TRANSPORTATION NETWORKS
IN THE OIC MEMBER COUNTRIES
IMPACT ON TRADE AND TOURISM

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Social Research and Training
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INTRODUCTION

Transportation is an indispensable element in any economic activity. Without physical access to resources and markets, economic growth and development cannot be possible. An efficient multimodal transportation system is, therefore, a fundamental element in sustainable economic development. It facilitates the transfer and movements of people, goods, services and resources and improves access to local and international markets. The development of modern and efficient multimodal transportation infrastructures and services, together with adequate and coherent relevant laws and regulations, are also crucial factors for enhancing and strengthening regional economic cooperation and integration.

The OIC countries as a group account for one sixth of the world land area and enjoy a vast strategic trading region. In addition, they are well-endowed with potential economic resources in different fields and sectors, such as agriculture, energy and mining, tourism, etc. In order for the OIC countries to maximize the efficient utilisation of these inherent potentials, with a view to enhancing trade and economic development and thus competitiveness and market integration, it is necessary, inter alia, to establish a multimodal transportation system which is efficiently functioning not only at the individual country level but also at the OIC regional level. Improving transportation networks in and among OIC countries is, therefore, a key factor that has direct impacts on enhancing and strengthening trade and economic integration in OIC countries at both the regional and world trading system levels.

Transportation networks facilitate mass carriage of goods, which is of special importance to the OIC countries since the majority of them are producers of primary commodities, mainly fuel and agricultural ones. Integrated transportation networks at both OIC regional and sub-regional levels would be also in harmony with the Islamic free trade area and the Islamic common market strategies of the OIC. The diverse geographic characteristics of the OIC countries, which considered as a natural constraint for enhancing economic and commercial cooperation among them, make it necessary to fully utilise the already established transportation networks on the one hand, and to develop them further, on the other.

Yet, as the present report shows, the low level of transport capacity in OIC countries, as a group, has undoubtedly, reflected in poor transport performance and ineffective use of the existing transport facilities, a factor which has, among others, negative impact on trade and tourism activities in these countries. It is clear that the present situation of transportation networks in the OIC countries, in terms of both capacity and performance, is still far from reaching the desired level of impact on intra-OIC trade and tourism activities.
CAPACITY OF THE OIC COUNTRIES IN VARIOUS MODES OF MODERN TRANSPORT

A comparative look at the capacity of the OIC countries in different modes of modern transport reveals some key challenges ahead of intra-OIC cooperation in trade.

Road Transport

Road network length, when standardized on a per capita basis, can be considered a proxy for measuring the extent to which every person in any given country or region is served by roads. The length of road network per capita within the group of OIC member states is modest when compared to other developing countries, developed countries as well as the world average. Based on the most recent data available as of 2011, the average road length for 1000 people living in the OIC member countries is calculated as 2.52 km, which compares poorly to the world average of 5.42 km (Figure 1 left panel). The average road density is 3.19 km in other developing economies. In developed economies, however, per 1000 resident people are served by as much as 15.52 km of road network.

When standardization is based on the land area, the average road network of 126 km per 1000 km² land area within the OIC countries group is almost the halfway to the other developing economies (268 km) and less than one third of that of the developed economies (479 km). The world average is currently 315 km (Figure 1...
right panel). Measured through either approaches, the results point to the strong need for further development of the road networks in the OIC member countries.

**Rail Transport**

Heavy industries are traditionally linked to the rail transport systems and the containerization improves the flexibility of rail transportation by linking it with road and maritime modes. The average length of railway serving 1000 people is only 70 meters within the group of OIC countries, while the world average is 170 meters – more than double (Figure 2 left panel). The poor figures in the OIC countries are mainly caused by the stagnant rail line infrastructure growth coupled with the increasing population. Other developing economies are also lagging behind the world with their average 120 meter of railway length per 1000 people, which is far below the average 540 meter rail network in operation for every 1000 people resident in the developed countries.

![Figure 2]( railways.png)

*2005 or later.

In terms of land coverage, again, the average 3.27 km of railway per 1000 km² land area of the OIC countries is still below that of the group of other developing economies, which averages at 7.69 km (Figure 2 right panel). It is observed that the improvement in overall railway figures for the OIC countries as a group has so far been relatively poorer in comparison to those of other developing countries and the world.
Air Transport

Beyond the benefits of fast and inexpensive transcontinental travel, air transport also is now a vital mode for shipping high value goods that need to come to market quickly, such as agricultural products subject to spoilage. Air transport has become an essential economic and social conduit throughout the world. According to 2010 World Health Organization (WHO) data, it is now the primary mode of transport for tourism activities.

The average number of air passengers in the OIC countries, measured on per 1000 people basis, is still below the desired levels. According to the most recent data available as of 2011, the density of the domestic and international passengers carried by aircrafts registered in the OIC countries is calculated as 118 per 1000 people (Figure 3 right panel). The world average is recently 346 passengers. Other developing countries, on the other hand, followed closely the OIC countries as a group with an average density of 128 passengers. Moreover, the passenger density in other developing countries has tripled in number since 1990, surpassing the average pace of growth in the OIC member countries over the same period.

Figure 3
Air Network Density
* 2005 or later.

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Source: Appendices 5-6

The low frequency of air travel in the OIC countries has to some extent been reflected in the small number of aircraft departures compared to the world average. Calculations based on the most recent data available reveals that the density of domestic and international takeoffs by carriers registered in the OIC countries is only 1.21 per 1000 people, while the world average is 4.02 departures for the same number of people (Figure 3 right panel).
The low levels of air traffic observed in the OIC countries can be attributed to the lack of infrastructure facilities such as proper terminals and paved runways which are very low in number and size.

**Sea Transport**

With more than 100,000 km of total coastline, OIC countries possess significant potential for maritime trade. Yet, the current level of merchant fleet capacity – expressed in tonnes per 1000 people – in the group of OIC member countries is far from enabling the group to fully utilize this potential. The total fleet capacity per 1000 people is measured as only 53 tonnes compared to the world average of 199 tonnes (Figure 4). Other developing countries as a group have improved their fleet capacity significantly since 1990, reaching 175 tonnes per 1000 people.

![Figure 4](chart.png)

*2005 or later.*

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Source: Appendix 7

Liner Shipping Connectivity Index aims at capturing a country’s integration level into global liner shipping networks. The index is generated from five components, which are mainly related to the maritime capacity of the country. According to this index, the majority of the OIC countries have poor shipping connectivity performances ranging between 0 and 20 index units (Figure 5). Malaysia, United Arab Emirates, Saudi Arabia, Morocco, Oman and Egypt are the OIC countries with the highest index values. These countries also outperform other developing countries other than China. Almost half of the developed countries, on the other hand, stand out with their high maritime capacities indicated by index values greater than 50 index units.

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1 Index is based on the country with the highest index value in 2004 (China=100).
2 These are number of ships, total container carrying capacity, max. vessel size, number of services and number of container shipping companies.
The modest transport development figures in various transport modes presented above indicate that transportation infrastructure in the OIC countries is incompetent and the transportation system as a whole offers poor connectivity, which is an essential ingredient of enhanced trade cooperation among the member states.

PERFORMANCE OF THE OIC COUNTRIES IN VARIOUS MODES OF MODERN TRANSPORT

The underdeveloped transport infrastructure coupled with poor transport links between the OIC member states has long stifled intra-OIC cooperation in trade and tourism. Even the busiest airports in the OIC member countries, such as Jakarta\(^3\) and Kuala Lumpur\(^4\) international airports, have direct flights to only a few OIC countries. For example, Jakarta International Airport hosts scheduled passenger flights to only six member states\(^5\). Similarly, Kuala Lumpur International Airport organizes cargo flights to only four member countries\(^6\). Currently, approximately 20 member countries have only one international airport in operation. This inadequate direct air link, observed even at the busiest airports, and the resulting higher freight and human transport costs and times among the OIC countries compounds the inability to operationalize intra-OIC trade and tourism cooperation efforts. On the other hand, although the group of OIC countries comprises mainly of countries that are adjacent to each other, the poor rail connectivity among adjacent OIC member countries undermines the prospects for building efficient trade corridors. Many OIC member countries have no railway connections to adjacent member states and many others face the break-of-gauge problem which leads to an increase in the duration and cost of rail shipments. Thus, apart from the negative impacts of the poor transport

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\(^3\) 16\(^{th}\) busiest airport by passenger traffic according to Airports Council International (ACI) 2010 data.
\(^4\) 28\(^{th}\) busiest airport by cargo traffic according to Airports Council International (ACI) 2009 data.
\(^5\) These are Malaysia, Saudi Arabia, United Arab Emirates, Kuwait, Qatar, Brunei, Turkey and Yemen.
\(^6\) These include Azerbaijan, Indonesia, Turkey and Uzbekistan.
development on overall OIC trade and tourism volume, the poor rail connectivity among the adjacent member countries pose additional challenge to creating a stronger intra-OIC cooperation in bulk trade.

Indeed, the performance of the OIC countries in two major modes of passenger and goods transport was modest in 2009. The group of OIC member countries accounted for only 4 and 5 percent of the total goods and people transported through the rail networks in the world during 2009, respectively (Figure 9). The member countries as a group had slightly better figures in air transport with shares of 10 and 9 percent in total air freight and passengers carried on planes during the same year, respectively.

![Figure 6](image)

Figure 6
Share of OIC Countries in Rail and Air Transport 2009

![Figure 7](image)

Figure 7
Logistics Performance Index
Source: World Bank WDI Online
*Thresholds are based on World Bank classification

Clearly, the poor average transport capacity figures observed in the group of OIC member countries translates into incompetency in logistics, which is the backbone of trade. Logistics Performance Index measures the performance of a country along its logistics supply chain and provides qualitative evaluations of that country in six areas, four of them\(^7\) being directly linked to the level of transport development. According to this index, as of 2009, 35 percent of the OIC countries had poor logistics performance figures below 2.40 index units (Figure 10 left panel), while only 23 percent of other developing countries were below this threshold. United Arab Emirates (3.63) and Somalia (1.34) were the two OIC member countries with the highest and lowest logistics performance index values, respectively (Figure 10 right panel). In contrast,

\(^7\) These are infrastructure, international shipments, logistics competence and timeliness.
74 percent of the developed countries recorded index values greater than 3.43 index units.

**LINKING TRANSPORTATION TO TRADE AND TOURISM**

From an economic development point of view, efficient transportation system can positively affect the pace of growth and development of trade and tourism activities through at least four ways (Weisbrod, 2008):

i. by enabling *new forms of trade* among industries and locations;

ii. by reducing *carrying cost* and enhancing *reliability* of existing trade and tourism movements;

iii. by expanding the *size of markets* and enabling *economies of scale* in production and efficient distribution of goods and services; and

iv. by increasing *productivity* through access to more diverse and specialized labor, supply and buyer markets.

In the light of this argument, the impact of transportation on trade and tourism is highlighted in this section through examining the relation between the capacity in key transport indicators and per capita trade performance at the country level. The data on the transport capacity covers the period starting from the year 2000 whereas the data on per capita trade and tourism figures are averaged over the period 2000-2009 for each country. For road transport, Figures 8a and 8b indicate a strong relationship between the growth in per capita trade volume and the road infrastructure development. The relationship between the two indicators is almost linear, implying that the growth in the per capita road network is linked to the increase in trade and tourism volume on a constant scale.
It is also clear from the figures that the OIC countries, with low road density, have a significant potential for increasing their trade and tourism volumes by improving their road network infrastructure. The OIC member countries apparently cluster in the low trade (tourism) volume-low road density region. The clustering of non-OIC developing and advanced country groups in the middle and upper parts of the figure is also evident, indicating that these countries achieved higher trade and tourism volumes in return for their higher levels of road network development. The lack of investment in road infrastructure seems to set back the ability of the member countries to increase their trade and tourism, thus putting them behind the other developing and developed countries.
A similar result is observed in the case of rail network. In this regard, Figures 9a and 9b reveal significant mutual relationships between the rail per capita growth and the growth in per capita trade and tourism volumes. Again, the OIC countries appear mainly in the low trade (tourism) volume-low rail per capita region and the positive linear relationship between the indicators are preserved in each country sub-group included in the figure. The strong correlation between rail transport capability and trade performance offers a motivation for the OIC member states with underdeveloped rail infrastructures to extend their rail networks. For example, in the landlocked Uganda only an approximate 300-km portion of the total 1,266 km rail network is operational and it lacks connections to the neighboring countries such as Sudan, Congo (DR), Rwanda and Tanzania, 3 out of which have direct access to sea. Other lines were closed mainly due to their technical deficiencies. Railways carry less than 10 percent of export and import traffic in Uganda. Transit time to the Port Mombasa of the adjacent Kenya is about 10 days (Itazi, 2010). Zambia, on the other hand, is another non-OIC landlocked country within the region and almost 2000 km of its rail network is functional with direct and indirect links to adjacent Congo, Tanzania, Malawi, Zimbabwe and Angola. Unsurprisingly, its average per capita trade volume over the last ten years has been as high as four times that of Uganda.
Despite the considerably varied air transport capabilities in OIC countries, the structural link between the development of air transport and trade and tourism levels is much more clear (Figures 10a and 10b). Developed economies again cluster at the upper right corner of the figure where the higher per capita trade and tourism volumes are associated with the higher levels of development in the air transport sector. The OIC countries are apparently represented on a large scale of air transport capabilities, where the member countries with a more developed air network performing better in trade and tourism activities.

CONCLUDING REMARKS AND RECOMMENDATIONS

The current level of transport capacity and performance in the OIC countries points to a strong need for more progress in transportation development within the group of OIC countries. When the average transportation figures of the OIC countries, as a group, are related to the figure of either population or land area, they remained lagging compared to the rest of developing countries as well as to the world average.

In this framework, OIC countries face critical obstacles and challenges in the field of transportation in particular in connection to trade and tourism. Already inadequate
infrastructure and maintenance services cannot be improved considerably due to insufficient financing resources and investment in transportation sector and transportation infrastructure projects. Complex and prolonged customs and border-crossing procedures, especially in land-locked member countries, prevent the development of trade and transportation.

Another challenge faced by OIC countries is inadequate implementation of trade and transport facilitation measures and lack of information and knowledge-sharing among OIC member countries in this area. Lack of a sound, harmonized, and adequate legal and regulatory frameworks, both at national and OIC regional level further exacerbates this challenge. Moreover, OIC countries lack the adequate human and institutional capacity of relevant transportation authorities. The use of Information and Communication Technologies (ICT) in the area of transport, trade facilitation and tourism is also lagging.

In the light of the above-identified obstacles and challenges, the following recommendations can be made at both national and OIC cooperation level.

At the national level, the solution of infrastructure problems requires sustainable longer-term investment and involvement of the private sector in transport project investments through OIC joint venture transport projects. Measures should be developed to improve maintenance of existing roads, railways, seaports and airports as well as to improve the quality of these transport modes services. Efficient resources should be allocated to the projects, programs and studies in transport sector, in collaboration with regional and international financial institutions.

More attention from private investors should be attracted through rational incentives. Private investments via Public-Private Partnership (PPP) scheme have become popular around the world as a tool for improving transport infrastructure. The 4th United Nations Conference on the Least Developed Countries (LDCs) which was held in Turkey in early May 2011 hosted various meetings on the issue of insufficient infrastructure development in the LDCs and the PPP scheme was set forth as a potential solution to this problem.

Transport sector reform has to be set in the context of general reform of public institutions and transport development plans should be integrated into their national strategies taking into consideration regional initiatives. National Trade and Transport Facilitation Committees (NTTFC) can be established for better coordination among private and public sectors institutions. This can help to identify the major transport related obstacles to tourism in the member countries by increasing coordination among the ministries of transport and tourism. Such mechanisms should be further improved by developing tools for knowledge-sharing on best practices and using ICT for trade and transport facilitation and tourism in cooperation with relevant regional and international organizations.
At the OIC cooperation level, developing an OIC regional transport approach requires close cooperation and coordination between the member countries as well as the different organization and agencies involved. It also requires concluding of framework agreement on the priorities both in the infrastructure and policy areas. High level policy coordination among Ministers of Transport in member countries can help promote dialogue on the challenges and problems facing the sector in the OIC region.

Creating a database of statistical information from the OIC member countries in the field of transport and exchanging of information among OIC member countries about their domestic and international transport facilities can help improve the networks throughout the OIC. Enhancing partnership with relevant regional and international organizations in the field of transport to avoid duplication and enhance effectiveness. In this framework, a master plan for the transport corridors in the OIC Member States including identification of the obstacles on the existing transport corridors in the OIC sub-regions should be prepared. Projects similar to the Port Sudan-Dakar railway line project should be designed and implemented to create grounds of cooperation among OIC member states in the field of transportation.

Due to the significant variations in the spatial distribution of population, the intensity of economic activities and the level of economic development among the member countries, the potential solutions to poor transport development should be tailored to the challenges faced by each individual country. Particularly for the land-locked member countries, the land transport is vital to economic development as the infrastructure development significantly contributes to the economic growth by reducing production costs, contributing to the diversification of the economy and, most importantly, linking these regions to transport corridors. In this regard, the OIC effort to coordinate OIC transport related activities with the Transport Corridor Europe – Caucasus – Asia (TRACECA) as well as the UN Special Programme for Central Asia (SPECA) is worthwhile.

REFERENCES


SESRIC, BASEIND Database.


UNCTAD, UNCTADstat Online Database.

World Bank, World Development Indicators (WDI) Online Database.

### Appendix 1: Road Network Land Density, km per 1000 km²

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* 2005 or later.
Source: World Bank WDI

Appendix 3: Rail Network Land Density, km per 1000 km²

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* 2005 or later.  
Source: World Bank

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**Appendix 4: Rail Network Population Density, km per 1000 heads**

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* 2005 and later.
Source: World Bank WDI

Appendix 5: Air Network Density (Departures), departures per 1000 heads
Appendix 6: Air Network Density (Passengers), departures per 1000 heads

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* 2005 or later.
* Domestic takeoffs and takeoffs abroad of air carriers registered in the country.
Source: World Bank WDI

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* 2005 or later.
^ Includes both domestic and international aircraft passengers of air carriers registered in the country.
Source: World Bank WDI

Appendix 7: Maritime Fleet Capacity Density, tonne per 1000 heads
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* 2005 or later  LL: Landlocked
* Deadweight is the weight measure of a vessel's carrying capacity.
Source: UNCTAD and World Bank