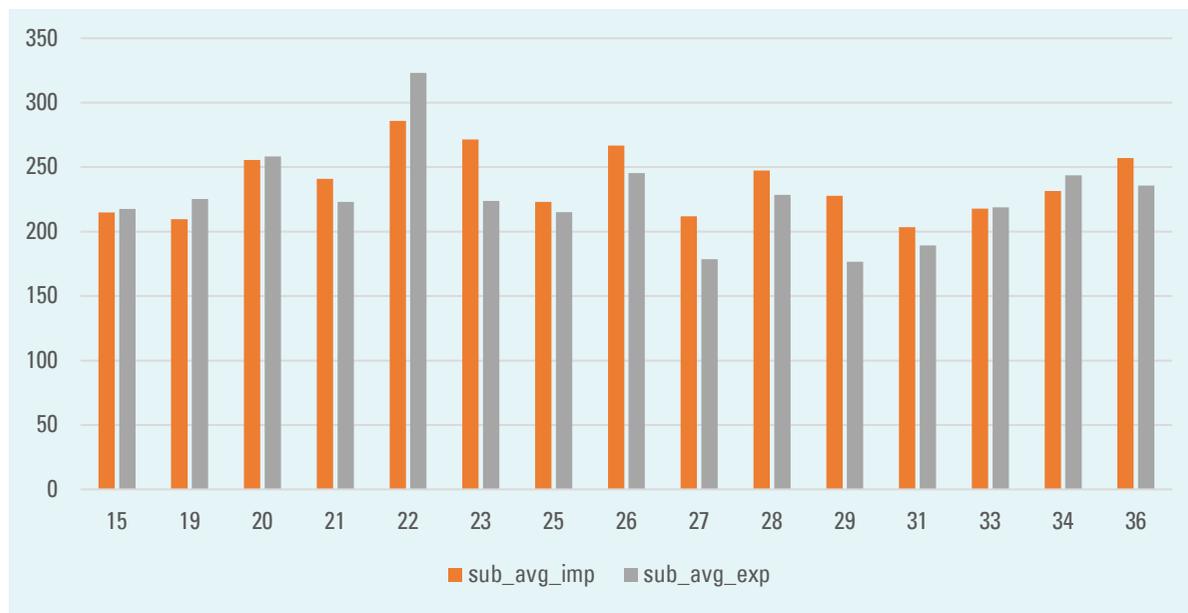
per cent for exports and 129 per cent for imports, followed by 29, “machinery and equipment”, and 27, “basic metals”. The most expensive sectors for Maghreb countries (Algeria, Morocco and Tunisia) are 22, “printing and publishing”, with export costs of 232.24 per cent and import costs of 285.85 per cent, followed by 20, “wood products”, and 26, “non-metallic and mineral products”. The cheapest sectors for the Maghreb are 27, “basic metals”, at 178.6 per cent for export costs and 211.8 per cent for import costs, followed by 31, “electrical machinery and apparatus”.

**Figure 11.** Trade costs by sector for the GCC countries



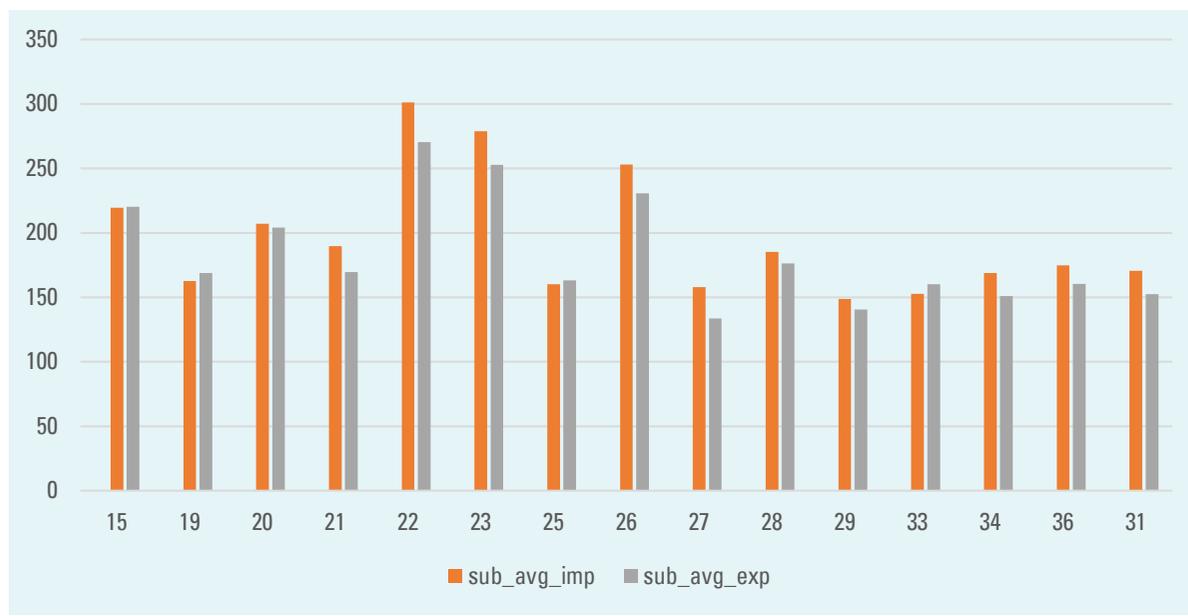
**Source:** ESCWA calculations based on the inverse gravity model.

**Figure 12.** Trade costs by sector for the Maghreb countries



**Source:** ESCWA calculations based on the inverse gravity model.

**Figure 13.** Trade costs by sector for the Mashreq countries



**Source:** ESCWA calculations based on the inverse gravity model.

For the Mashreq countries (Egypt, Jordan, the State of Palestine and Syria), the most expensive sectors are 22, “printing and publishing”, with export costs of 270 per cent and import costs of 301 per cent, followed by 23, “coke, refined petroleum products and nuclear fuel”, and 26, “non-metallic and mineral products”. The cheapest sectors are 27, “basic metals”, with export costs of 133 per cent and import costs of 158 per cent, followed by 29, “machinery and equipment”.

The following sections examine results for only two countries, Tunisia in the AMU group and Egypt in the rest of the Arab countries group. Tables for all Arab countries are in annex 3.

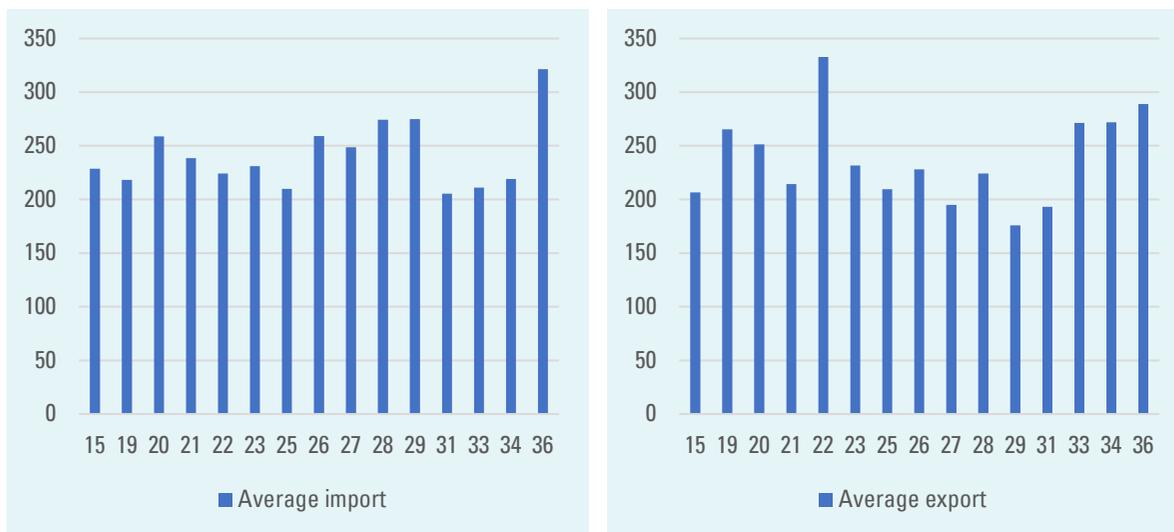
#### (a) The case of Tunisia

Analysis of sectoral trade costs for Tunisia reveals many interesting observations. The most expensive sectors for imports

(figure 14) are mainly 20, “wood products”; 28, “fabricated metal products”; 29, “machinery and equipment”; and 36, “furniture”. For exports, the most expensive sectors are 22, “printing and publishing”; 19, “leather, leather products and footwear”; 33, “medical, precision and optical instruments”, 34, “motor vehicles, trailers, semi-trailers”, and 36, “furniture”.

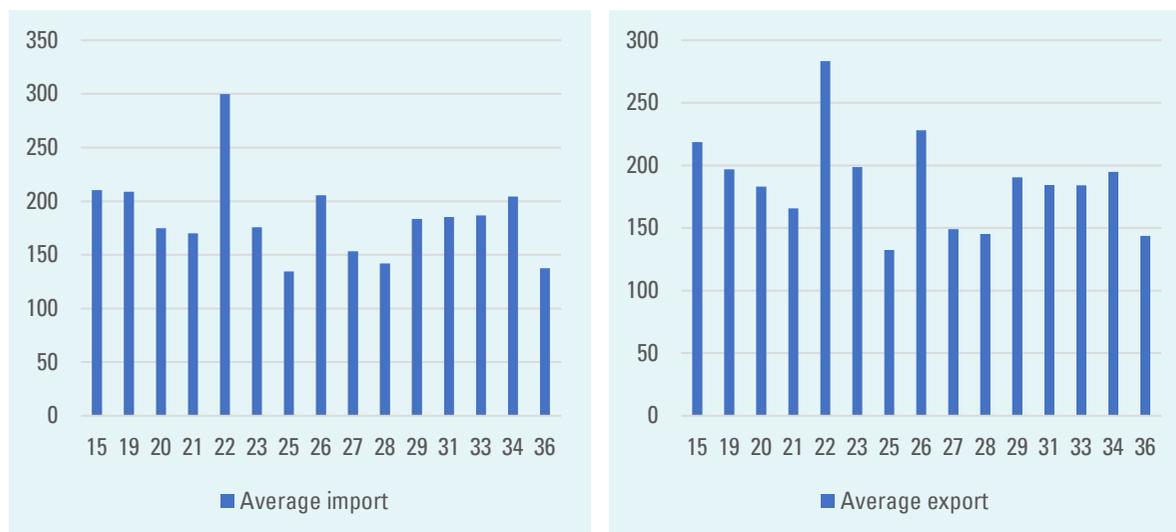
Trade with Arab countries and countries of sub-Saharan Africa falls in the category of intermediate trade costs, which shows that opportunities still exist to develop trade and achieve lower costs. Lower trade costs may occur through increasing economies of scale, but may require important investment and regulatory reforms in international transport. For the rest of the countries, the costs are quite high, but the volume of trade remains very low, which does not allow a global and realistic appreciation of the costs of trade.

**Figure 14.** Tunisia’s export and import trade costs by sector



**Source:** ESCWA calculations based on the inverse gravity model.

**Figure 15.** Egypt’s export and import trade costs by sector



**Source:** ESCWA calculations based on the inverse gravity model.

### (b) The case of Egypt

Results for Egypt suggest that, on average, the five cheapest sectors (all origins combined) in terms of import trade costs are, in order, 25, “rubber and plastic products”, with an average of 135 per cent; 36, “furniture”, at 136 per cent; 28, “fabricated metals products”, at 140 per cent; 27, “basic metals”, at 151 per cent; and 21, “paper and paper products”, at 170 per cent. The five most expensive sectors on average (all origins combined) for Egyptian import trade costs are 22, “printing and publishing”, with an average of 297 per cent; 19, “leather, leather products and footwear”, at 217 per cent; 15, “food and beverages”, at 207 per cent; 26, “non-metallic mineral products” at 206 per cent; and 34, “motor vehicles, trailers, semi-trailers” at 202 per cent. Other sectors are between these two groups.

For exports, results show only a slightly different story, as illustrated in figure 15.

## D. Concluding remarks

This report presents two levels of trade cost analysis. The first covers trade costs at an aggregate level for all products. Estimates are extracted from an annually updated global database on trade costs among all countries around the world. The report is not limited to extracting data from this database, however. It also involves significant regional aggregation, which requires building a global trade database including all countries for both exports and imports at the Harmonized System (HS) level of product classification. This exercise has been done for 15 years, but for reporting, the four years selected are enough to reflect major changes, as each year covers five years.

The second estimation, done specifically for this study, is at the sectoral level. Given the huge amount of required data and the complexity of the estimation process itself, the calculation has been limited to Arab countries, and their trade among themselves and with their main partners.

This is a unique exercise, representing an updating of a previous estimation carried out by ESCWA in 2015 using available data until 2011. Given the lack of data on sectoral production and consumption for most Arab countries over the whole period in the United Nations Industrial Development Organization (UNIDO) database, the only available database on sectoral production, the analysis has been extended at a final stage to integrate national data for two countries, Egypt and Tunisia, where data are much more accessible on a yearly basis.

For the rest of the countries, two major groups could be distinguished. A first group involves countries where data are very scarce both at global and national levels, and for which estimates have been limited to some years. The second group consists of countries where data are more problematic, and includes those in conflict and/or with poor statistical databases. For this latter group, estimates have been mainly limited to one observation.

After building a large database for this report, we used it to calculate trade costs among each of the Arab countries and with the rest of the world, country by country, using the approach developed by Novy (2013). After estimations were made between each set of countries, a significant effort went towards aggregating countries by groups of partners using the appropriate weighing techniques. The result was ad valorem trade costs by sector and partner for each of the considered Arab countries from 2000 to 2015.

In general, for this period, the average of the ratio of exports to output was determined for each Arab country in all sectors depending on data availability, as explained earlier. This showed that several Arab countries re-exported actively, and hence played roles as trading hubs

for many sectoral products such as textiles, apparel, leather products, refined petroleum products, chemical products, rubber and plastic products, basic metals, fabricated metal products, machinery and equipment, and motor vehicles. The countries that served as trading hubs during the sample period included Oman for textiles, apparel and leather products; Jordan for textiles and apparel; Kuwait and Qatar for chemical, rubber and plastic products; and Yemen, Oman and Qatar for machinery, equipment, instruments and motor vehicles.

The analysis of the calculated trade costs produced several findings. First, for most of the industrial sectors, on average, Arab countries traded among each other at relatively higher costs than with other trading partners close to the region. This finding clearly held over the whole sample period for several industries, notably food and beverages, wood products, paper and paper products, non-metallic mineral products, fabricated metal products, motor vehicles and furniture. The complexity of trade regulations and inefficient logistics are the main reasons behind the high costs of Arab trade.

Within the Arab trading blocs, this result does not hold for the AMU countries. In fact, the AMU countries have the highest trade costs when exporting to the Arab region for almost all industrial sectors, providing further explanation of their weak level of integration in the region. Algeria, Morocco and Tunisia incurred relatively high trading costs when exporting to the Arab countries. Overall low intra-Arab trade costs resulted, therefore, from relatively low trade costs for the Mashreq countries.

Bilateral exports and production data from 2000 to 2015 allowed us to evaluate the overall trading costs of Arab countries across trading

partners. As depicted in the detailed results in the annexes, trading partner blocs can be ordered according to overall trade costs as follows. First, in ascending order of bilateral overall trade costs, the European Union comes first, followed by some Arab countries, the rest of Europe and East Asia. NAFTA members, countries in sub-Saharan Africa and the rest of partners are the most expensive destinations and origins for Arab trade. It is important to recall once again that rushing to conclude trade agreements that are generally limited to cutting tariffs will not provide a significant boost to Arab exports if all other determinants of trade costs are not clearly reflected in national and regional integration policies.

Second, based on the overall trade costs across trading blocs, industrial sectors could be easily ordered according to overall estimates of trade costs. This ordering could be used as an important dimension of the economic transformation strategies often advanced as the main goal of Arab countries over the past decades.

Third, for some countries and sectors, the findings of the sectoral estimation of trade costs are not consistent with results published by ESCAP and the World Bank. The reasons are more related to techniques for the selected substitution elasticities across industries than to the nature of the methodology.

Fourth, the evolution of the estimates of overall trade costs of Arab countries with each trading partner allows the identification of sectors and trading partners with falling trading costs. Among the stylized facts found, we can state the visible fall in Arab-Arab trade costs after 2011 for leather, leather products and footwear, chemicals and chemical products, basic metals and fabricated metal products. The decrease of such costs reflects some of the impact that the complete implementation of the Greater Arab Free Trade Agreement (GAFTA) had on the Arab integration process, adding more evidence to support the positive impact that the agreement could have on Arab trade.

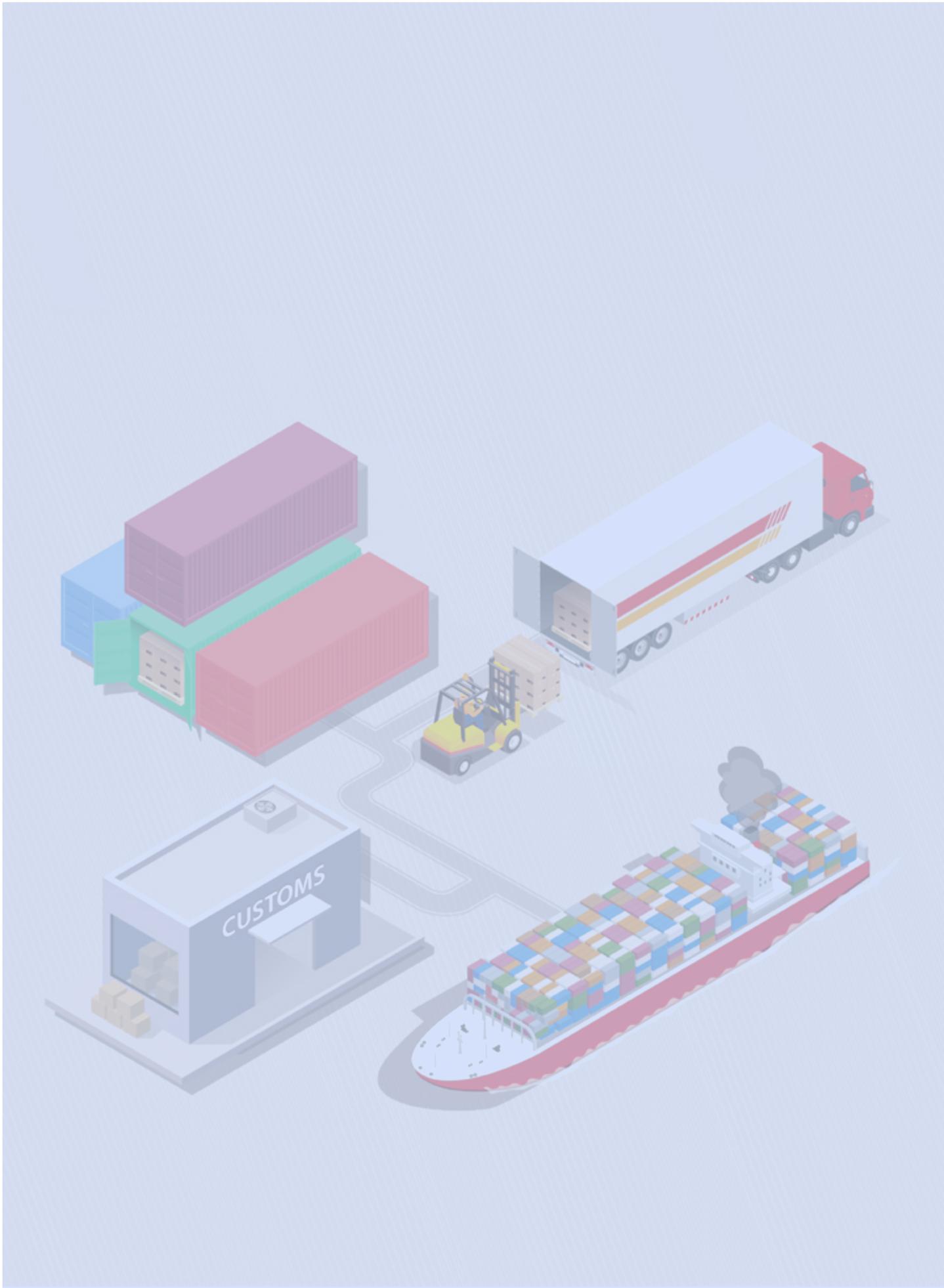
Arab-Europe trade costs fell for fewer industrial sectors, mainly for chemicals and chemical products, but they are the lowest compared with all other origins and destinations of Arab trade. This is clearly due more to the development of European trade logistics than to the situation in the Arab region.

Finally, despite the very interesting conclusions that could be drawn from this analysis, it is still important to go further and undertake a clear and robust decomposition of costs using the appropriate techniques. Once decomposed, priorities for reforms and improvements could be defined based on simulation analysis of the weight of each component in terms of boosting trade, reducing costs, increasing welfare and in turn facilitating the achievement of the SDGs.



## 2. Transport Costs in the Arab Region





## 2. Transport Costs in the Arab Region

Transport costs are major determinants of trade costs, which in turn define trade competitiveness. An efficient and competitive transport sector increases efficiency and connectivity among transport networks, which can lead to lower transport costs and high reliability. Well-developed transport infrastructure not only reduces the distance between regions but also integrates national markets and connects them to other economies at low costs (Ismail and Mahyideen 2015). A study by Radelet and Sachs finds empirical evidence that countries with lower transport costs have had faster increases in manufactured exports and overall economic growth during the last three decades than countries with higher transport costs. Amadji and Yates (1995) claim that Africa's relatively low export levels are essentially due to high transport costs in the region.

Transport costs have significant impacts on the structure of economic activities as well as on international trade. Empirical evidence underlines that raising transport costs by 10 per cent reduces trade volumes by more than 20 per cent, and that the general quality of transport infrastructure can account for half of the variation in transport costs.<sup>2</sup>

Estimating transport costs is not an easy job. It requires significant data<sup>3</sup> that are not easily available at the national or sectoral levels. Explicit attention to transport costs is very limited in international trade literature; it was not until 1954 that Paul Samuelson (Didier 2008) first addressed transport costs in a "transfer

problem" analysis, by developing the famous "iceberg model". This was defined as the cost of transporting a good as a proportion of the value of the good. Hummels and Skiba (2004) in their findings confirm that transportation costs are of the "iceberg" form proportional to goods prices. Hummels (1999) highlights the fact that a country's integration into global value chains is still associated with costs related to infrastructure, distance to markets and oil prices.

Transport costs are determined by many primary variables. The location of a country and its proximity to global production hubs impacts transport costs generally through distance and accessibility. While distance is known to be a major driver of transport costs, it is closely linked to the popularity of the route and the connectivity of the country to global shipping networks, with the latter playing a major role in increasing or decreasing costs. Energy is one of the most important determinants of transport costs, with pricing fluctuations leading to uncertainty that drives transport costs higher.

The cost of transport varies greatly according to the type of products. Products shipped in bulk cost much less than those shipped in containers. Insurance and storage costs differ. Perishable goods and products of high value to weight are costlier to transport. The mode of transport is a major factor as well; cost differences between different modes for the same product can be large. Although air cargo costs have dropped sharply in past decades owing to technological advancements in the

aviation industry, cost differences remain significant with maritime transport. The same applies for road transport when compared to maritime. Even between road and rail transport, the cost of transport is significant.

The size of a country's trade and its share of global trade are important determinants of transport costs. Countries with larger trade volumes are in more advantageous positions to ship cheaply given the economy of scale. Moreover, many transport interactions involve empty backhauls due to mismatches between inbound and return trips. In such a case, the cost of transport for the inbound trip increases to cover the return trip cost.

The availability and quality of infrastructure are important for efficient logistics. Poor infrastructure leads to increased costs for transport and logistics. Yet the availability of infrastructure is not a guarantee of efficient logistics unless services improve.

## A. Logistics performance in the Arab region

Transport costs have gained importance in recent decades due to the drastic fall in tariffs resulting from successive rounds of trade liberalization at the global, regional, bilateral and even unilateral levels. It is now estimated that the effective cost provided by transport is in many cases higher than that provided by tariffs (Parameswaran 2014). Trade cost was estimated at 170 per cent (in terms of ad valorem equivalent) for industrialized countries. The major categories of trade cost were transport (21 per cent), border-related trade barriers (44 per cent), and retail and wholesale distribution (55 per cent) (Anderson and van Wincoop 2003).

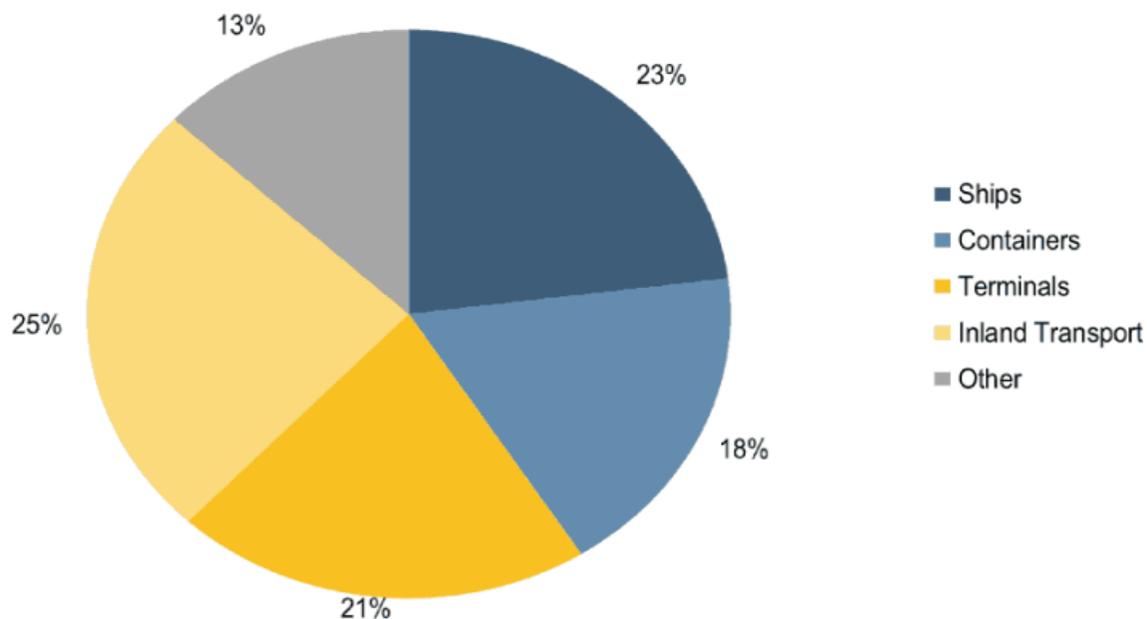
The cost of moving a container along transport networks can be broken into five major categories (figure 16). The first is inland transport, including rail and trucking, which accounts for one quarter of container shipping costs and represents the bulk cost of moving a container. Shipping is the second major category, accounting for 23 per cent of the cost, including operating expenses, capital costs and bunker fuel. The cost of shipping decreases with increased quantity to achieve economy of scale. Port and terminal costs, and container maintenance and leasing costs account for 21 per cent and 18 per cent of the total, respectively, while other formalities and fees are around 13 per cent.

In recent years, measurement of logistics efficiency has received attention given its role as a trade enabler. Among the tools developed to assess logistics is the Logistics Performance Index (LPI). It estimates supply chain performance for 160 countries and ranks them accordingly.

Arab countries vary greatly in their logistics performance. Figure 17 sums up their scores on the LPI indicator from 2012 to 2018. The results affirm that most Arab countries have not improved their logistics performance; only three countries fall in the top quantile, while eight fall in the bottom quantile. Poor performance is common across all dimensions of the index.

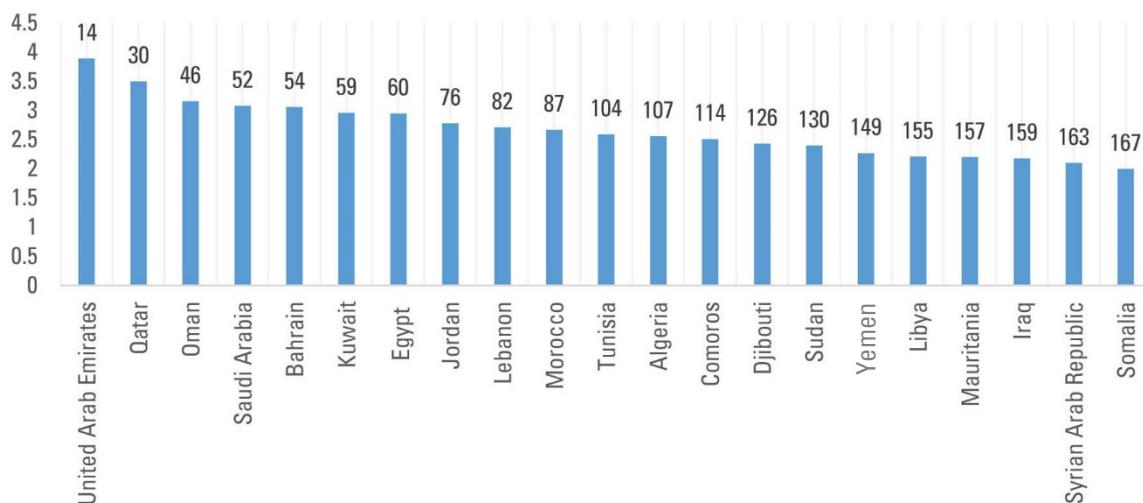
A major factor in the low performance of logistics in the Arab region is domestic logistics performance, which is measured by the Domestic LPI. The Domestic LPI looks in detail at the logistics environment and constraints inside countries, not just at gateways such as ports or borders. This indicator is useful for transport cost analysis as it shows where bottlenecks are in the flow of goods across a country, even though it is based on perceptions of users and not factual figures.

Figure 16. Container transport cost



Source: Rodrigue n.d.

Figure 17. Arab region aggregated LPI, 2012-2018, score and rank



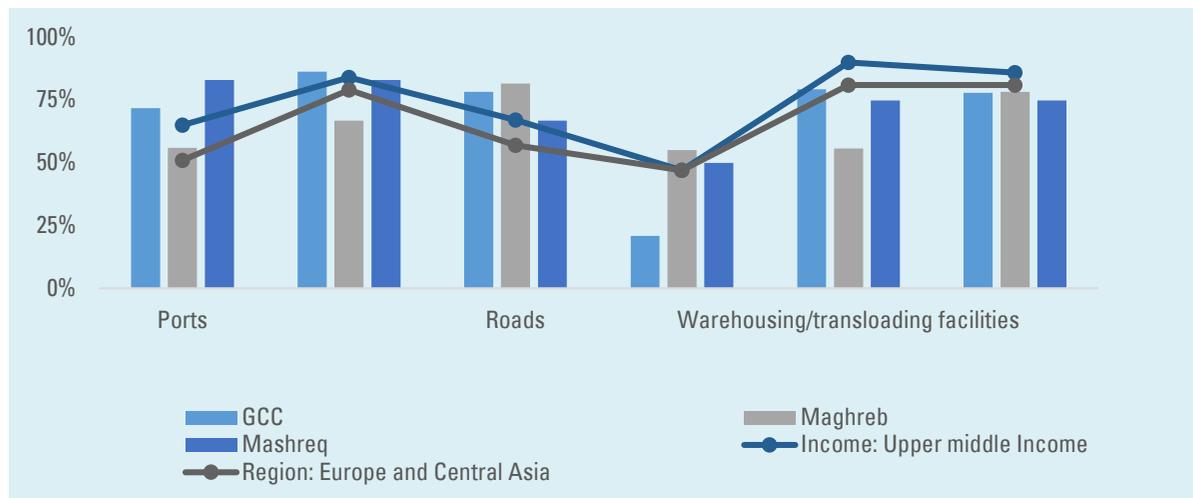
Source: World Bank, Logistics Performance Index database.

Service sector regulation and performance are closely interrelated with infrastructure quality and logistics sector outcomes. Air services, maritime transport and freight forwarding are rated highly across the region (figure 19).

One of the most important issues in logistics is the timeliness of delivering goods, which

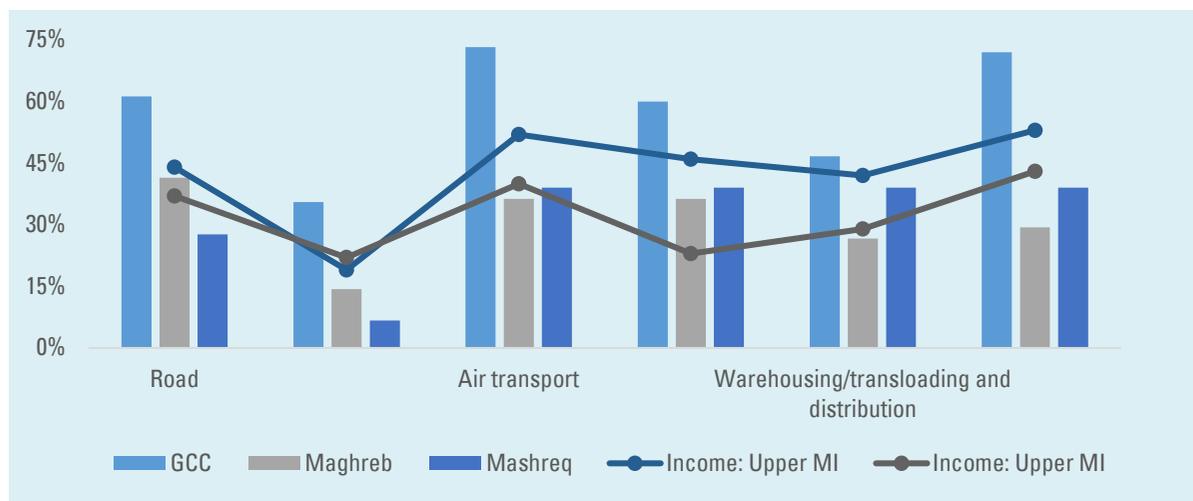
depends to a large extent on efficiency in clearing goods through the border. This clearance can be affected by delay in the final release of shipments, which affects the costs of the shipment and the final product. Various issues cause delays in clearing goods (figure 20).

**Figure 18.** Infrastructure quality in the Arab region, 2018



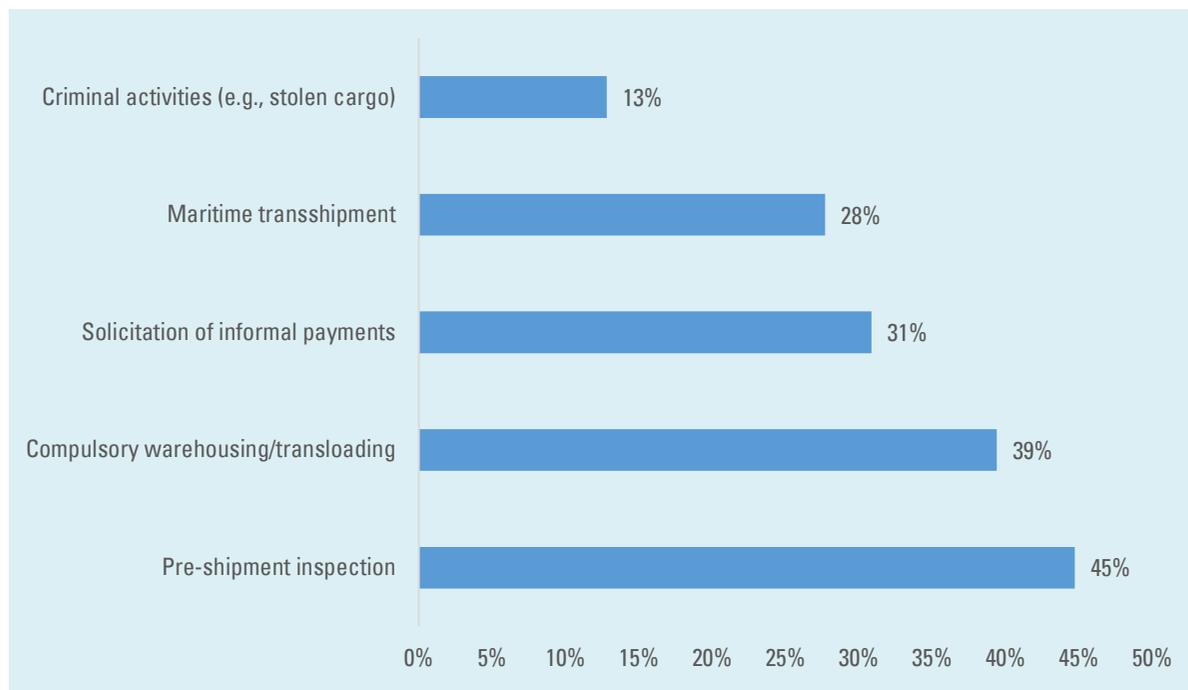
Source: World Bank, Logistics Performance Index database.

**Figure 19.** Competence and quality of services in the Arab region, 2018



Source: World Bank, Logistics Performance Index database.

**Figure 20.** Major sources of delay in the Arab region, 2018



**Source:** World Bank, Logistics Performance Index database.

## B. Connectivity to global shipping networks

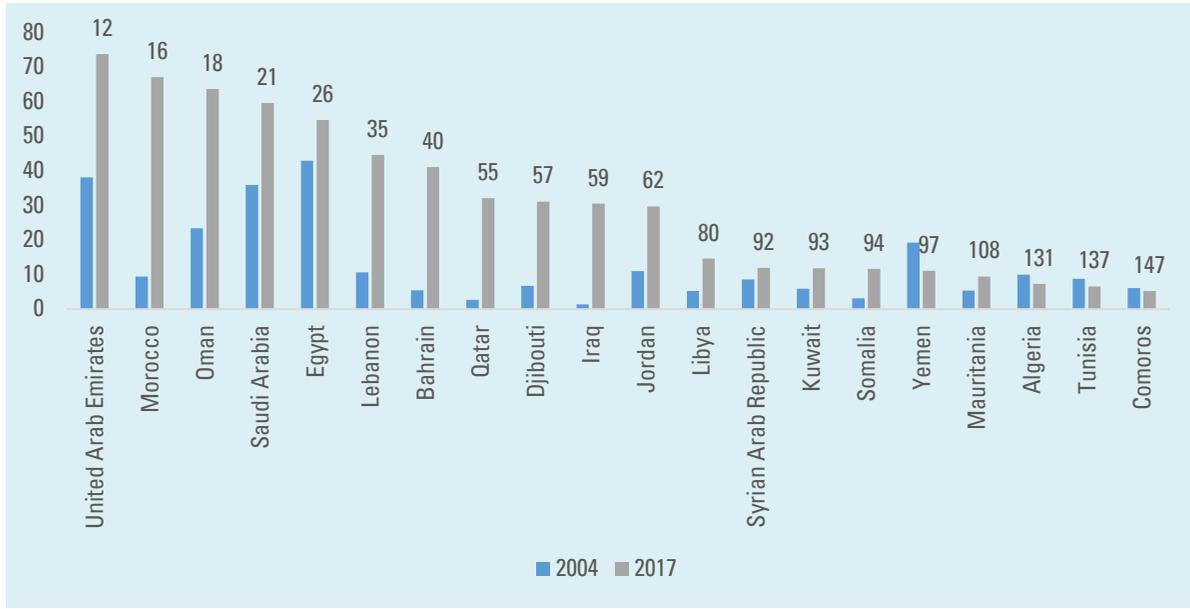
Connectivity to global maritime shipping networks is an important factor for securing competitive shipments, thus lowering transport costs, especially as maritime shipping carries around 80 per cent of the volume of international trade. Countries more connected to global shipping networks are generally more competitive in international markets and in connecting to global value chains. The Arab region, although astride three continents and overseeing international shipping routes, suffers from low connectivity to global shipping networks. It has some of the oldest ports in the world and has

historically been a major intermediary in international shipping.

The Liner Shipping Connectivity Index (LSCI) of the United Nations Conference on Trade and Development (UNCTAD) can compare countries' positions within the global liner shipping network. The Arab region's LSCI performance gives a clear picture of constrained connectivity to global shipping networks. Recent evolution in connectivity to global shipping networks, however, indicates the ability of the region to overcome this obstacle (figure 21).

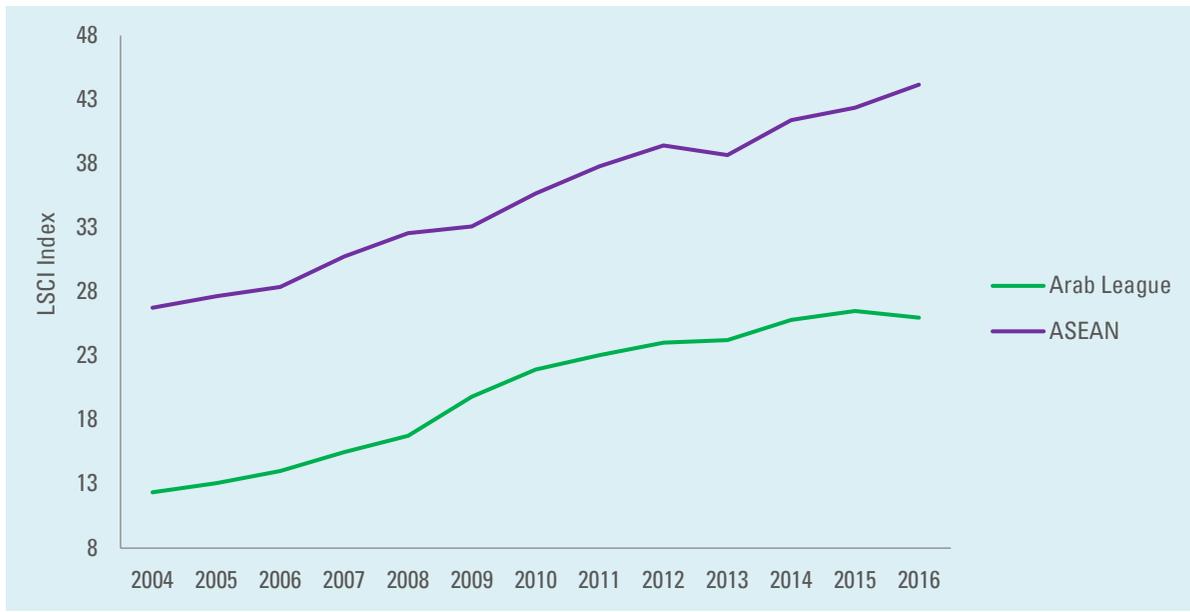
Figure 22 shows that the Arab region is way below the connectivity seen among ASEAN members.

**Figure 21.** Arab region LSCI score and global ranking, 2004 and 2017



Source: UNCTADSTAT, see: <https://unctadstat.unctad.org/wds/TableView/tableView.aspx?ReportId=92>.

**Figure 22.** Comparison between the Arab region and ASEAN



Source: UNCTADSTAT, see: <https://unctadstat.unctad.org/wds/TableView/tableView.aspx?ReportId=92>.

## C. Entry costs for doing business in the Arab region

Trade costs limit a country's exports and increase the prices of its imports. The World Bank's *Doing Business* report provides data on the time and cost (excluding tariffs) of importing and exporting into a country. The report measures the time and cost associated with document compliance, border compliance and domestic transportation.

The average cost to export a standard container from the Arab region in 2017 was the highest among regions.<sup>4</sup> It was estimated at around \$828, twice the cost to export a standard container from ASEAN. The cost of exporting a container is very high for the least developed countries, at more than \$1,100, followed by the Mashreq countries with an average cost of \$1,025. The GCC countries have the lowest cost among Arab subregions at \$487. The average cost to import a standard container in 2017 to the Arab region amounted to \$986, more than twice the ASEAN average. The least developed countries again have the highest cost. Importing a standard container costs them \$1,248, followed by the GCC and Mashreq countries at \$986 and \$984, respectively. Maghreb countries have the lowest cost. With an average time of 157 hours to export and 207 hours to import, the Arab region is among the most delayed regions for trade. By comparison, ASEAN clocks in at 144 hours for exports and 155 for imports. The consequences are clear when looking at the Arab region's rank for "trading across borders". The region has a collective rank of 135 compared to 102 for ASEAN.

The rank for "distance to frontier" indicates the evolution of a country's performance across all

economies and across time, on a scale from 0 to 100, where 0 represent the lowest performance. A score of 75 in 2017 means that the economy is 25 percentage points away from the best performance across all economies and across time (World Bank 2017).

### Case study on transport costs: Jordan

Logistics and transport costs in Jordan as shown in table 2 are significantly higher for imports than exports. This can be attributed to various reasons, including long waiting times to unload shipments, the low frequency of shipper lines stopping at Jordan's Aqaba Port, and the low volume of shipping to the country, which makes the cost per unit higher.

Aqaba Port is not a major port that ships serve directly. Ships coming from Europe, Asia and the United States of America serve the port through reshipping from other hub ports in the region, which explains the significant rise in prices of shipping for imports compared to exports. The difference between the cost of shipping imports and exports ranges between 80 per cent in the case of Europe to 140 per cent in the case of the United States.

While the shipping cost is high, logistics costs at the port are reasonable. The cost of land transport between Aqaba and all major cities – Amman, Zarqa and Irbid – is higher for inbound than for outbound transport. The difference ranges between 40 per cent and 75 per cent, setting imports at a disadvantage. This may be caused by truck cartels at the port setting their prices higher than the average market price.

**Table 1.** Transport costs and time delays in the Arab region, 2017

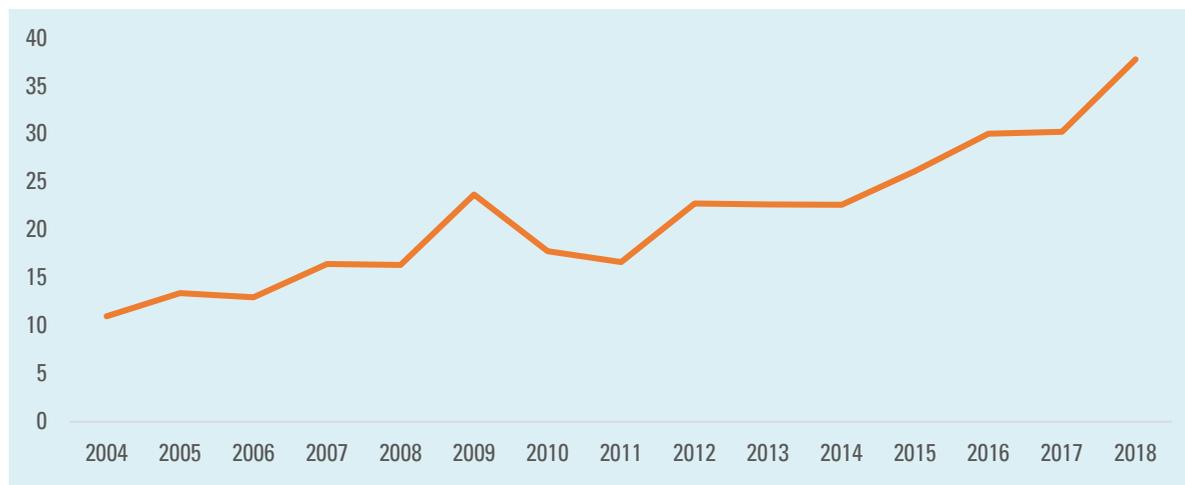
Economy	Ease of doing business rank	Trading across borders					
		Ease of trading across borders	Rank	Time to export (hours)	Time to import (hours)	Costs to export	Cost to import
ASEAN	103	78.539	97	145	155	409	441
GCC	72	83.6333	113	84	190	487	897
Bahrain	63	87.82	82	95	138	258	527
Kuwait	102	66.77	157	104	335	793	978
Oman	66	92.85	67	74	93	330	374
Qatar	83	86.06	128	40	160	532	1 371
Saudi Arabia	94	77.09	158	159	359	369	1 169
United Arab Emirates	26	91.21	85	33	55	640	961
Mashreq	141	79.185	134	203	255	1 026	985
Egypt	122	92.43	168	136	505	358	1 554
Iraq	165	71.32	179	573	307	2 818	1 544
Jordan	118	84.62	50	40	130	147	211
Lebanon	126	78.45	134	144	252	510	830
Syrian Arab Republic	173	78.93	176	132	290	1 838	1 570
State of Palestine	140	69.36	99	194	47	482	200
Maghreb	122	81.5925	112	127	250	631	662
Algeria	156	77.54	178	267	576	967	866
Libya	188	71.48	114	144	185	625	697
Morocco	68	92.34	63	45	132	263	344
Tunisia	77	85.01	92	53	107	669	740
Horn of Africa	171	62.4033	139	135	129	886	1 140
Comoros	153	71.59	107	108	99	775	858
Djibouti	171	66.91	155	181	128	1 039	1 309
Somalia	190	48.71	156	117	161	845	1 252
Least developed countries	169	77.41333	170	238	212	1 109	1 248
Mauritania	160	86.87	137	123	148	841	982
Sudan	168	73.78	184	352	276	1 378	1 513
Yemen	179	71.59	189	..	..	..	..
Arab region	136	76.8455	134	158	207	828	986

Source: World Bank 2016.

**Table 2.** Costs of transport and logistics between Jordan and some global ports in United States dollars

	Exports from Aqaba Port		Imports to Aqaba Port	
	20 ft	40 ft	20 ft	40 ft
Shipping line: Maersk	20 ft	40 ft	20 ft	40 ft
Rotterdam	762	1 121	1 702	2 303
Interop	760	1 458	1 367	2 222
Shanghai	250	400	600	961
New York	1 200	2 200	2 200	2 500
Customs clearance	28	28	56	56
Insurance of the goods (up to \$141,000, equivalent to 100,000 JD)	212	212	212	212
Land transport costs from the factory to the port				
From-to Amman	317	317	550	550
From-to Irbid	458	458	667	667
From-to Zarka	360	360	578	578
From-to Al Mafraq	374	374	636	636
Handling costs	53	79	88	131
Warehousing costs (up to 6 days)	Up to 7 days: no cost 8-14 days: \$9 per day 15-21 days: \$18 per day	Up to 7 days: no cost From 8 to 14 days: \$18 per day 15-21 days: \$35 per day	7-13 days: \$7 per day 14-20 days: \$29 per day	7-13 days: \$15 per day 14-20 days: \$58 per day
Clearance time (days)	2	2	4	4
Dwell time in departure port (days)	1	1	2	2
Other costs	49	49	99	73
Customs fees	106	106	According to customs tariffs	According to customs tariffs

**Source:** Jordanian authorities.

**Figure 23.** Jordan's score on the LSCI between 2004 and 2018

**Source:** UNCTADSTAT, see: <https://unctadstat.unctad.org/wds/TableView/tableView.aspx?ReportId=92>.

Jordan's container throughput has grown from 414,000 20-foot equivalent units (TEU) in 2000 to 815,000 TEU in 2018. While Jordan exported around 404,000 TEUs in 2018, 71 per cent of exported containers (around 290,000 TEUs)<sup>5</sup> were empty, putting a burden on importers to pay for the re-export of empty containers. Comparing the costs incurred between the two destinations of New York and Shanghai, it is obvious that the volume of traffic is a strong determinant of transport costs. While the difference in distance between Aqaba and both ports is less than 1,000 miles, the cost of shipping to New York is five times more expensive than shipping to Shanghai, which could be attributed to the large inbound traffic from Shanghai to Aqaba.

Various reforms over the past few years have improved the process of clearing goods, and reduced trade and transport costs. Reforms include streamlining customs clearance processes, advancing the use of a single window and improving infrastructure at the

Aqaba customs and port, and introducing X-ray scanners for risk management systems. Jordan also reduced the time for exporting and importing by implementing a risk-based inspection system with post-destination clearance for pre-approved traders, reducing the number of containers subject to physical inspection, and allowing online submission of customs declarations by fully implementing the ASYCUDA world electronic data interchange system (World Bank 2017).

## D. Transport costs and cross-cutting issues

### 1. Transport costs and the SDGs

Although transport was not explicitly included as a goal in the 2030 Agenda for Sustainable Development, it is an important tool for implementing the Agenda and achieving many of the SDGs. Trade costs, which are partly determined by transport costs, affect economic

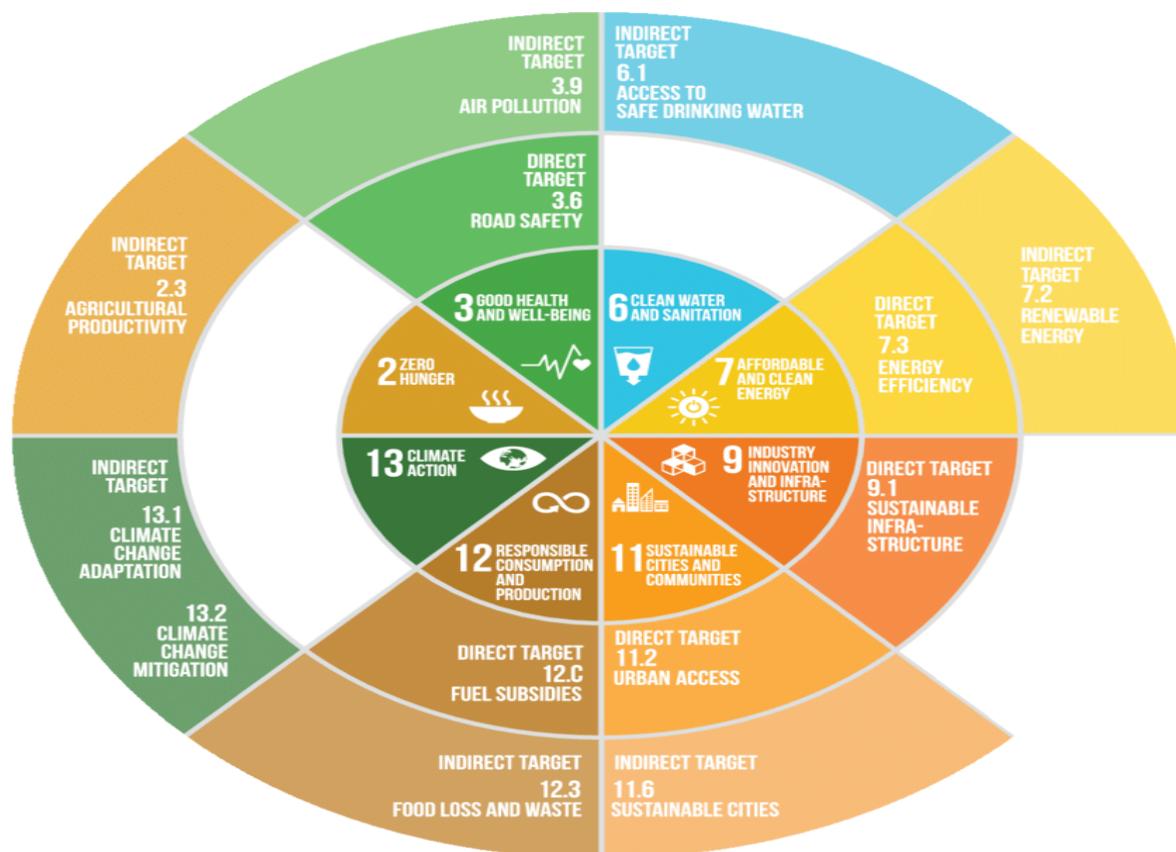
growth by influencing the competitiveness of countries, and producers of goods and services. Both trade and transport costs are felt by consumers, and shape demand for goods and services.

Many SDGs are deemed to be in *direct* relation with transportation, so reducing transport costs must be seen as a key element to achieve them. Since the SDGs are interconnected, and success

in one leads to the success of others, transport is likely to influence most of the goals.

Transport costs are directly linked to SDG 1 on ending poverty, as a major determinant of connectivity to markets, jobs, education, health care, etc. Improving logistics and transportation infrastructure and services increases transport mobility and strengthens rural-urban connectivity, which reduces rural poverty.

**Figure 24.** Transport-related SDGs and targets



Source: SloCat 2015.

The global investment in transport is estimated to range from \$1 trillion to \$2 trillion each year while developing countries, home to more than 80 per cent of the world population, account for less than 40 per cent of total investment in transport (World Bank 2015). Today, nearly two thirds of the Arab population is either poor or vulnerable to poverty (ESCWA et al. 2017). Market access through road connectivity, if planned and implemented successfully, would contribute to achieving SDG 1 by reducing poverty from 40.6 per cent to 5 per cent by 2030 (ibid.).

Low transport costs are also vital for achieving SDG 2 on ending hunger. Lowering the prices of food supplies and fostering access to food by more people enhances food security and reduces hunger. Cutting transport costs also contributes to limiting extreme food price volatility and sustaining food supply chains.

Transport costs influence achievement of SDG 8 on inclusive and sustainable economic growth. Lower transport costs contribute to more competitiveness and efficiency as preconditions for sustainable and inclusive economic growth. Transport costs are estimated to account for around 4 per cent of the cost of each unit of output in manufacturing, but this figure varies according to subsectors (Rodrigue n.d.). Increased transport costs can have a negative impact on economic growth as they affect productivity and supply chain efficiency. In short, reducing transport costs for all modes of transport and in particular for road transport can significantly contribute to achieving various SDGs, directly and indirectly.

## **2. Transport costs and gender equality**

Transport plays a key role in accessing economic resources, education, health and

other elements necessary for women's empowerment. Efficient, safe and affordable transport is essential for women's equal participation in economic activities. Many developing countries exhibit significant gender equality gaps in terms of education, health care, and political and economic participation. Part of that is the result of a lack of transport networks that are reliable, safe and accessible.

In the Arab region, as in many other developing regions, women's mobility is constrained by limited transport and social factors that can reduce access to the outside world.

Women in rural areas usually have less access to transport to send goods to markets than men, mainly due to having less control over money and resources such as vehicles. Women in such areas, who mostly produce handicrafts and some agriculture products, can be hurt by high transport costs that render them unable to compete in markets. They are particularly sensitive to the loss of competitiveness because as family caretakers, they already spend more time in unpaid care work, reducing the hours they have for paid work and cutting into the margins of small-scale businesses. This effect increases with export activities as competition increases, and the disadvantages of higher transport costs multiply.

## **3. Transport costs and climate change**

Transport is a major contributor to climate change and a major victim of it. Transportation services account for 25 per cent of energy demand and 61.5 per cent of yearly oil consumption. Emissions are huge. Maritime transport emissions alone are not compatible

with the internationally agreed goal of keeping the global temperature increase below 2 degrees Celsius. Greenhouse gas emissions from the transport sector as a whole have more than doubled since 1970. In 2010, the transport sector was responsible for 23 per cent of total carbon dioxide emissions (ibid.), which is catastrophic in terms of climate change.

Climate change also poses dire consequences through increased transport costs. Climate-related phenomena such as floods, increased temperatures, a rising sea level, etc. cause the closure of roads, ports and airports, damages to infrastructure and transport means, excessive delays in transport, etc., all of which can lead to increased maintenance and operation costs, and steeper fares.

Combating climate change requires the transport sector to adopt new policies and technologies that reduce emissions. Such actions call for investments that raise capital and operational costs, however. Recently, members of the International Maritime Organization reached an agreement to cut the shipping sector's overall carbon dioxide output by 50 per cent by 2050, to begin emissions reductions as soon as possible, and to pursue efforts to phase out carbon emissions entirely. The agreement includes a reference to bringing shipping in line with the temperature goal of the Paris Agreement on climate change, which seeks to limit global warming to "well below" 2 degrees Celsius.<sup>6</sup> Implementation of the agreement will have serious implications for the shipping industry, including a major investment in more environmentally friendly ships and other means to reach the target. This may lead to major changes in the cost of transportation by sea.

## E. Conclusion and recommendations

This report has shown that most Arab countries still maintain high trade and transport costs that affect their ability to integrate further in the global economy and at the regional level. Various reasons contribute to this situation, including policy and non-policy dimensions that drive up trade costs. The causes can change according to the level of development of each country and other factors. Addressing the causes calls for separate and independent analysis in each country to identify the exact factors involved as the basis for designing required responses that boost trade competitiveness, advance integration in regional and global value chains, enable diversification of exports and markets, and subsequently foster economic growth and job creation.

Notwithstanding the specificity of each country context, the following interventions are deemed necessary for overcoming the hurdles of high trade and transport costs in the Arab countries.

First, improve the quality of infrastructure at ports with a focus on efficiency, not size. This is an important target to enable efficient services. It also requires the development of appropriate policies that underpin healthy competition, and competitive services and prices.

Second, enhance connectivity to global transport networks as a prerequisite for lowering transport and trade costs. This requires developing maritime networks, port efficiency and hinterland connectivity to smooth the transport of shipments from and to the country at competitive prices. Today's technological developments are instrumental in increasing the efficiency of channelling tariffs through ports with limited capacities.

Third, fully implement trade facilitation measures to reduce delays at borders and lower the costs of clearing goods. Full implementation of the trade facilitation agreement is a good start but certainly not sufficient as other measures to improve logistics performance are crucial. Addressing the major causes of delays as revealed by the analysis of the LPI is a necessary step to improve efficiency in ports and reduce costs.

Fourth, improve transparency through the digitization of processes and the provision of

necessary information via electronic means, both of which can have a positive effect on trade costs.

Finally, remove unnecessary non-tariff measures as this can also lead to substantial reductions in trade costs. Through advanced technologies, countries can now substitute time-consuming and cumbersome procedures with electronic and remote processes that secure the interests of the country, while minimizing delays encountered and paid for by economic agents.

# Annexes

## Annex 1. Methodology and data

Direct evidence on trade costs comes in two major categories: costs imposed by policy (tariffs, quotas and the like) and costs imposed by the environment (transportation, insurance against various hazards, time costs). One major problem in estimating trade costs is the multiple difficulties in obtaining accurate measures of them (see Anderson and van Wincoop 2004). To overcome these limitations, specific economic models have been developed to estimate the costs at the aggregated and sectoral levels. Gravity models are extensively used for this purpose. In this respect, a variety of ad hoc trade cost functions have been used to relate the unobservable cost to observable variables.

The selected methodology in this paper follows that of ESCAP and the World Bank for estimating trade costs at the bilateral and sectoral levels. This methodology is fully consistent with a broad range of leading trade theories, including Ricardian, and the Heckscher-Ohlin and heterogeneous firms models (Novy 2013). The method, known as the indirect method, is useful in practice since it can be implemented easily once adequate data are available. Unlike the direct approach, which includes time invariant cost components, the indirect method is a function of time varying variables, and hence can serve as a tool to trace

the evolution of bilateral trade costs over time. The bilateral trade costs in this report are measured by the following formula:

$$\tau_{ijt}^k = \left( \frac{x_{iit}^k x_{jjt}^k}{x_{ijt}^k x_{jit}^k} \right)^{\frac{1}{2(\sigma^k - 1)}} - 1 \quad ; \text{ at time } t \text{ for sector } k,$$

where,

$\tau_{ijt}^k$  is the tariff equivalent trade cost from country  $i$  to country  $j$  at time  $t$  for sector  $k$ ,

$x_{iit}^k$  and  $x_{jjt}^k$  are the domestic trade of sector  $k$  in country  $i$  and  $j$ , respectively,

$x_{ijt}^k$  and  $x_{jit}^k$  are the bilateral trade of sector  $k$ , for country  $i$  and  $j$ , respectively,

$\sigma^k$  is the elasticity of substitution between goods in sector  $k$ .

In this equation, the tariff equivalent trade cost measure is obtained by deducting one from the geometric mean of bilateral trade costs relative to domestic trade costs. Hence, the value of  $\tau_{ijt}^k$  is provided in ad valorem equivalent form. In other words, it gives the additional cost to the value of goods produced by sector  $k$  in country  $i$ , and exported to country  $j$ , as compared to when country  $i$  trades these goods within its borders. The reading of the micro-founded trade

cost measure is straightforward. Low values of  $\tau_{ijt}^k$  correspond to low trade costs, which is the case when bilateral trade flows  $x_{ijt}^k$   $x_{jit}^k$  increase relative to domestic trade flows  $x_{iit}^k$   $x_{jtt}^k$ . In other words, as the ratio  $\frac{x_{iit}^k x_{jtt}^k}{x_{ijt}^k x_{jit}^k}$  falls and countries trade more internationally than domestically, international trade costs must be falling relative to domestic trade costs. Whereas  $\tau_{ijt}^k$  values are high when countries tend to trade more with themselves than they do with each other, and are infinite for any pair of countries that do not trade at all.

Intuitively, if a country sells relatively more of its production internationally than domestically, it must be because international trade costs have fallen relative to domestic trade costs, holding other factors constant. Similarly, if a country sells relatively more goods domestically than internationally, it must be because international trade costs have increased relative to domestic trade costs, holding others factors constant.

Concerning the list of countries included in this study, crossing the output data with trade data allowed us to gather data for 16 Arab countries to keep the original database built for the period 2000 to 2011, which was extended in the present assessment to the years 2012, 2013, 2014 and 2015. Adding the main trading partners of the 16 Arab countries, we came up with a list including 88 countries. In fact, we opted to update the previous estimation (Jelassi 2015) rather than building a new one with a different number of countries and sectors. Not all data are available for all selected countries and sectors in each year. Annex 2 gives the list of Arab countries and their trading partners classified according to the geographical region.

To make the results more appropriate to current debates on the regional and global integration

of Arab countries, we decided to aggregate countries according to their regional economic communities or geographical appurtenance.

Accordingly, aggregation has been made according to 13 blocs of partners, as follows:

1. Arab Maghreb Union (AMU).
2. Gulf Council Countries (GCC).
3. Rest of the Arab Countries.
4. Pan Arab Free Trade Agreement (PAFTA).
5. Europe 28 (EU-28).
6. Rest of the European Countries.
7. North American Free Trade Agreement (NAFTA).
8. Latin America and the Caribbean.
9. Association of Southeast Asian Nations (ASEAN).
10. Rest of the South and East Asian Countries.
11. Rest of the Central and Western Asian Countries.
12. Australia and New Zealand.
13. Sub-Saharan Africa (SSA).

The lists of members of each bloc are in annex 2.

Concerning the Arab countries, four trading blocs can be highlighted for this study. PAFTA is represented by 16 members instead of 18 in total. The AMU is represented by Algeria, Morocco and Tunisia. The GCC is fully represented by its six members (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates). The rest of the Arab countries includes the remaining Arab States. To measure bilateral trade costs for the Arab countries and their trading partners from 2000 to 2015, a meticulous data collection exercise was required to construct the trade cost dataset, covering production and export data.

First, it is generally known that data on international trade provided by COMTRADE

according to the required harmonized format are not directly available, and their construction is challenging. This requires a number of conversions and adjustments to ensure that data are in a comparable format. In fact, calculation of bilateral trade costs requires data on domestic trade in each country, which is calculated as domestic production fewer total exports. So, for each sector  $k$  of country  $i$  at time  $t$ , sectoral output less sectoral total exports provides the value of domestic trade of sector  $k$  in country  $i$  at time  $t$ . That is,  $x_{iit}^k = y_{it}^k - x_{it}^k$ ,

where,

$x_{iit}^k$ : Intranational trade of sector  $k$  for country  $i$  at time  $t$ .

$y_{it}^k$ : Output of sector  $k$  for country  $i$  at time  $t$ .

$x_{it}^k$ : Exports of sector  $k$  for country  $i$  at time  $t$ .

Consequently, a concordance must be used to map trade data from HS 6-digits to the more aggregated ISIC. To achieve this, we started the construction of our database in the reverse way. That is, we collected sectoral production data according to the ISIC Rev.3 from the UNIDO Industrial Statistics Database 2 (INDSTAT2) 2014 ISIC Rev.3 database. Hence, outputs for each sector of all countries included in the study were obtained in current United States dollars. In the second stage, and to build the remaining part of the dataset covering adequate bilateral exports, the corresponding bilateral trade from the COMTRADE database was cautiously mapped from HS 6-digits (2007) to ISIC Rev.3 according to the concordance H3 to ISIC Rev.3. For practical reasons, an additional mapping was undertaken, and the bilateral exports dataset constructed for each sector after a careful manipulation of raw data. However, in order to

fill the UNIDO INDSTAT 2 gaps on sectoral production for many important Arab countries, we supplied the estimation exercise with additional data from national sources.

## Global overview

Results displayed in this paper rely on the ESCAP-World Bank trade cost dataset, which is a joint effort led by the two institutions to develop a common standard methodology for calculating comprehensive international trade costs. The current available version includes data from 1995 to 2015 for over 180 countries.<sup>7</sup>

The database distinguishes between two major sectors according to the ISIC Rev.3 classification, which are “AB” for “agriculture, hunting, forestry and fishing” and “D” for “manufacturing”. A measure of a weighted trade cost, called goods total trade (GTT), reflects a weighted trade cost of sectors “AB” and “D”.

For some cases, trade costs for sector “D” are empty for data limitations. In this case, we used the weighted GTT trade cost measure as a proxy given that the value of manufacturing exports is far more important than the value of agricultural exports for all considered Arab countries. Weighting was undertaken using the COMTRADE database through the World Integrated Trade Solution available online. We adopted the same sectoral aggregation as the ESCAP trade cost database. Out of the 18 Arab members of PAFTA we need as reporters for both import and export flows, data exist for only 16 countries. We considered four years to ease presentations and interpretations, which are 2000, 2005, 2010 and 2015.

Given that the number of Arab countries considered in this study is important,

and in order to be concise and avoid repetition of the same conclusions for countries behaving similarly, the report provided an interpretation for only one country belonging to the AMU, which is Tunisia, and one country belonging to the rest of the Arab countries bloc, which is Jordan. Graphics displaying results for other countries are in annex 3. The presentation and interpretation of the results could be undertaken in many alternative forms starting by focusing the analysis at the country level, where all sectors could be included in one figure, or by focusing on one sector with a regional overview. Depending on the adopted approach, the presentation and interpretation will differ. Based on the sample provided here, final users could replicate the analysis in one way or another once the structure and dimensions of figures are defined.

The methodology adopted for computing trade costs as well as data sources reveals economy-wide and sectoral estimation results using the results from the ESCAP/World Bank database and the specific findings of the quantitative assessment undertaken in this paper. Economy-wide estimation results were related to trade costs faced by Arab countries for both imports and exports as revealed by the ESCAP/World Bank database, which required a significant effort to aggregate trade and trade costs by partners. In this respect, 13 different partners were selected for this report by proceeding to an aggregation of countries according to either the regional trade agreements in which they participate or their geographical proximity. Sectoral estimation results were done using the database built especially for this paper, which distinguishes 15 sectors according to the ISIC Rev.3 classification for 19 Arab countries and their 13 identified trading partners.

## Annex 2. Country groupings

Arab Maghreb Union (AMU)			
DZA	Algeria	MRT	Mauritania
LBY	Libya	TUN	Tunisia
MAR	Morocco		

Gulf Council Countries (GCC)			
BHR	Bahrain	QAT	Qatar
KWT	Kuwait	SAU	Saudi Arabia
OMN	Oman	ARE	United Arab Emirates

Rest of the Arab Countries (RAC)			
EGY	Egypt	SYR	Syrian Arab Republic
IRQ	Iraq	YEM	Yemen
JOR	Jordan	SDN	Sudan
LBN	Lebanon		
PSE	State of Palestine		

Greater Arab Free Trade Agreement (GAFTA)			
DZA	Algeria	ARE	United Arab Emirates
LBY	Libya	EGY	Egypt
MAR	Morocco	IRQ	Iraq
MRT	Mauritania	JOR	Jordan
TUN	Tunisia	LBN	Lebanon
BHR	Bahrain	PSE	State of Palestine
KWT	Kuwait	SDN	Sudan
OMN	Oman	SYR	Syrian Arab Republic
QAT	Qatar	YEM	Yemen
SAU	Saudi Arabia		

Europe 28 (EU-28)			
AUT	Austria	HUN	Hungary
BEL	Belgium	IRL	Ireland
BGR	Bulgaria	ITA	Italy
CYP	Cyprus	LTU	Lithuania
CZE	Czech Republic	LUX	Luxembourg
DEU	Germany	LVA	Latvia
DNK	Denmark	MLT	Malta
ESP	Spain	NLD	Netherlands
EST	Estonia	POL	Poland
FIN	Finland	PRT	Portugal
FRA	France	ROM	Romania
GBR	United Kingdom	SVK	Slovak Republic
GRC	Greece	SVN	Slovenia
HRV	Croatia	SWE	Sweden

Rest of the European Countries (REC)			
ALB	Albania	MKD	Republic of North Macedonia
AND	Andorra	MNT	Montenegro
BIH	Bosnia and Herzegovina	NOR	Norway
BLR	Belarus	RUS	Russian Federation
CHE	Switzerland	UKR	Ukraine
ISL	Iceland	SMR	San Marino
MDA	Moldova	FRO	Faeroe Islands

North American Free Trade Agreement (NAFTA)			
CAN	Canada		
MEX	Mexico		
USA	United States of America		

Latin America and the Caribbean (LAC)			
ANT	Netherlands Antilles	GUY	Guyana
ARG	Argentina	HND	Honduras
ATG	Antigua and Barbuda	JAM	Jamaica
BLZ	Belize	NIC	Nicaragua
BOL	Bolivia	PAN	Panama
BRA	Brazil	PER	Peru
BRB	Barbados	PRY	Paraguay
CHL	Chile	SLV	El Salvador
COL	Colombia	SUR	Suriname
CRI	Costa Rica	TTO	Trinidad and Tobago
CUB	Cuba	URY	Uruguay
DMA	Dominica	VEN	Venezuela
DOM	Dominican Republic	BHS	Bahamas The
ECU	Ecuador	VCT	St. Vincent and the Grenadines
GTM	Guatemala	ABW	Aruba

Association of Southeast Asian Nations (ASEAN)			
BRN	Brunei	PHL	Philippines
IDN	Indonesia	SGP	Singapore
KHM	Cambodia	THA	Thailand
LAO	Lao People's Democratic Rep.	VNM	Viet Nam
MYS	Malaysia	MMR	Myanmar

Rest of South and East Asian Countries (RSEA)			
AFG	Afghanistan	KOR	Korea Rep.
BGD	Bangladesh	LKA	Sri Lanka
CHN	China	MAC	Macao
HKG	Hong Kong China	MDV	Maldives
IND	India	MNG	Mongolia
IRN	Iran Islamic Rep.	NPL	Nepal
JPN	Japan	PAK	Pakistan

Rest of Central and Western Asian Countries (RCWA)			
ARM	Armenia	TJK	Tajikistan
AZE	Azerbaijan	TUR	Turkey
GEO	Georgia	UZB	Uzbekistan
KAZ	Kazakhstan	ISR	Israel
KGZ	Kyrgyz Republic		

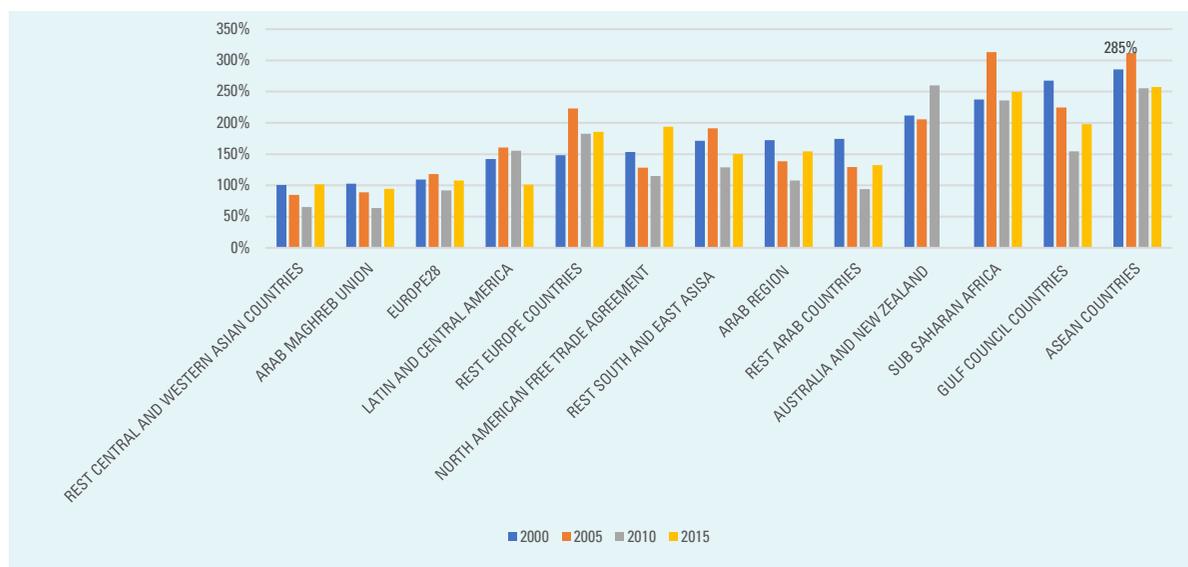
Australia and New Zealand (ANZ)			
AUS	Australia		
NZL	New Zealand		

Sub-Saharan Africa (SSA)			
AGO	Angola	MUS	Mauritius
BDI	Burundi	MWI	Malawi
BEN	Benin	NAM	Namibia
BFA	Burkina Faso	NER	Niger
BWA	Botswana	NGA	Nigeria
CAF	Central African Republic	RWA	Rwanda
CIV	Côte d'Ivoire	SEN	Senegal
CMR	Cameroon	SWZ	Swaziland
COG	Congo Rep.	SYC	Seychelles
COM	Comoros	TCD	Chad
ETH	Ethiopia	TGO	Togo
GAB	Gabon	TZA	United Republic of Tanzania
GHA	Ghana	UGA	Uganda
GIN	Guinea	ZAF	South Africa
GMB	Gambia The	ZAR	Congo Dem. Rep
GNQ	Equatorial Guinea	ZMB	Zambia
KEN	Kenya	ZWE	Zimbabwe
LBR	Liberia	CPV	Cape Verde
LSO	Lesotho	SLE	Sierra Leone
MDG	Madagascar	STP	Sao Tome and Principe
MLI	Mali	ERI	Eritrea
MOZ	Mozambique		

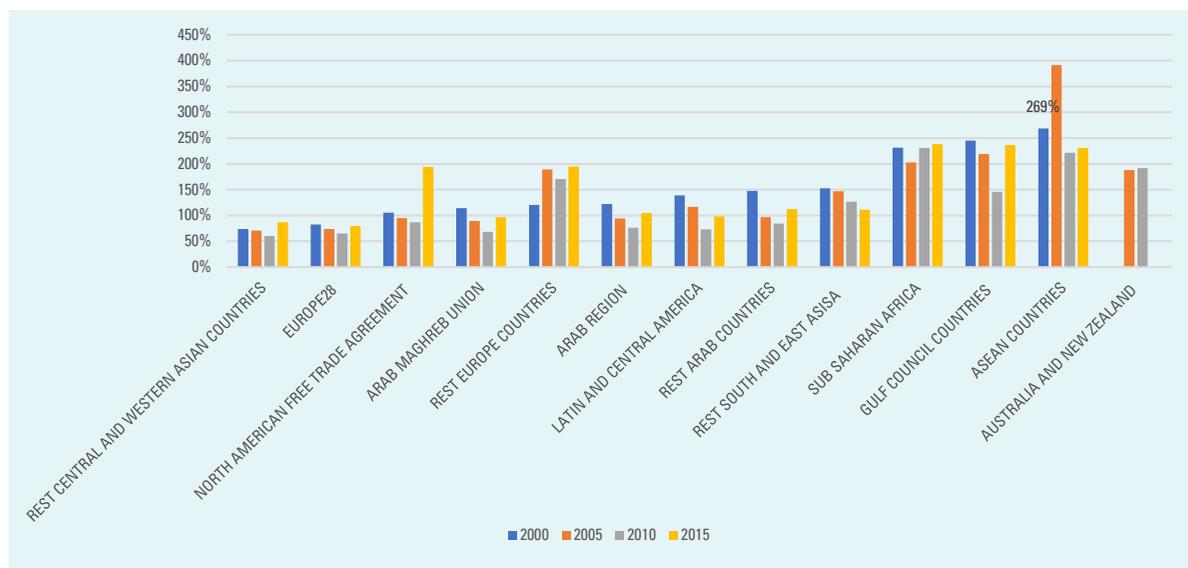
## Annex 3. Economy-wide trade costs

### 1. Algeria

**Figure A3.1** Trade costs for Algerian imports (As a percentage of import values by origin)

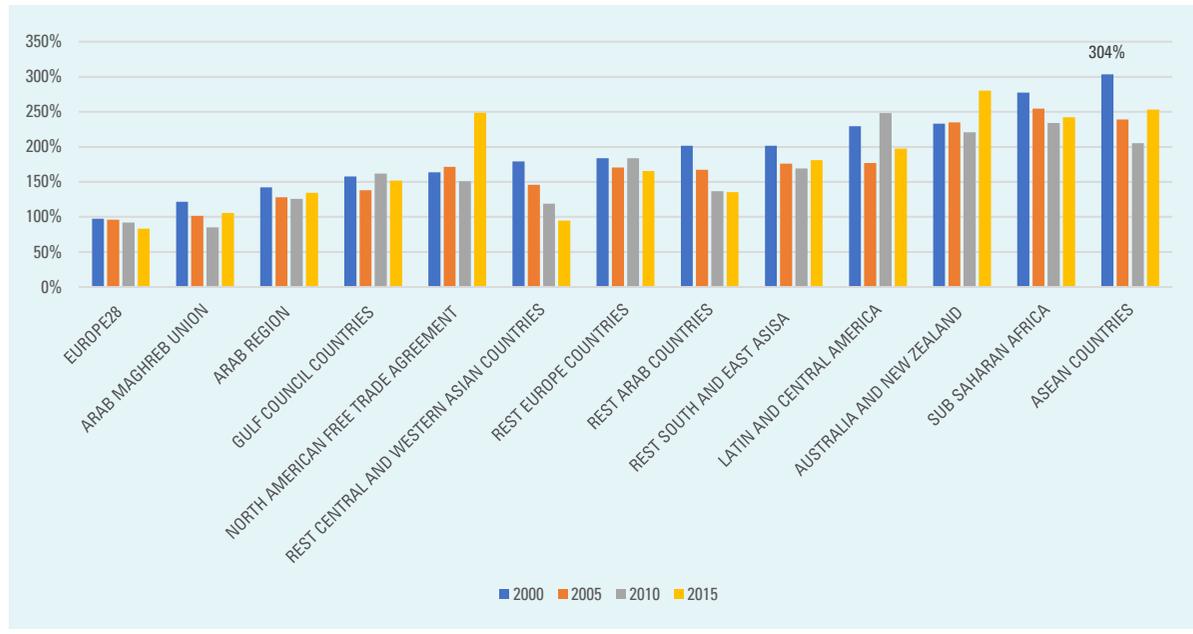


**Figure A3.2** Trade costs for Algerian exports (As a percentage of export values by destination)

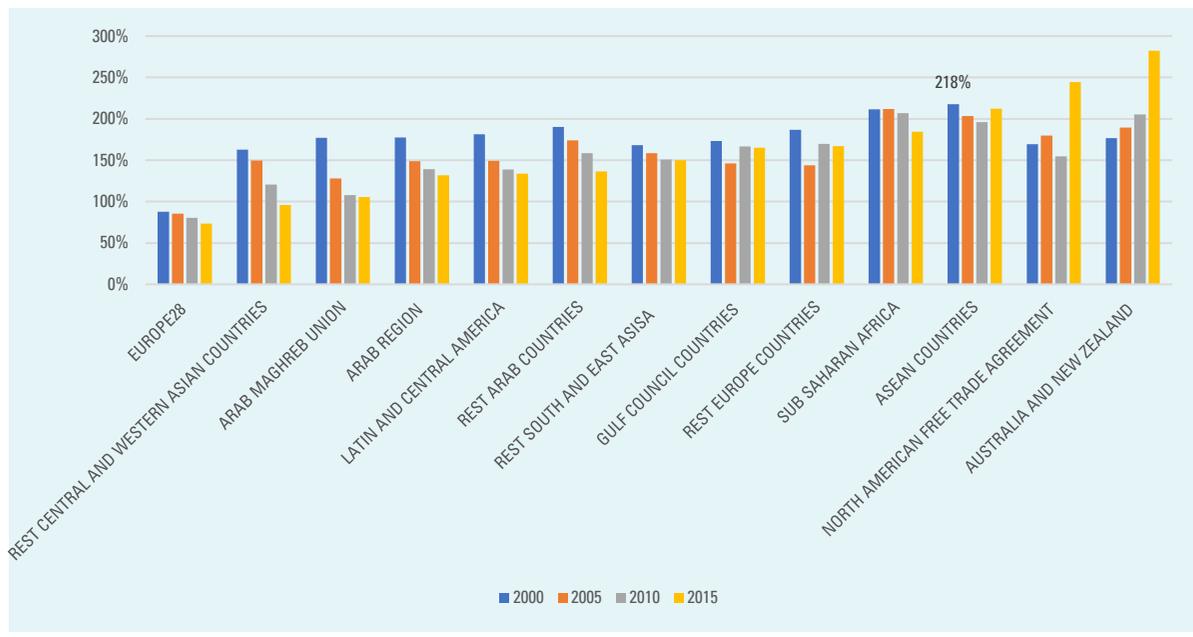


## 2. Morocco

**Figure A3.3** Trade costs for Moroccan imports (As a percentage of import values by origin)

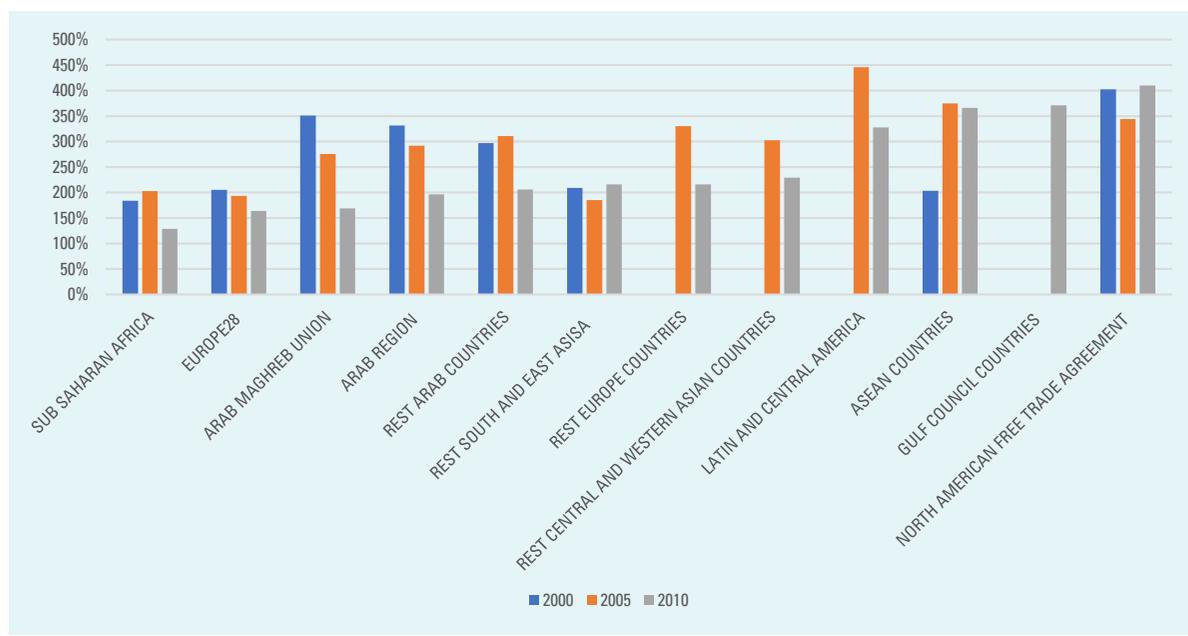


**Figure A3.4** Trade costs for Moroccan exports (As a percentage of export values by destination)

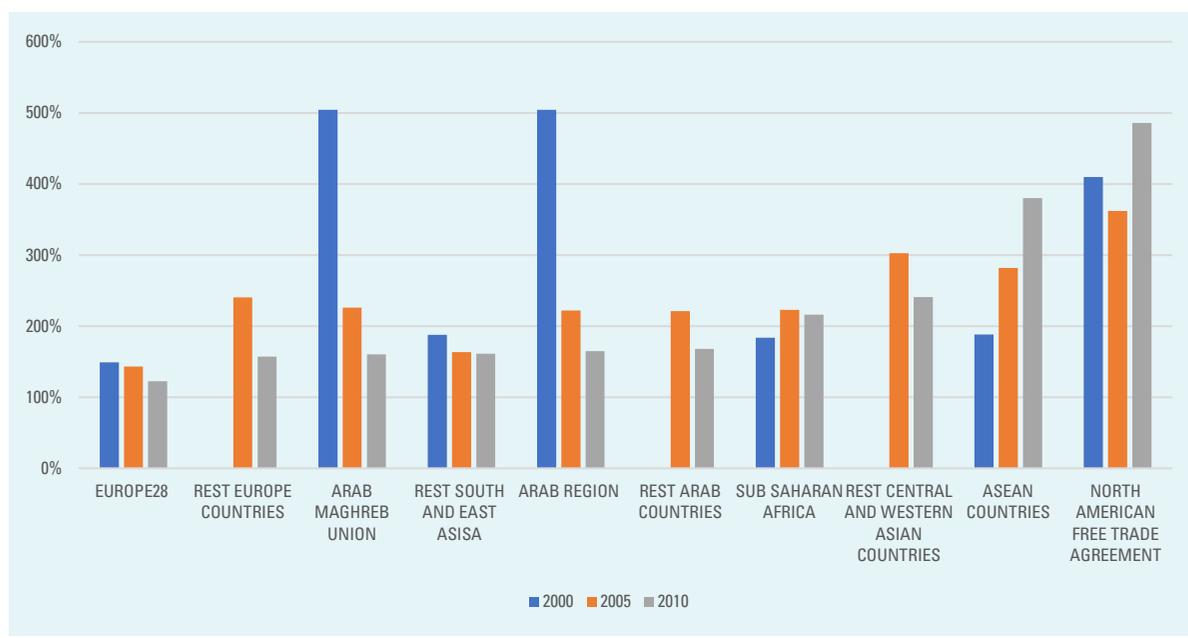


### 3. Mauritania

**Figure A3.5** Trade costs for Mauritanian imports (As a percentage of import values by origin)

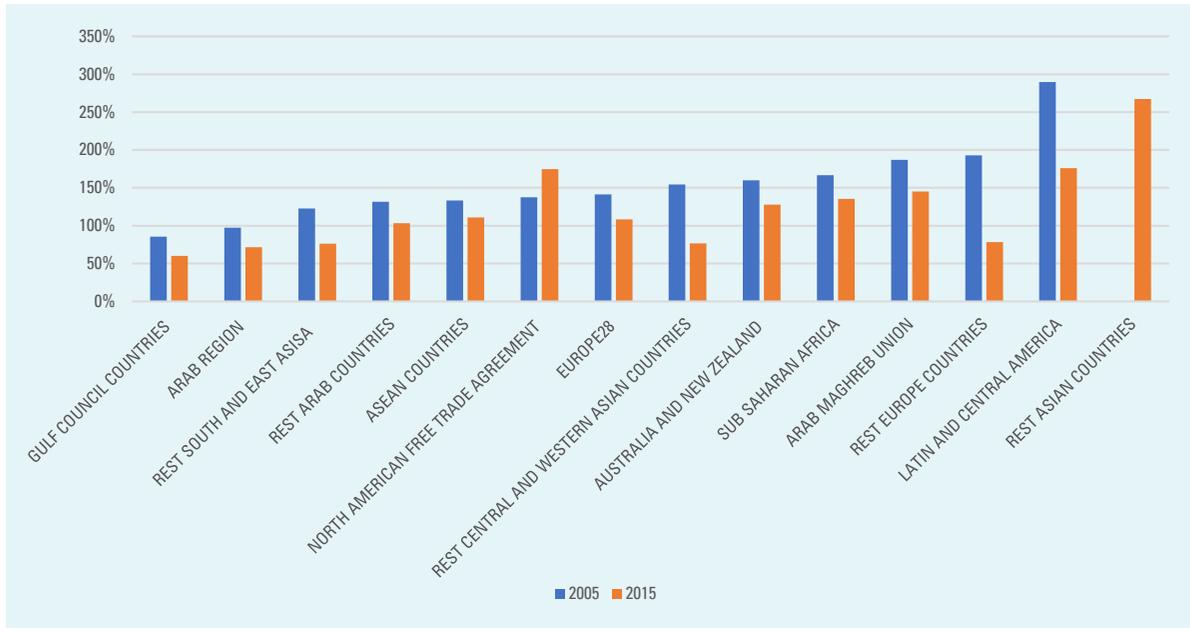


**Figure A3.6** Trade costs for Mauritanian exports (As a percentage of export values by destination)

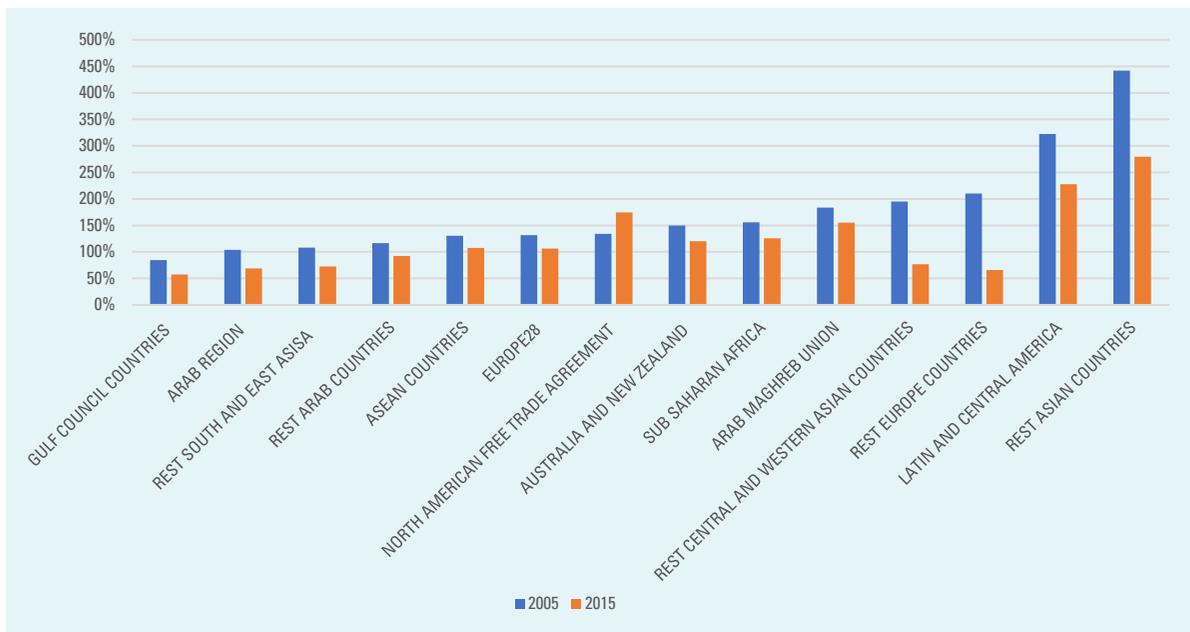


#### 4. United Arab Emirates

**Figure A3.7** Trade costs for United Arab Emirates' imports (As a percentage of import values by origin)

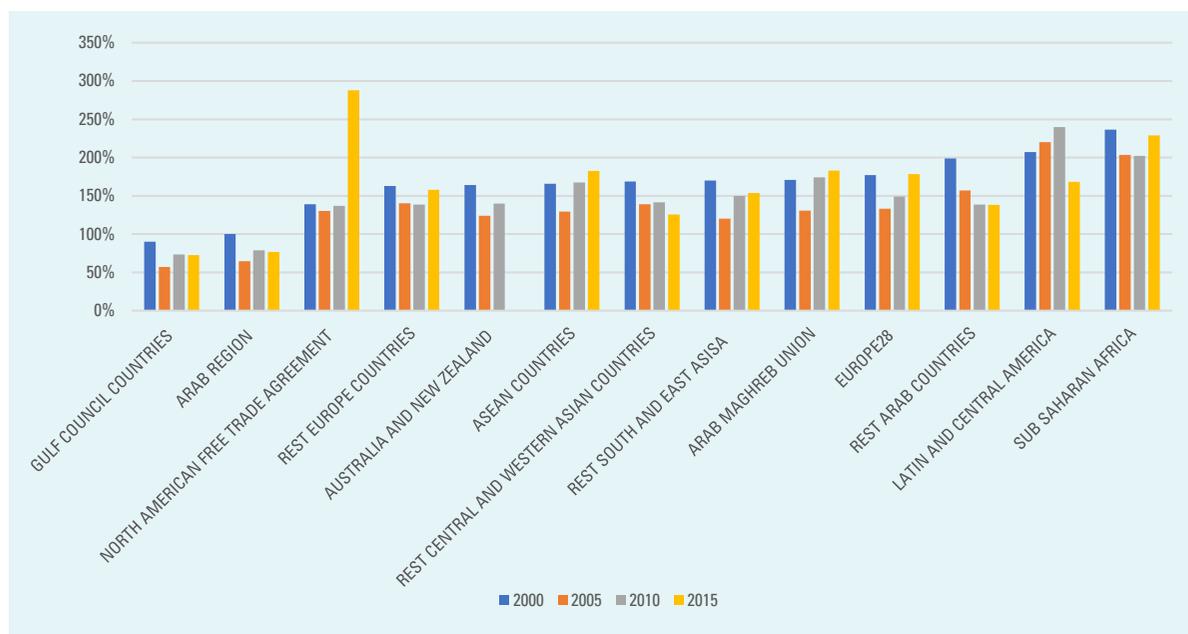


**Figure A3.8** Trade costs for United Arab Emirates' exports (As a percentage of export values by destination)

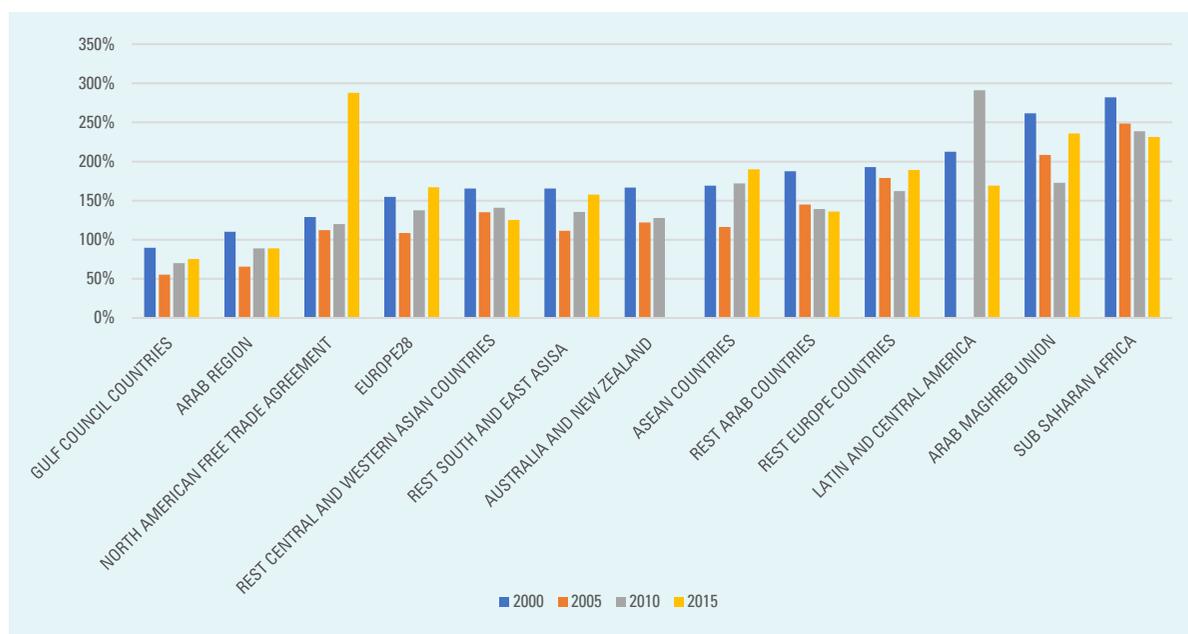


## 5. Bahrain

**Figure A3.9** Trade costs for Bahraini imports (As a percentage of import values by origin)

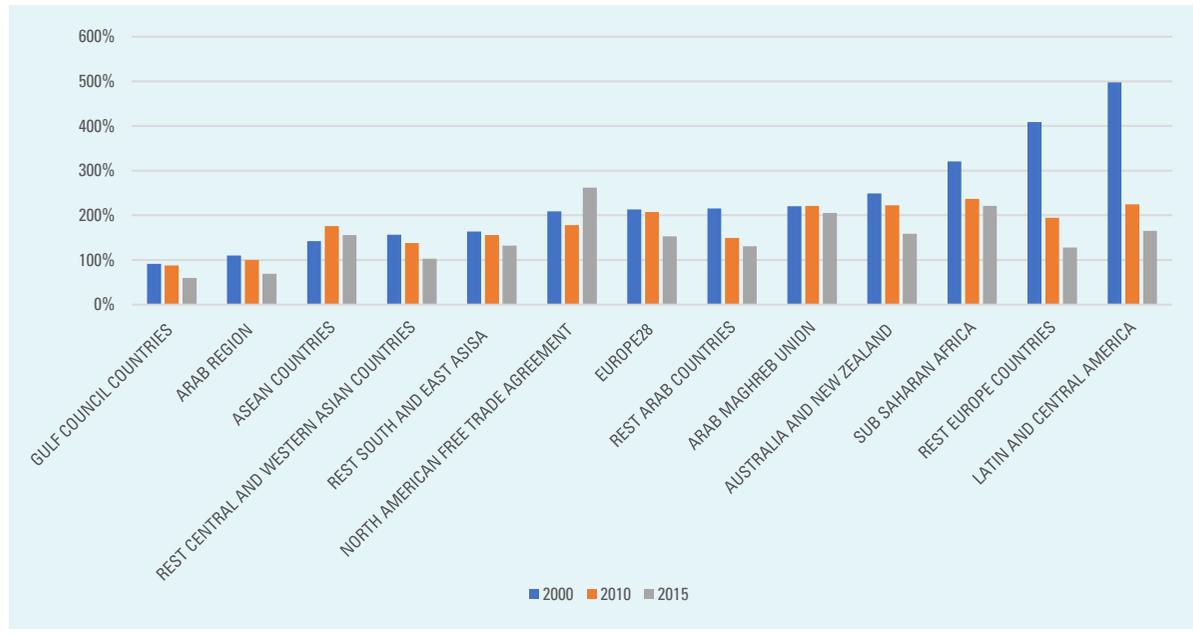


**Figure A3.10** Trade costs for Bahraini exports (As a percentage of export values by destination)

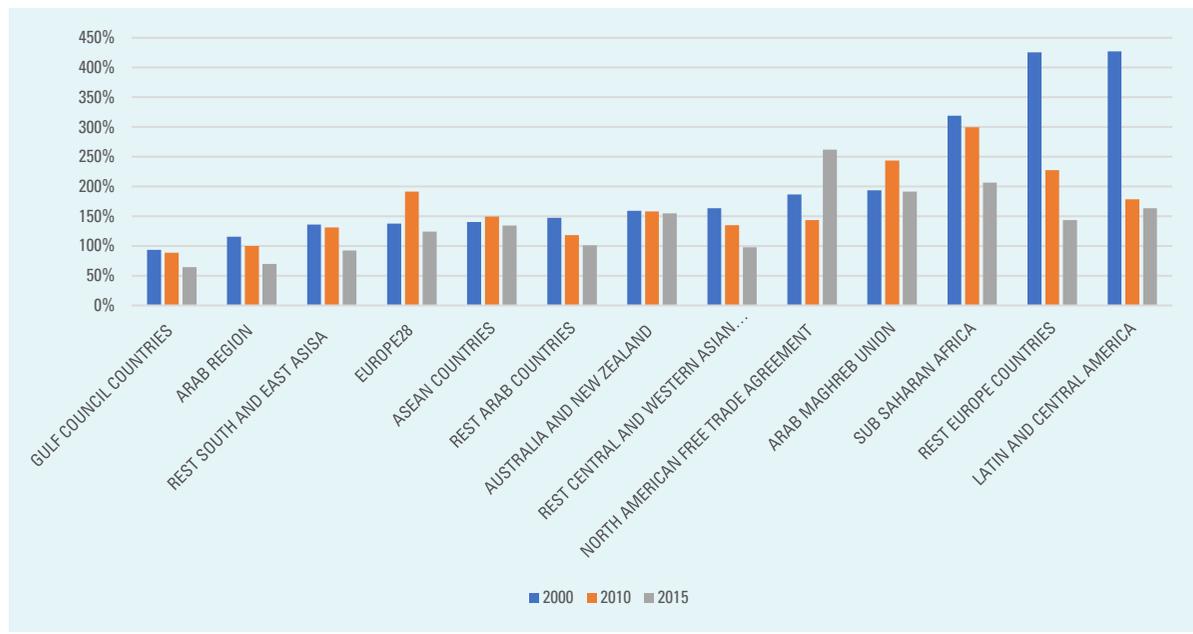


## 6. Kuwait

**Figure A3.11** Trade costs for Kuwaiti imports (As a percentage of import values by origin)

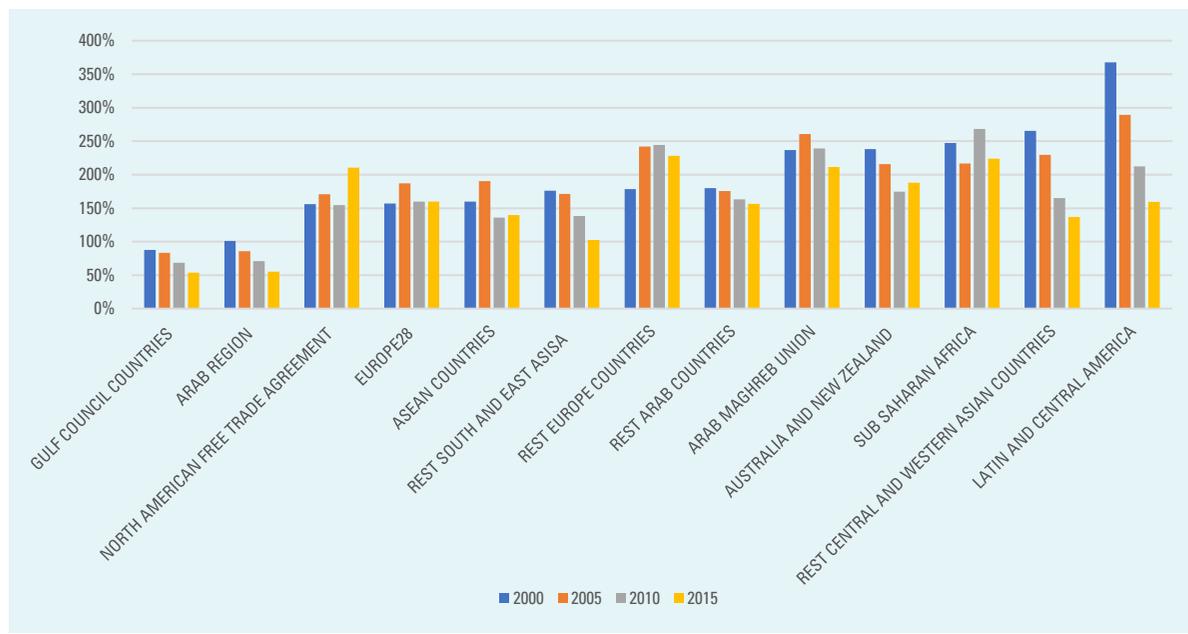


**Figure A3.12** Trade costs for Kuwaiti exports (As a percentage of export values by destination)

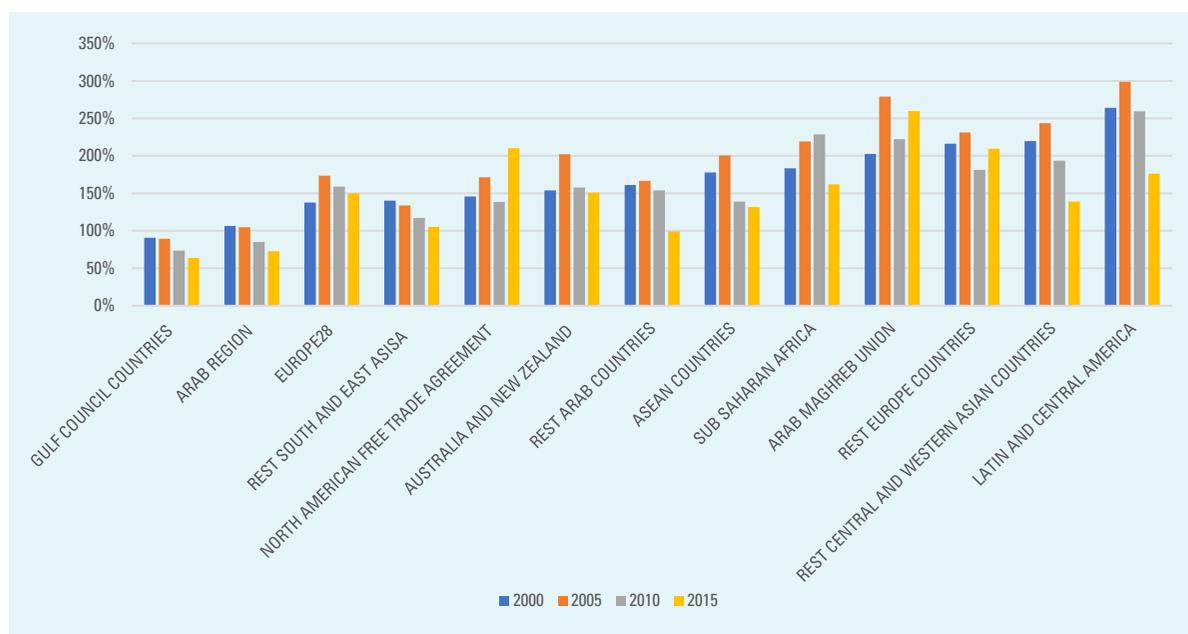


## 7. Oman

**Figure A3.13** Trade costs for Omani imports (As a percentage of import values by origin)

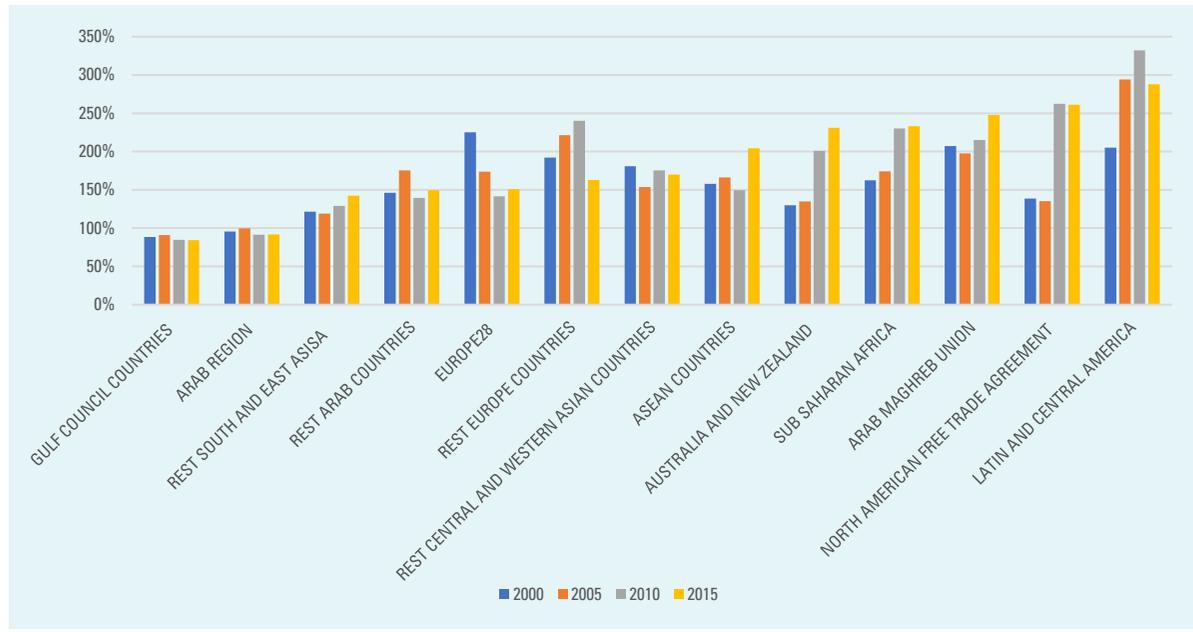


**Figure A3.14** Trade costs for Omani exports (As a percentage of export values by destination)

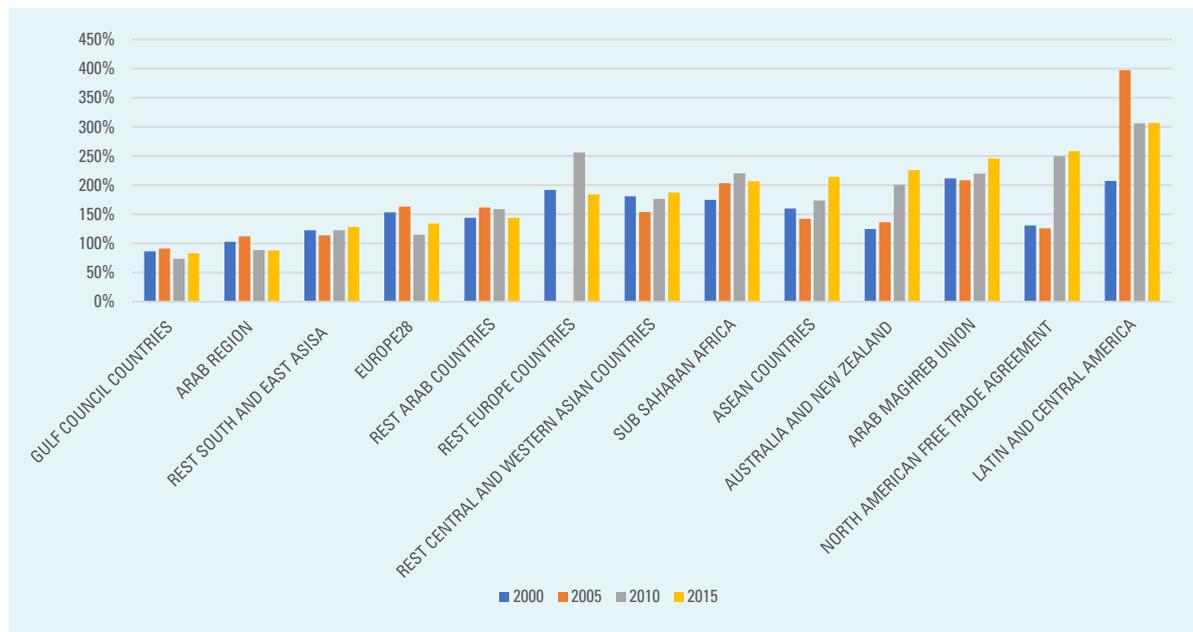


## 8. Qatar

**Figure A3.15** Trade costs for Qatari imports (As a percentage of import values by origin)

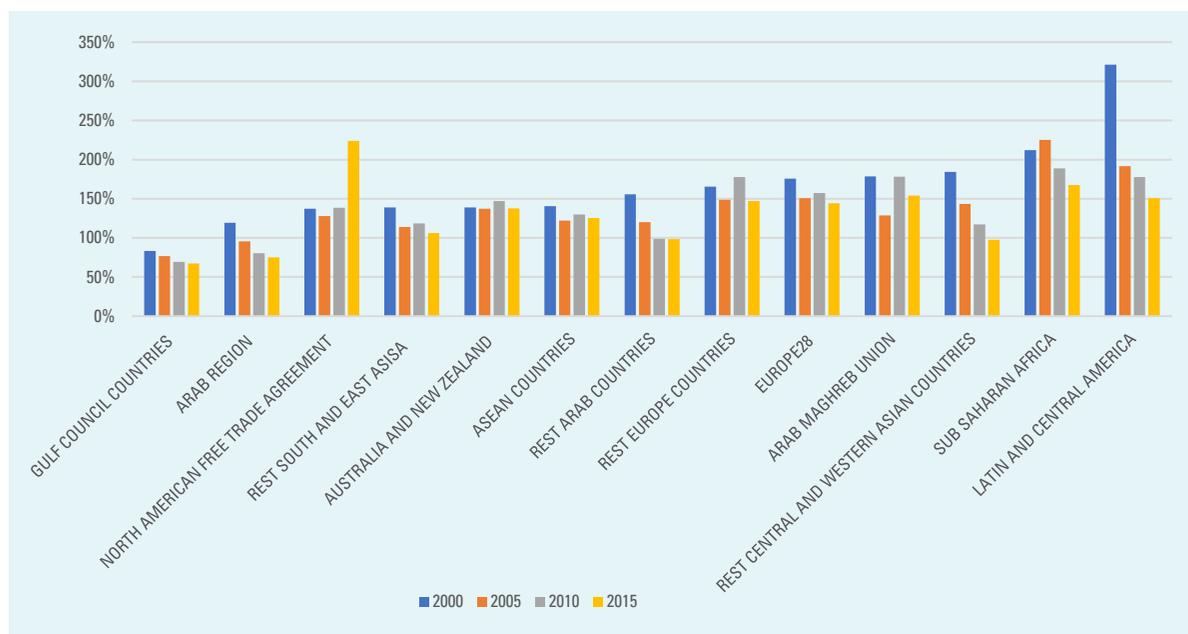


**Figure A3.16** Trade costs for Qatari exports (As a percentage of export values by destination)

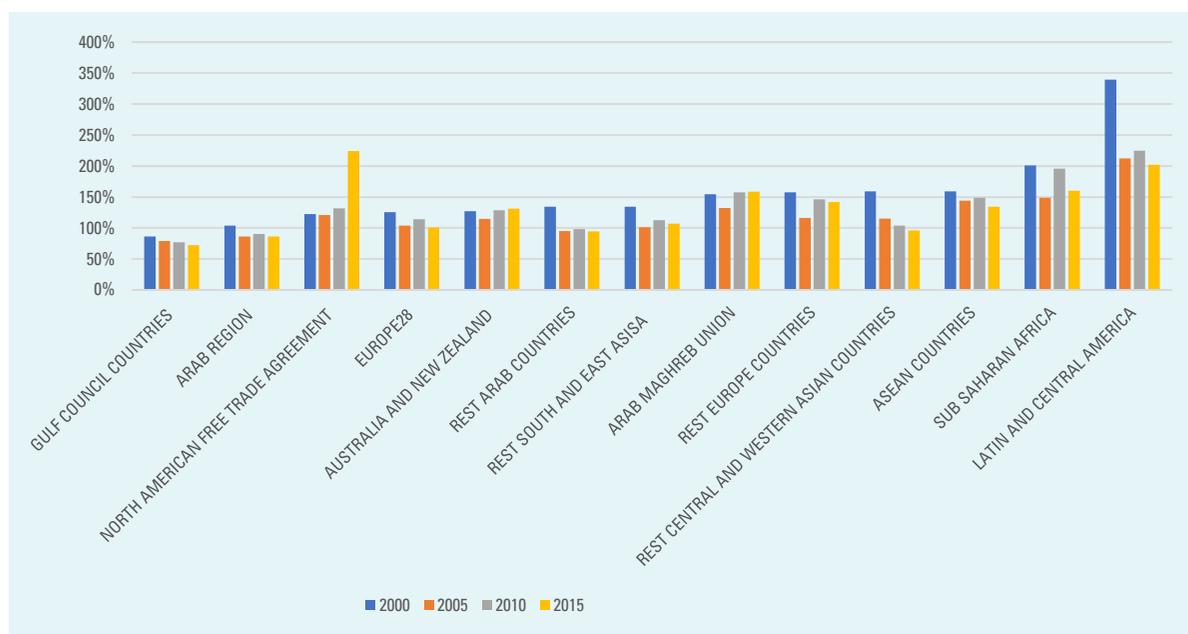


## 9. Saudi Arabia

**Figure A3.17** Trade costs for Saudi imports (As a percentage of import values by origin)

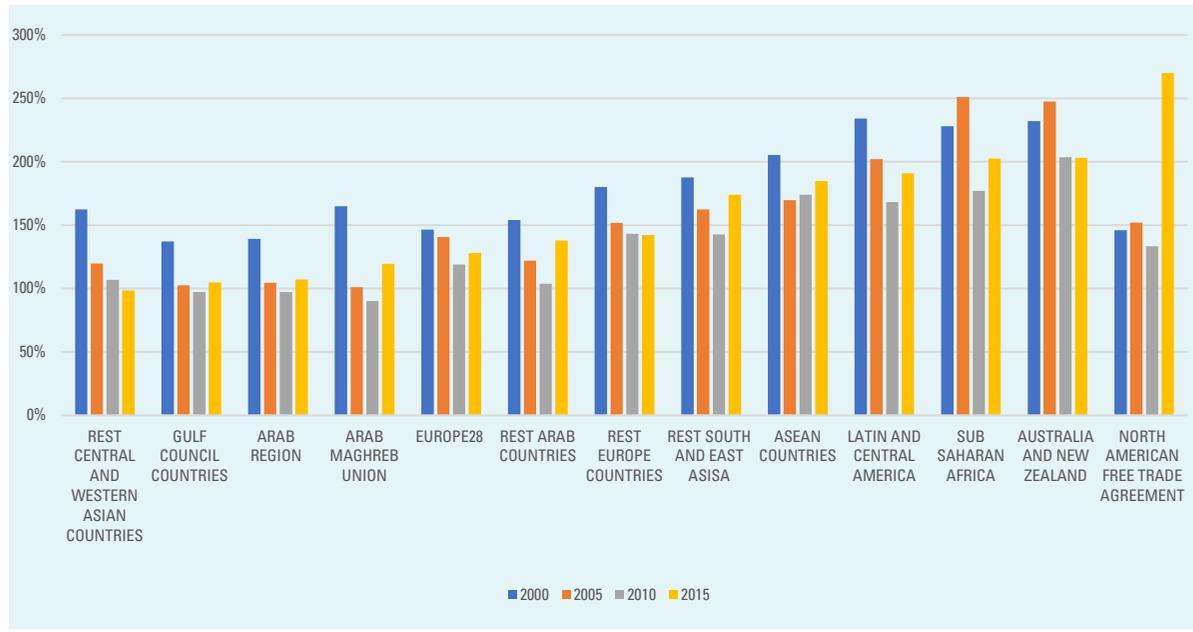


**Figure A3.18** Trade costs for Saudi exports (As a percentage of export values by destination)

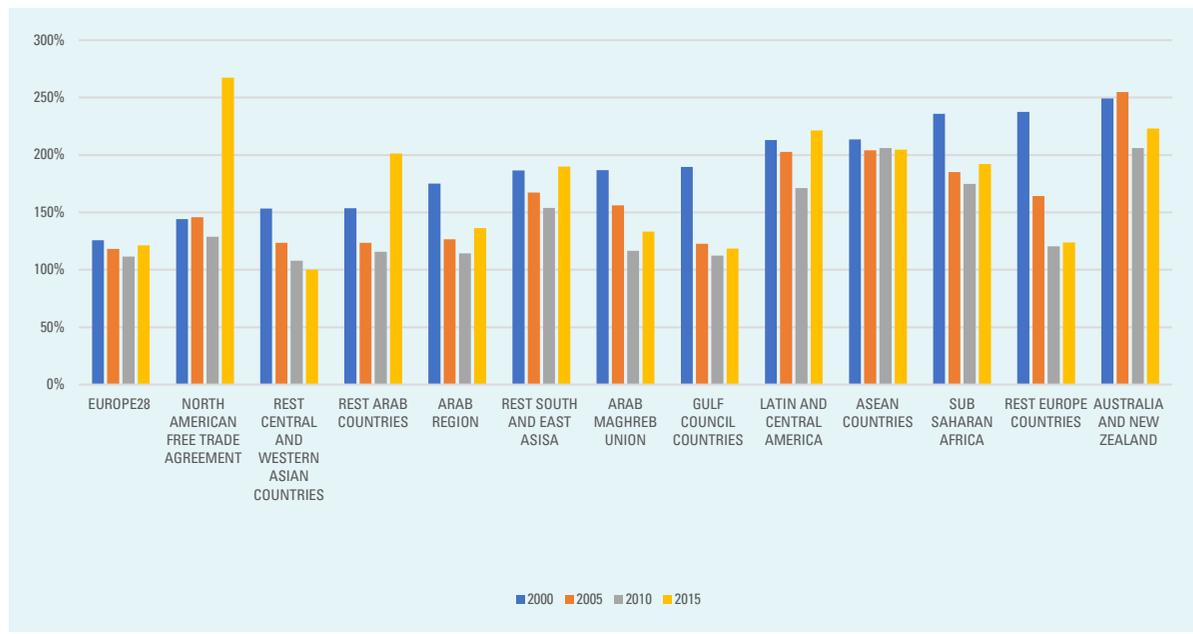


## 10. Egypt

**Figure A3.19** Trade costs for Egyptian imports (As a percentage of import values by origin)

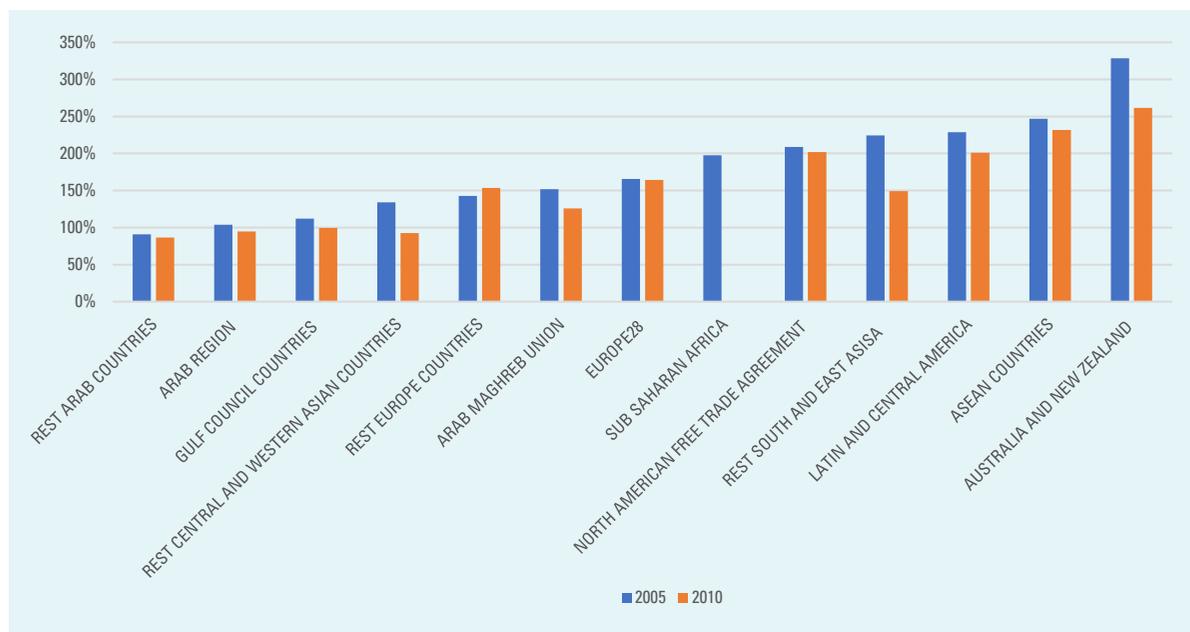


**Figure A3.20** Trade costs for Egyptian exports (As a percentage of export values by destination)

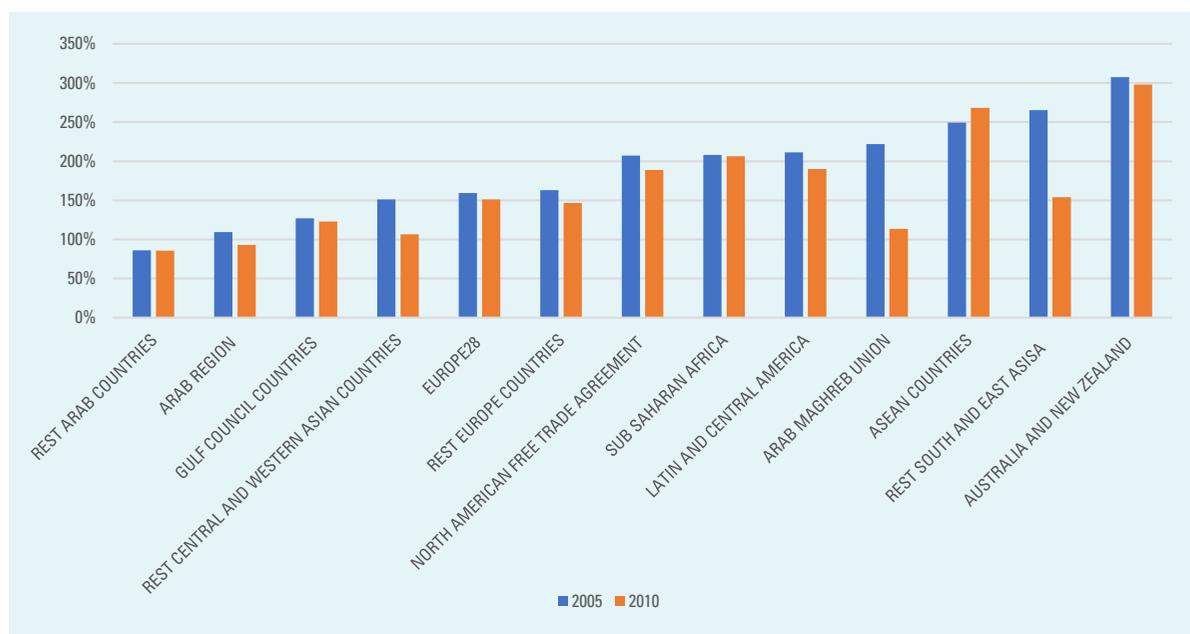


## 11. Syrian Arab Republic

**Figure A3.21** Trade costs for Syrian Arab Republic imports (As a percentage of import values by origin)

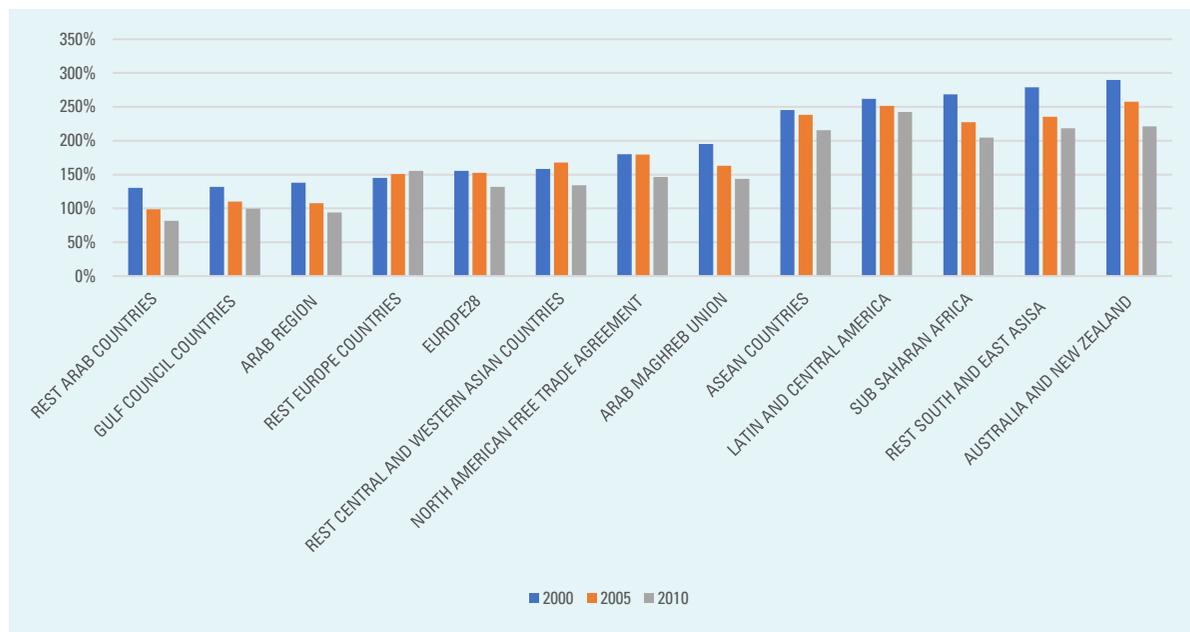


**Figure A3.22** Trade costs for Syrian Arab Republic exports (As a percentage of export values by destination)

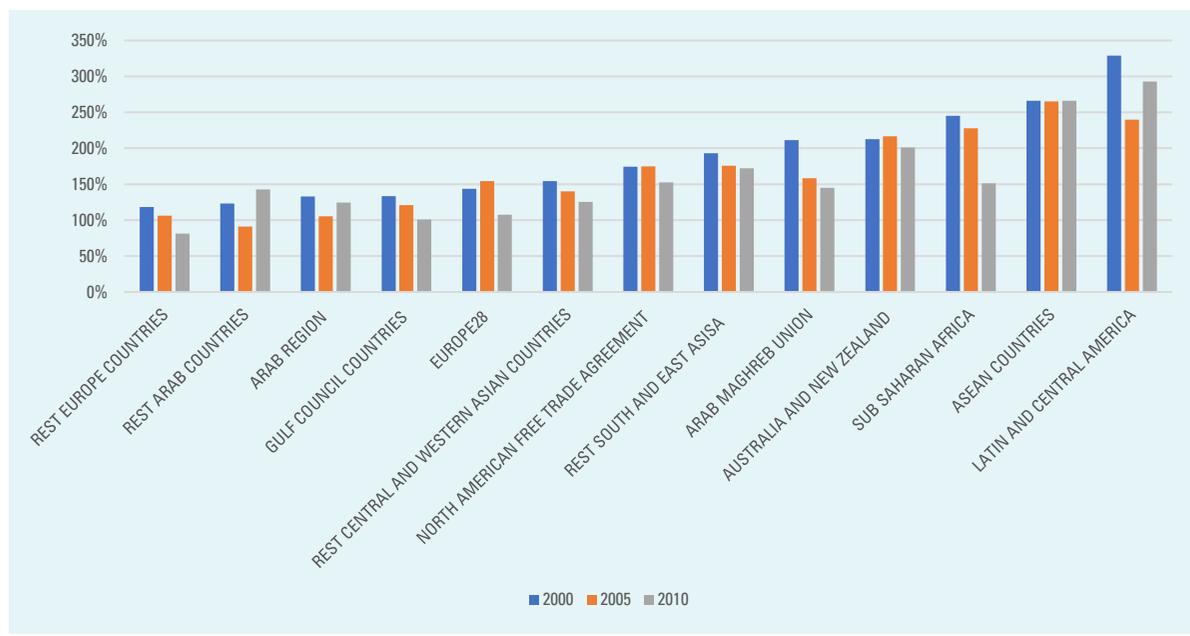


## 12. Lebanon

**Figure A3.23** Trade costs for Lebanese imports (As a percentage of import values by origin)

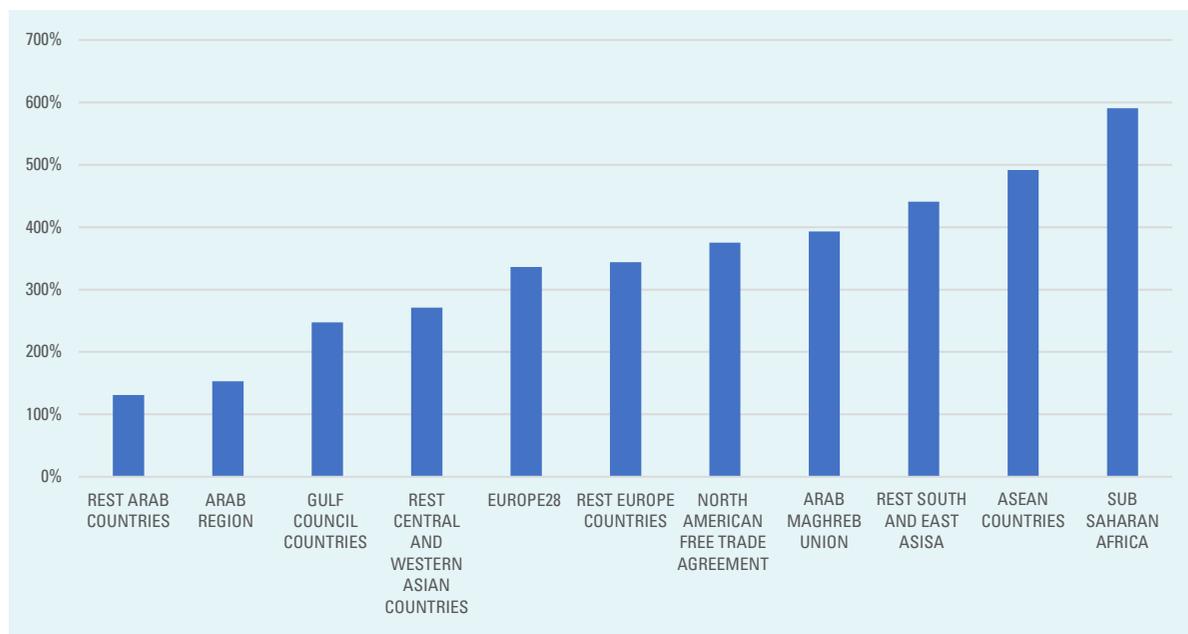


**Figure A3.24** Trade costs for Lebanese exports (As a percentage of export values by destination)

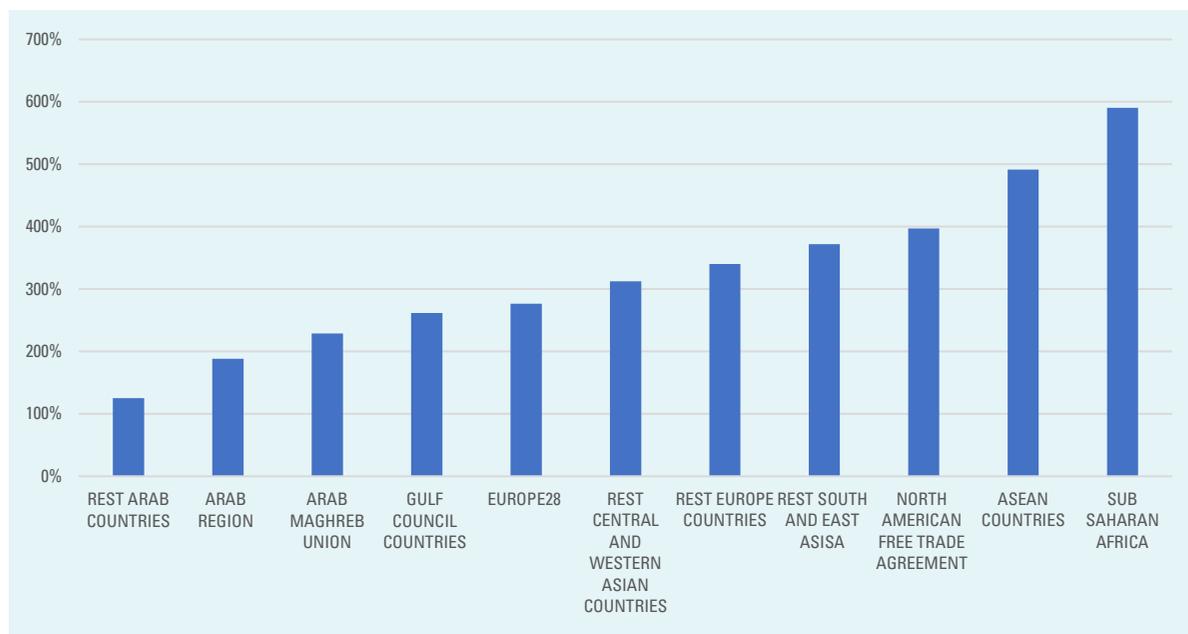


### 13. State of Palestine

**Figure A3.25** Trade costs for Palestinian imports (As a percentage of import values by origin), 2010

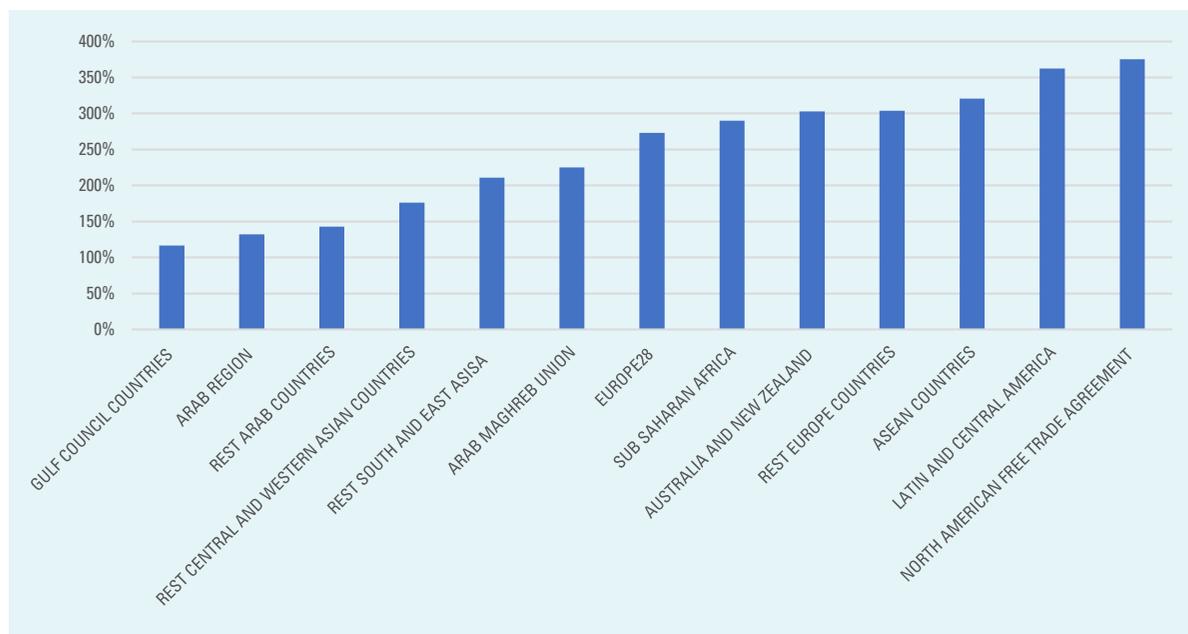


**Figure A3.26** Trade costs for Palestinian exports (As a percentage of export values by destination), 2010

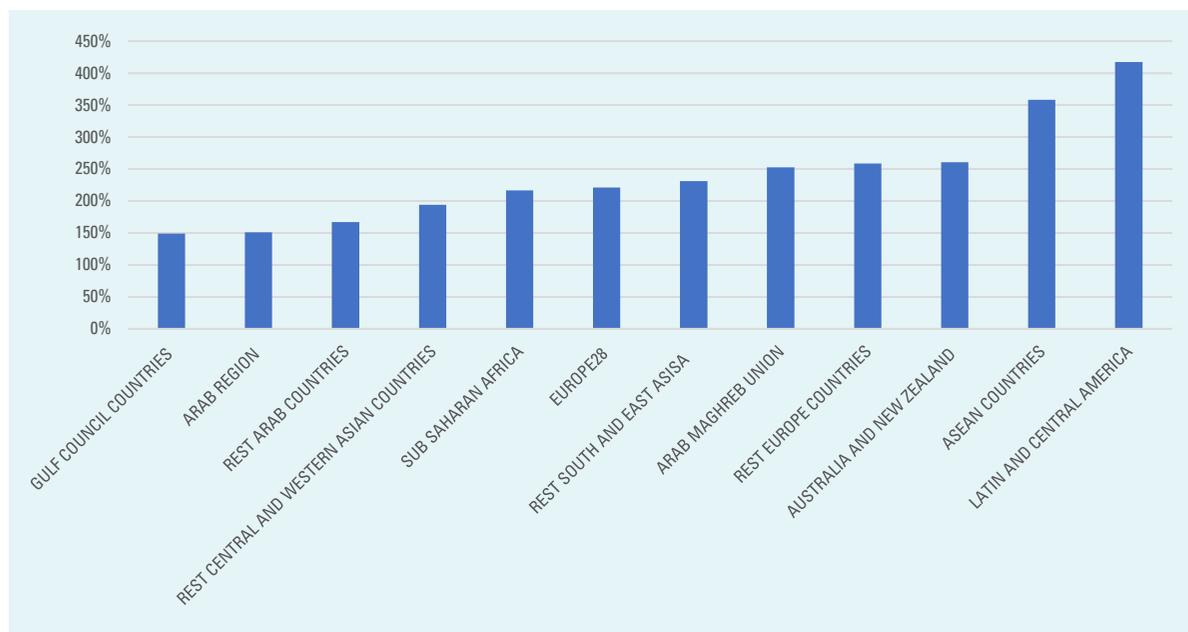


## 14. Sudan

**Figure A3.27** Trade costs for Sudanese imports (As a percentage of import values by origin), 2015

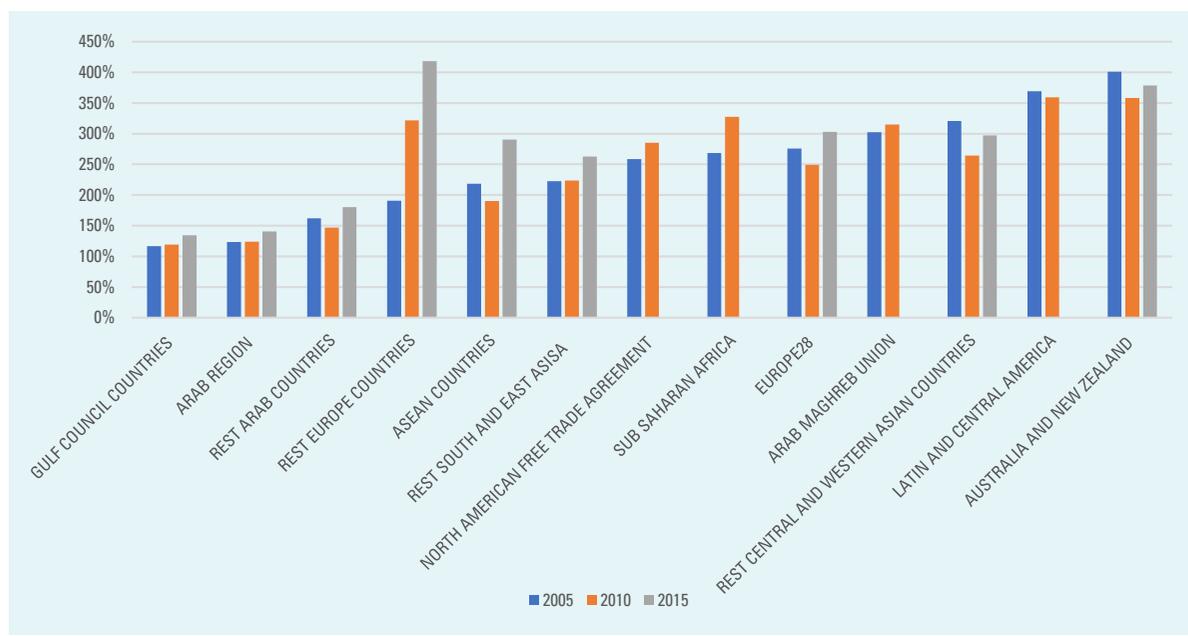


**Figure A3.28** Trade costs for Sudanese exports (As a percentage of export values by destination), 2015

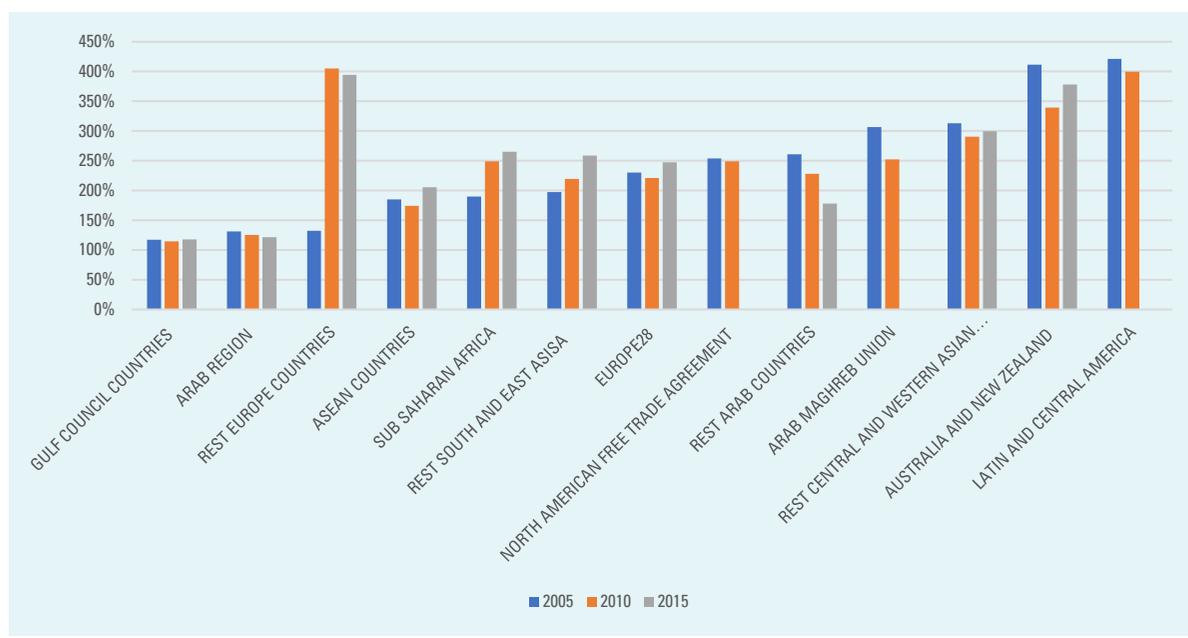


## 15. Yemen

**Figure A3.29** Trade costs for Yemeni imports (As a percentage of import values by origin)



**Figure A3.30** Trade costs for Yemeni exports (As a percentage of export values by destination)





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# Endnotes

## Chapter 1

1. The figure refers to the additional cost added to the original value of the product.

## Chapter 2

2. See: <https://transportgeography.org>.
3. Such as shipping time and costs, inland transport, insurance, warehousing, handling costs, etc. for each container and the value of the container content, among others.
4. Authors' calculation using data from World Bank 2016.
5. See: [www.shipping.com.jo/page/aqaba-port-statistic](http://www.shipping.com.jo/page/aqaba-port-statistic).
6. See: [www.maritime-executive.com/article/imo-agrees-to-co2-emissions-target](http://www.maritime-executive.com/article/imo-agrees-to-co2-emissions-target).

## Annex 1

7. See: [www.unescap.org/resources/escap-world-bank-trade-cost-database](http://www.unescap.org/resources/escap-world-bank-trade-cost-database).



Trade costs are a major determinant of trade competitiveness and integration in regional and global economies. The Arab region has high trade costs, resulting in low trade integration at the regional and global levels. The present study investigates trade costs in the region, both at the national economy level and the sectoral level.

The results show varying trade costs between Arab countries, and between Arab countries and their trade partners. Trade costs with traditional trade partners, such as the European Union, are moderate; however, they are high with other regions. Similarly, some sectors showed better trade costs than others. Overall, trade costs in the Arab region remain an obstacle to expanding the region's participation in international trade, and to intraregional integration. Various factors contribute to this, including transport and logistics costs. It is therefore crucial to further investigate trade costs at the country level, and focus on decomposing trade costs into their basic components.

