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**ESCWA vision for a multimodal transport system
in the Arab region****Summary**

The present document describes a three-year project proposed by the Economic and Social Commission for Western Asia (ESCWA) aimed at formulating a strategic vision for a multimodal transport system in the Arab region.

The project will build on analysis of present transport flows between Arab countries, and between the region and the rest of the world, and on estimates of future flows according to different scenarios based on global megatrends and their potential effect on the Arab region. It will also recommend improvements needed in transport infrastructure and policy to meet future demand efficiently and sustainably.

It will contain a strategic vision for developing multimodal transport corridors and reforming transport policy, to be agreed upon in consultation with Arab Governments, the League of Arab States, the private sector, civil society, and regional and international financial institutions. An appraisal tool will be developed to assess the feasibility of future infrastructure projects and transport policy reforms, taking into consideration the induced and wider effects of transport on economic and social development. At a later stage, the project will provide innovative development tools to make the vision a reality, including the sharing of funding between Governments, the private sector and interested international development institutions and agencies.

Representatives of member States are invited to take note of the proposed project and make comments and suggestions thereon.

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Introduction

1. Transport is essential for all social and economic activities: raw materials are transported to factories, manufactured goods are transported from factories to marketplaces or consumers, and people travel from their homes to schools and places of work. Throughout history, improvements in transport have helped to connect regions and countries, enabling the exchange of goods, services and ideas, thereby supporting integration and cooperation between societies and cultures.

2. The present paper describes a three-year project proposed by the Economic and Social Commission for Western Asia (ESCWA), with a view to formulating a strategic vision for a multimodal transport system in the Arab region, and tools for assessing investment needs, transport policy reform and environmental impact throughout the region.

I. BACKGROUND

A. TRANSPORT, THE ECONOMY AND SOCIETY

3. The impact of transport systems on economies cannot be understated. It is commonly accepted that transport accounts for 10 per cent of the total cost of products exchanged in markets around the world. Its role in enhancing economic and social development, for example through the emergence of global value chains (GVCs), is crucial.

4. In the United States of America, total transport-related final demand accounted for 9.6 per cent of gross domestic product (GDP) in 2014, according to the Bureau of Transport Statistics in the US Department of Transport. According to US Department of Labor figures, transport accounted for 17 per cent of total consumer unit expenditure of \$53,495 billion that year, ranking second after housing. Nearly 20 million people were employed in transport-related jobs, in and outside the transport industry, in 2002, accounting for 16 per cent of total occupational employment in the United States.

5. In the European Union, it is estimated that the transport industry directly employs around 10 million people and accounts for about 5 per cent of GDP. On average, households spend 13.2 per cent of their budget on transport goods and services.¹

6. In 2006, the Eddington Transport Study concluded that a 5 per cent reduction in travel time for all business-related travel on roads in the United Kingdom could generate savings of £2.5 billion, equivalent to 0.2 per cent of GDP. According to the same study, transport has an impact on the economy in a variety of ways, by:

(a) Increasing business efficiency through time savings and improved reliability for business travellers, freight and logistics operations;

(b) Increasing business investment and innovation by supporting economies of scale or new ways of working;

(c) Supporting clusters of economic activity;

(d) Improving the efficiency of labour markets, labour market flexibility and access to jobs;

(e) Increasing competition by opening up new markets;

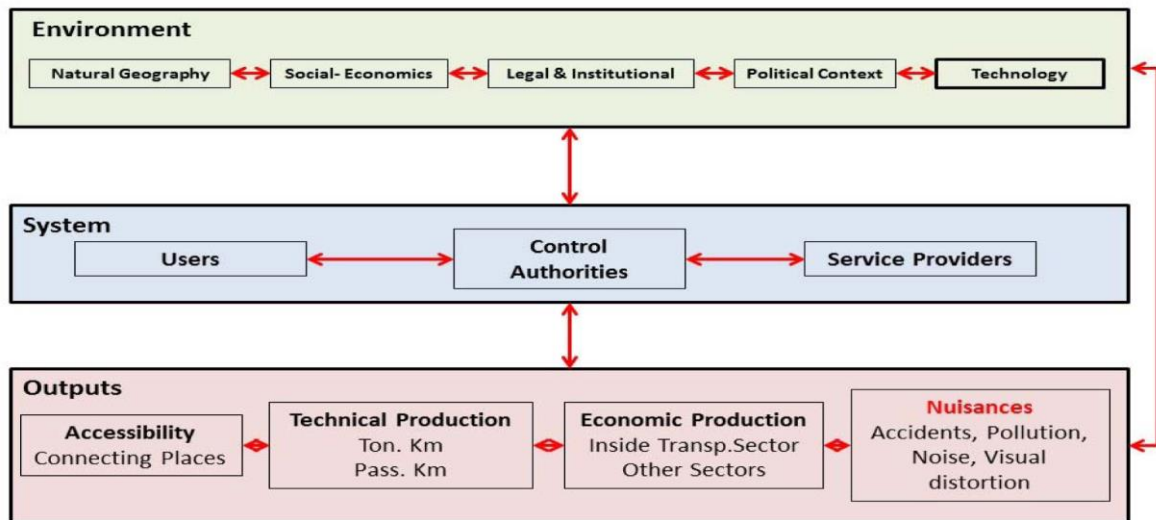
¹ European Commission. EU Science Hub. Available from <https://ec.europa.eu/jrc/en/research-topic/transport-sector-economic-analysis>.

- (f) Increasing domestic and international trade by reducing costs;
- (g) Providing an attractive business environment and good quality of life.

B. A SYSTEMS APPROACH TO TRANSPORT

7. The planning and management of transport, given its complexity, requires a systems approach that takes into account the interaction of a multitude of internal and external factors. While the norm in most of the world, such an approach has been largely missing in the Arab region. Analysis of a transport system (figure 1), should include a study of the system’s environment, the system itself, and its performance, or outputs.

Figure 1. Conceptual framework of the transport system



Source: Adapted from Shalom Reichman, Les Transports: Servitude ou Liberté (Paris: PUR, 1983).

8. Environment takes in geography, the political and socioeconomic context, legal matters, the institutional framework, and technology. The “system” refers to its users (people and goods), the providers of transport services, and the control and regulatory authorities, without which the system could not perform properly. Four categories of output/performance may be examined: accessibility and geographical connectivity; technical performance expressed in ton-kilometres and passenger-kilometres; economic production in terms of added value produced within the transport system and in other sectors; and the adverse effects of transport, such as road crashes, pollution, noise and distortion of the landscape.

9. Understanding the interactions between the elements (sub-systems) outlined in figure 1 is essential to capturing what drives change in transport systems. The impact of performance on the system and its environment may make itself felt only over the long term, while changes in the environment tend to have a sudden, direct and strong impact on the system, and are likely to transform performance.

10. Technological developments, such as the invention of the steam engine and, later, the combustion engine, and the spread of robotics in vehicle manufacture, unleashed revolutions in transport and radically changed how we live and do business. Aircraft and container shipping brought about the most profound change in transport in the twentieth century. Historically, economic, environmental and political factors have also had a profound effect on transport, and in particular on the choice of routes and corridors, old and new. The conflicts that have rocked certain Arab countries since 2011 are just the latest example of how traditional transport routes can be disrupted by external factors, along with production and trade patterns.

11. Using the systems approach reveals considerable disparities in the various components of transport systems across the Arab region and underlines the scale of the challenges facing any plans to build a

homogeneous multimodal transport system as the backbone for balanced and inclusive regional development. Nevertheless, there are complementarities between certain Arab countries and the differences are less pronounced at a subregional level, given that neighbouring countries are more closely integrated with one another.

C. PLANNING TRANSPORT INFRASTRUCTURE

12. Given the nature of transport infrastructure, strategic planning must be conducted over the long term. It should not be confined to conventional cost/benefits analysis, but rather should also consider how judicious investments might create opportunities for future developments. A national transport infrastructure strategy might lay emphasis on investments that will: service production oriented to international trade; complement other infrastructure investments; and create opportunities for further value-enhancing investments. Planning should, in a coordinated fashion, consider needs at the national (country), regional (subnational) and local (urban) levels.

13. Modern planning tends to be operational, whereby forecast models are used not to define final outcomes, but rather to support an iterative process of dialogue between decision-makers, planners and specialists, and the public. Region-wide transport planning would benefit from the creation of a platform to enable such dialogue and the comparison of national transport planning with the needs of the wider region.

D. PAN-ARAB REGIONAL TRANSPORT

14. Observations reveal a weakness of trade between Arab countries as a share of foreign trade, with the Arab region considered the weakest in terms of trade integration. Intraregional exports reached only 5.2 per cent of total regional exports in 2010. Although intraregional exports increase to 18 per cent when oil and its derivatives are included, they remain significantly low when compared with a 65 per cent intraregional export rate between European Union countries and a 49 per cent rate between members of the North American Free Trade Agreement, or even when compared to other developing regions such as the Association of Southeast Asian Nations with an intraregional export rate of 24.8 per cent and African countries with a 12.4 per cent intraregional export rate.

15. The Arab region faces significant challenges, in particular with regard to the cross-border movement of labour, capital and goods that hamper the transformation of complementarities between member States of ESCWA into mutually beneficial regional integration.

16. A key factor is the lack of integrated transport systems and infrastructure, without which the region will continue to struggle to establish regional value chains and participate in the global system of production and distribution, and therefore to achieve greater prosperity and sustainable growth. The complementarities and relative advantages of Arab countries can only be fully realized through improved multimodal transport systems that enhance the interconnectivity between Arab societies and economies.

17. Most Arab countries suffer from weak railway interconnectivity, with many entirely lacking railway lines. The average length of railways in the region is 7 kilometres for every 100,000 inhabitants, compared with 71 kilometres in the United States and 42 kilometres in the European Union, and a global average of 15 kilometres per 100,000 persons.

18. Despite the development of high quality expressways connecting major cities and economic centres in some Arab countries, the total density of road equipment in the region remains weak by world standards. A recent assessment revealed that, on average, there are only 220 kilometres of public roads per 100,000 persons in the Arab region, compared with 2,076 kilometres in the European Union, 2,049 kilometres in the United States, and a global average of 875 kilometres.

19. With regard to using trucks to exchange goods between Arab countries, reports indicate that around 57 per cent of the time required for truck journeys is lost because of recurrent stops at border crossings for various inspections and controls, resulting in additional costs of around 38 per cent of the journey's original cost.

20. ESCWA has, since 1999, supported the development of an Integrated Transport System in the Arab Mashreq (ITSAM). Since 2014, given growth in the Commission's membership, it has promoted the broader Integrated Transport System between the Arab States (ITSAS). Those initiatives have resulted in regional agreements on international roads and railways and an action plan to develop them, in line with common standards and taking into account the particular conditions of each country.

21. In an assessment carried out in 2013, ESCWA found that, although reports by member States indicated 100 per cent implementation of the road agreement, in fact it did not exceed 60 per cent. Repeated reports have highlighted the difficulty in accurately assessing the rate of implementation of the railroad agreement, and that missing links, which accounted for 59.5 per cent of the network in 2003, still remain, at least in the Arab Mashreq.

22. While useful in terms of mapping international road and railway networks in the region and the missing links that need to be filled for their integration, the international agreements remain weak in terms of commitments to address those links. They fail to provide clear instruments for financing the construction of infrastructure and are conditioned by the particular circumstances of various countries. Furthermore, they do not contain level of service or level of safety provisions, which means that segments are not necessarily compatible across borders.

Figure 2. Ottoman Empire rail network, 1914

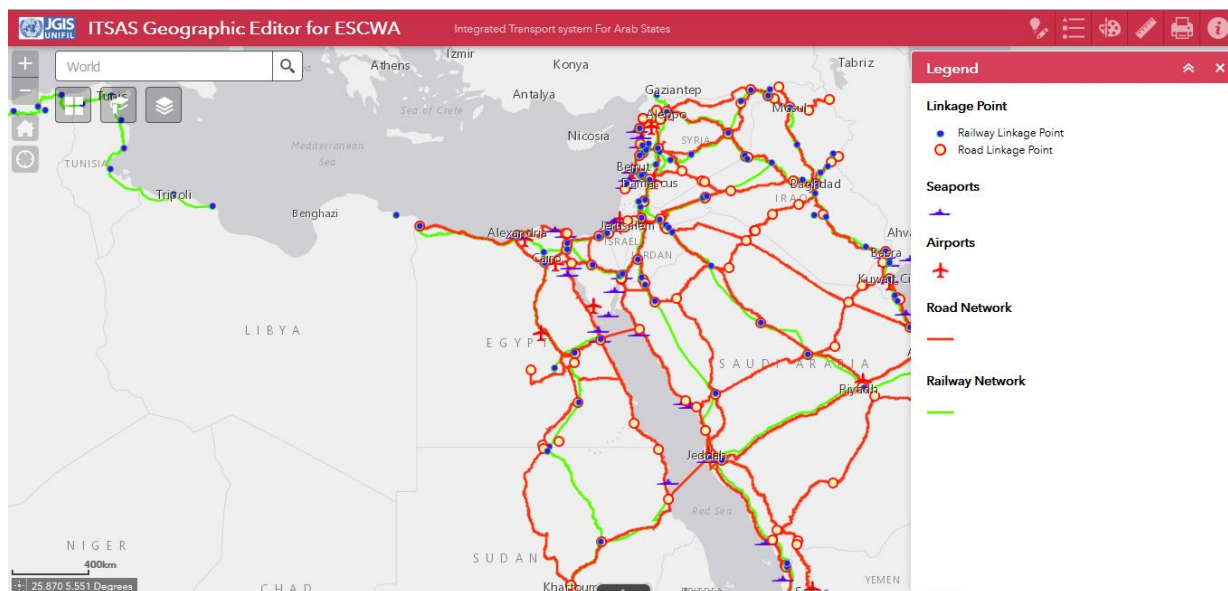


Source: Khairallah, Sh. *Railways of the Middle-East 1856-1948, Political and Economic Background* (Beirut: Librairie du Liban, 1991).

Note: The boundaries and names shown, and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

23. At the fifteenth session of the ESCWA Committee on Transport and Logistics, held in Rabat on 27 and 28 January 2015, the development of an e-platform for information updates on ITSAS was requested. The League of Arab States also requested support from ESCWA to expand ITSAS railway and road networks across all Arab countries. In response, a concept for that project was presented and endorsed at the Committee's sixteenth session, held in Cairo on 23 and 24 November 2016. ESCWA and the United Nations Interim Forces in Lebanon (UNIFIL) are developing a pilot ITSAS-GIS (geographical information systems) map project (figure 3).

Figure 3. ITSAS-GIS map project (partial view)



Source: ESCWA and UNIFIL (2017).

Note: The boundaries and names shown, and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

24. The project is being proposed to formulate a joint strategic vision to implement the components of a multimodal transport system for optimal interconnectivity between Arab countries, and between the region and the rest of the world. The project builds on previous steps taken by ESCWA in this field, by increasing understanding of the economic and social viability of multimodal transport systems and their impact on stimulating innovative projects for production and distribution between countries that contribute to greater growth, wellbeing and prosperity.

II. THE MULTIMODAL TRANSPORT PROJECT AND ITS PHASES

25. The purpose of the project, which consists of five phases (figure 4) is to:

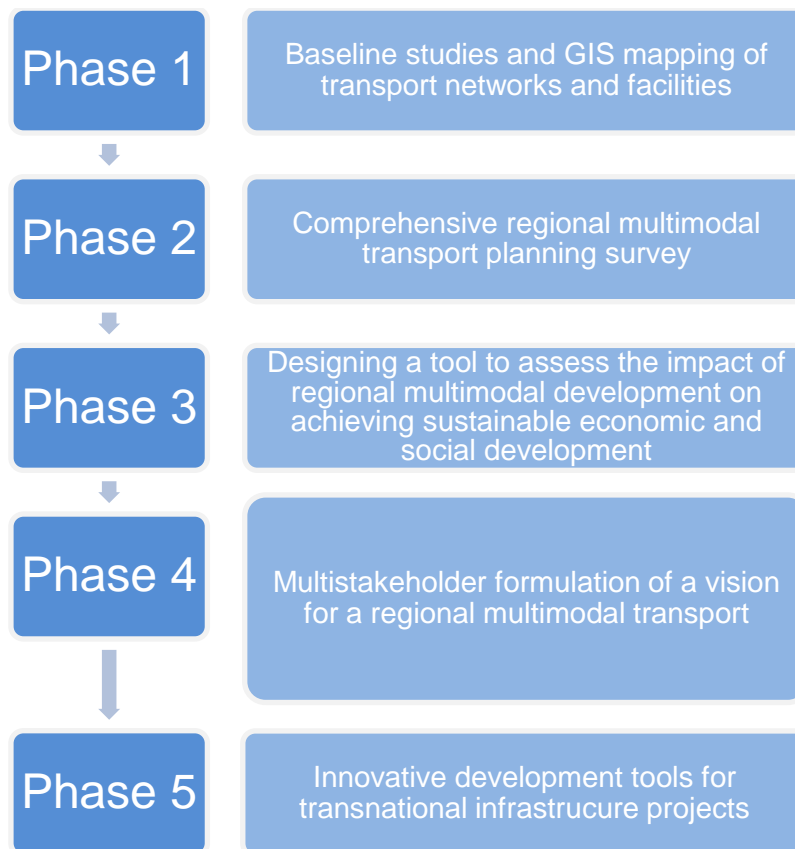
- (a) Develop a conceptual framework for assessing the future of transport in the Arab region;
- (b) Study megatrends likely to have an impact on transport infrastructure planning in the region;
- (c) Produce an ITSAS-GIS map of existing transport networks and flows, in partnership with the IDB and UNIFIL;
- (d) Undertake a comprehensive multimodal transport planning study in the Arab region to assess the performance of transport networks and facilities, identify potential bottlenecks, and examine scenarios taking into account potential future needs and global developments;

(e) Develop an appraisal tool to assess developmental impact and returns on investment in future regional transport infrastructure, and policy reforms, so as to formulate an overarching vision;

(f) Facilitate multistakeholder dialogue between Arab Governments, the private sector, civil society, the League of Arab States, and regional and international financial institutions, with the aim of producing a mutually agreed-upon vision for multimodal transport in the region;

(g) Support the development of proposals for reform programmes and infrastructure projects for submission to interested donors.

Figure 4. Phases of the multimodal transport project



A. PHASE 1: BASELINE STUDIES AND GIS MAPPING OF TRANSPORT NETWORKS AND FACILITIES (6 MONTHS)

26. The current phase entails completing theoretical and conceptual studies on the contribution of transport to economic and social development and on the benefits of increasing regional interconnectivity between national transport networks, so as to achieve economic integration by benefiting from the comparative advantages of Arab countries in a common Arab space for production and exchange. Preparatory studies are being conducted in three fields, which together form the theoretical and conceptual foundation of the proposed project.

1. Conceptual framework study

27. The purpose of the study is to promote a better understanding of the dynamic links and causal relationships between complex transport systems and their changing geographic, economic and social environments. Basic concepts will be adopted based on the schematic representation of the transport system

proposed by Reichman² in the 1980s and subsequent contributions that highlight the depth of the dynamic influences between a system's components and its environment, on the one hand, and between the outputs of a system and its environment, on the other. The study determines the engines of change that drive significant transformations in transport systems, and identifies the comparative advantages of different transport modes (road, rail, water and air) and the optimal uses of those modes and their structures, in accordance with the type of materials being transported, journey distances, and transport conditions and features.

2. Better understanding the role of transport in economic and social development

28. The aim of the study is to enhance the conceptual framework to better understand the role of various transport systems in achieving economic and social development, by studying the impact on new investment of expanding the economic space for production and exchange. The study determines indirect and non-traditional outcomes that improve the economic and social impact of spatial interlinkages. It also enables a new approach to analysing the relationship between establishing transport and development systems that take into account disparities between areas and countries with mature and integrated transport networks (where the introduction of new transport links will have a marginal effects) and areas and countries that lack the required transport interconnectivity (where investments can be used to develop new segments with significant impact on promoting economic and social development and improving living standards), especially when such segments strengthen interregional connectivity to better benefit from the comparative advantages of geographic regions, which cannot be achieved at the level of individual countries that are not geographically connected.

3. Megatrends study

29. This study will explore the drivers of change in global transport and megatrends that might bring further significant transformation by 2030, the year set for achievement of the Sustainable Development Goals (SDGs), and address the potential impact of those trends on transport in the Arab region. Examples of such drivers of change include: the relocation of North American and European industries; the growing number of emerging economies; the increasing use of solar and other renewable and clean energies; technological innovations such as hyper-loops and driverless cars; foreseeable advances in digital technology and the internet of things, leading to smart transport; worldwide megaprojects like the Eurasia high-speed rail project and the Chinese "belt and road initiative".

4. ITSAS-GIS Map

30. The web-based ITSAS-GIS map will facilitate follow-up on the implementation of existing international rail and road agreements in the Arab region and provide a full picture of how airports, ports, border crossings and logistics zones perform. It will pinpoint the actual level of service and safety of transport infrastructure and facilities, and track the flow of goods between the region's countries. All of that information will assist in strategic planning and anticipating future demands on transport and logistics between Arab countries. ESCWA is discussing with the IDB the possibility of building the map on the basis of the Bank's GIS map of transport networks and flows between countries of the Organization of Islamic Cooperation (OIC).

B. PHASE 2: COMPREHENSIVE REGIONAL MULTIMODAL TRANSPORT PLANNING SURVEY (12 MONTHS)

31. During this phase, a comprehensive study will be prepared to plan a multimodal regional transport system in the Arab region, in accordance with the classical approach used in transport planning that comprises the following components:

(a) Conducting survey of transport volumes between Arab countries, and between Arab countries and the rest of the world, using a common baseline year; and preparing origin-destination matrixes on passenger

² Reichman, S., *Les Transports: Servitude ou Liberté*, Paris: PUR, 1983.

numbers and the volume of exchanged goods according to the main types of products, the composition of transport modes, the distribution of transport volumes between modes and networks, transport costs and duration, and service and safety levels;

(b) Conducting a survey on policies, strategies and work plans to develop the transport sector in Arab countries and at the regional level; and analysing the compatibility of their outputs with large national development projects and with the 2030 Agenda for Sustainable Development;

(c) Conducting a predictive study on the estimated transport volume in 2030, using the four-step classical modelling approach (transport development, transport distribution, share of transport modes, distribution on network lines), in line with economic and social changes identified in phase-one preparatory studies and with scenarios emanating from the identification of engines of change and expected significant transformations in transport and the global level and their impact on transport in the Arab region. The study will determine expected service and security levels for networks and existing transport facilities in the region, and will identify potential bottlenecks and their locations for all transport modes and the required development programmes to avoid such bottlenecks.

32. The study will set out a general framework to predict the status of multimodal transport in the region in 2030, in terms of expected transport volume and its relationship to the design capacity of existing networks and facilities. It will also provide an analysis of national and regional programmes aimed at developing transport infrastructure and reforming policies to increase benefits from design capacity and remove regulatory barriers to passenger and cargo flows.

C. PHASE 3: DESIGNING A TOOL TO EVALUATE THE IMPACT OF REGIONAL MULTIMODAL
TRANSPORT DEVELOPMENT ON ACHIEVING SUSTAINABLE ECONOMIC
AND SOCIAL DEVELOPMENT (6 MONTHS)

33. During this phase, a software tool will be developed to analyse the impact of infrastructure development and transport policy reform at the regional level on growth and economic and social development in Arab countries beyond traditional approaches to calculating economic viability based on direct costs and returns, which will include inherent impacts and indirect effects such as stimulating innovative production projects that reach beyond national markets that benefit the production and distribution space at the regional level, neighbouring regions and the international economy.

34. This evaluation tool will be reviewed in consultation with national partners, to prepare for its use in the project's fourth phase to formulate a strategic joint vision for developing multimodal transport in the Arab region.

D. PHASE 4: MULTISTAKEHOLDER FORMULATION OF A VISION
FOR A REGIONAL MULTIMODAL TRANSPORT (12 MONTHS)

35. The comprehensive regional transport vision that emerges from dialogue between stakeholders across the region will be based on the studies prepared in the first two phases of the project. It will seek to identify:

- (a) Complementarities and contradictions between national planning instruments;
- (b) Compatibility with the goals of the 2030 Agenda for Sustainable Development;
- (c) Requirements for meeting future demand on transport and logistics infrastructure;
- (d) Elements of greater regional integration that would be most conducive to shared growth and prosperity.

36. The vision will also address the following components:

(a) Regional and international transport corridors for interregional and intraregional flows of people, goods and services;

(b) Preliminary selection of priority megaprojects to be implemented by 2030 and 2050, based on comprehensive criteria regarding the expected direct effects and induced opportunities to bolster sustainable development;

(c) Necessary transport policies;

(d) An evaluation of the likely transformative effect of megaprojects on individual countries, the region and the world. The ITSAS-GIS map tool would enable a qualitative approach for each project and analysis of their regional impact.

37. The elaboration of the vision will be achieved in a transparent, gradual and coordinated manner, as a result of inclusive consultations with the main stakeholders involved in the regional multimodal transport system. The consultations will take the form of a series of workshops with representatives of governments, the private sector, civil society and regional and international financial institutions, to be followed by intergovernmental negotiations.

E. PHASE 5: INNOVATIVE DEVELOPMENT TOOLS FOR TRANSNATIONAL INFRASTRUCTURE PROJECTS (TO BE DETERMINED AT A LATER DATE)

38. An array of tools will be made available to implement the selected priority projects in coordination with regional and international funding agencies, taking into consideration the potential for cost recovery arising from the impact of those projects on individual countries and the region: transport and non-transport profits, and the direct, indirect and induced singularity effects of regional networking.

39. The development tools should be flexible enough to allow recourse to various approaches to project funding, including public-private partnerships, and funding of cross-border projects by international donors, multilateral development banks and the countries concerned themselves.

III. CONCLUSIONS

40. This project will make it possible to launch a mutually agreed strategic vision for an efficient and sustainable multimodal transport system in the Arab region, which would foster regional integration and strengthen inclusive economic and social development. The vision will benefit from an evidence-based approach and transparent consultations involving the region's governments, the private sector and interested regional and international development institutions and agencies.

41. The project will be implemented in collaboration with national focal points in Arab ministries of transport and public works, and in partnership with the League of Arab States represented by the Department of Transport and Tourism and the secretariat of the Council of Arab Ministers of Transport. ESCWA mentioned the project at the thirtieth session of the Council of Arab Ministers of Transport, held in Alexandria, Egypt, on 22 October 2017.

42. The total cost of implementing the project is estimated at around \$3 million over three years. Efforts to secure funding will be conducted in partnership with the Islamic Development Bank and the World Bank Group. The Islamic Development Bank has expressed its interest in funding the GIS component of the multimodal transport system in the Arab region.
