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**Geographic information system for transport networks and facilities
in the Arab region: latest developments**

Summary

The present document provides an overview of the latest developments related to a geographic information system project for transport networks and facilities in the Arab region, following the twenty-third session of the Committee on Transport and Logistics of the Economic and Social Commission for Western Asia (ESCWA), held in Alexandria, Egypt, on 20 and 21 October 2022. The document addresses the plan of the ESCWA secretariat to continue working on this project in the future. It also provides recommendations to member States on ways to optimize the benefits of the project, and move forward in developing an integrated transport system in Arab countries.

The Committee on Transport and Logistics is invited to review the present document and the recommendations set out therein.

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Introduction

1. Pursuant to a recommendation made by the Committee on Transport and Logistics of the Economic and Social Commission for Western Asia (ESCWA) at the close of its fifteenth session, which was held in Rabat on 27 and 28 January 2015, the ESCWA secretariat began implementing a geographic information system (GIS) project for transport networks and facilities in the Arab region.
2. The project entails building an electronic platform to monitor and develop the components of an integrated transport system in Arab countries, by providing the necessary information to conduct the analyses and surveys necessary for planning. The platform will also enable focal points in countries party to the transport agreements sponsored by ESCWA¹ to periodically update information on them. This information and analysis will support work to secure the necessary funding to develop the system.
3. The present document sets out with the latest developments in the GIS project for transport networks and facilities in the Arab region, following the twenty-third session of the ESCWA Committee on Transport and Logistics, and the ESCWA secretariat's plan to continue work on the project in the future. It also provides recommendations to member States on ways to optimize the benefits of the project, and to move forward in developing a GIS information system for transport networks and facilities in the Arab region.

I. Overview of the GIS project for transport networks and facilities in the Arab region

4. In collaboration with the United Nations Interim Force in Lebanon (UNIFIL), in 2017, the ESCWA secretariat developed a pilot version of the GIS platform for transport networks and facilities in Arab countries. This platform was limited to countries covered by ESCWA transport agreements.²
5. It became clear during the project's trial period that the first version of the platform would not meet all the technical requirements for establishing and operating a GIS, especially in terms of capacity. This required updating the platform with a new environment and tools.
6. After UNIFIL withdrew from the project, the ESCWA secretariat established a new platform based on an open-source GIS. It then extracted the road and railway networks of countries covered by ESCWA transport agreements, and transferred them from ArcGIS used in the trial version to the open QGIS system. It also expanded the road and railway networks to include countries that had not acceded to the transport agreements sponsored by ESCWA, while allowing the countries concerned to amend their data at a later date so as to keep only the main international roads and railway lines on the platform.
7. On 24 April 2018, ESCWA held a coordination meeting with the Islamic Development Bank, the United Nations Economic Commission for Europe, and the Centre for Transportation Studies for the Western Mediterranean (CETMO) to collaborate in establishing a GIS platform.
8. Following the coordination meeting, the ESCWA secretariat developed a unified table containing amended and integrated features, which were more comprehensive and aligned with other regional platforms. It also agreed with all stakeholders to introduce two new layers in the platform on "border crossings" and "logistics zones," in addition to the five existing layers, namely the "general information" layer at the country level, the "road networks" layer, the "railway networks" layer, the "airports" layer, and the "seaports" layer. The ESCWA secretariat linked the platform to a GIS cloud server (Cloud-GIS), which provides communication between users over the Internet through a real-time filling feature.

¹ These agreements are the Agreement on International Roads Between Arab Countries, the Agreement on International Railways in Arab Countries, and the Memorandum of Understanding on Cooperation in the Field of Maritime Transport in Arab Countries.

² These are 14 Arab countries, namely Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Oman, the State of Palestine, Qatar, Saudi Arabia, the Sudan, the Syrian Arab Republic, the United Arab Emirates and Yemen.

9. After several meetings between ESCWA and its partners, a formula was agreed to finance the project through the Islamic Development Bank, which contributed to funding the following two training workshops for national coordinators: a [first training workshop](#) to build the capacity of national coordinators in the field of data entry in the platform (Beirut, 10–11 July 2019); and a [second training workshop](#) to build the capacity of national coordinators (Beirut, 18–19 December 2019), where participants agreed on the need to prepare a detailed user manual as guidance for entering and analysing data.

10. ESCWA, with funding from the Islamic Development Bank, prepared a user manual comprising two parts. The first part explains how to collect and enter data, and how to modify attributes and create and modify geometry features. The second part focuses on data analysis and reporting, and showcases data visualization capabilities, data queries, and other geographical analysis tools. ESCWA has included tables of attributes in the manual in both Arabic and English.

11. ESCWA also organized several virtual training courses for national coordinators, in collaboration with and with the participation of the Islamic Development Bank.

II. Latest developments on the project following the twenty-third session of the Committee on Transport and Logistics

A. Third in-person training workshop

12. Within the framework of a [series of training workshops](#) on the use of GIS for an integrated transport system between Arab countries, ESCWA, in collaboration with the Islamic Development Bank, organized the third in-person training workshop, pursuant to recommendations made by the ESCWA [Committee on Transport and Logistics at its twenty-third session](#).

13. The third in-person training workshop on GIS was held in collaboration with and the participation of the Islamic Development Bank, at the United Nations House in Beirut, and also virtually via Teams, on 21 and 22 March 2023. The workshop aimed to undertake the following:

- Explaining the stages that the project has completed.
- Discussing difficulties and challenges, agreeing on a road map to overcome them, and following up on the implementation of the project in a way that serves the interconnection of transport networks and supports regional integration in the Arab region.
- Training national coordinators on how to use GIS tools to conduct enquiries, generate and analyse data to assist in decision-making on developing transport networks and facilities at the national and regional levels.
- Explaining the use of cloud GIS for future transport applications.

14. The third in-person training workshop resulted in the following recommendations for moving forward with GIS for transport networks and facilities in the Arab region:

- Record several educational videos about the programme, and make them available to national coordinators via the Internet.
- Hold separate sessions with the coordinators of each country to review and audit the data (remotely).
- Consider holding awareness-raising sessions at the national level with data providers in participating countries.
- Consider organizing a regional awareness-raising workshop with stakeholders involved in the project's applications.

B. Training materials and individual coordination meetings

15. At the request of ESCWA, the ministries of transport of Egypt, Jordan, Morocco, Oman and Somalia submitted nominations for new national coordinators to replace those who retired or moved to other jobs. An explanatory meeting was organized for these coordinators to explain the project's components, descriptive features, and data-filling method.

16. The explanatory meeting for the new coordinators was held remotely via Teams on Tuesday, 2 May 2023, and was attended by the coordinators of Egypt, Jordan, Morocco, Oman and Somalia.

17. Pursuant to recommendations made at the [third in-person training workshop on GIS](#), the ESCWA secretariat recorded a number of educational videos about the programme, which national coordinators can access on the workshop page on the ESCWA website. Subsequently, the data entered by national coordinators on the project platform was reviewed and verified.

18. From May to July 2023, the ESCWA secretariat also held several individual coordination meetings via Teams with the coordinators of each country separately, pursuant to recommendations made at the third in-person training workshop. These meetings aimed to conduct a joint review of the status of data entered into the programme by national coordinators, discuss comments thereon, and provide the necessary explanations for the descriptive attributes and their units, if necessary.

19. These individual coordination meetings were attended by coordinators from Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, the State of Palestine, Qatar, Saudi Arabia and the Syrian Arab Republic.

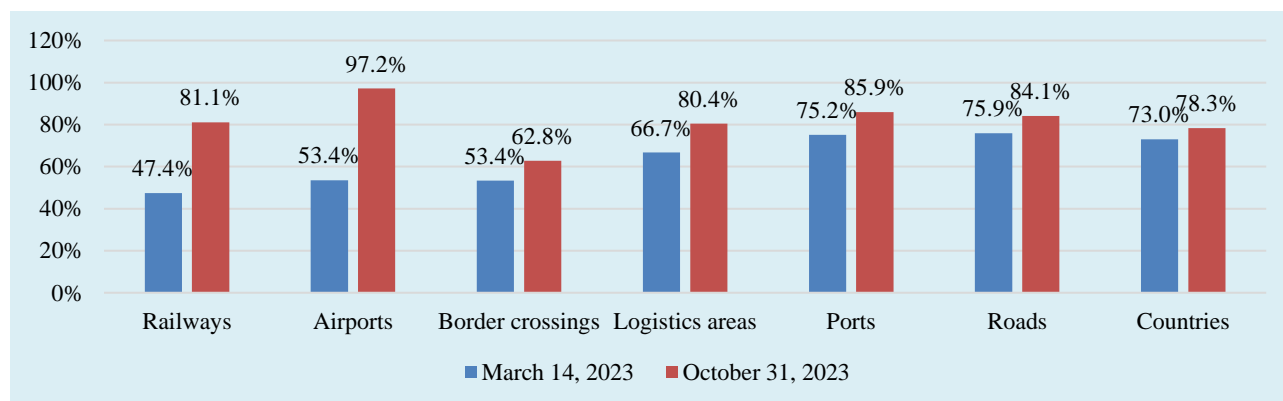
20. However, it was not possible to hold meetings for some countries, such as Oman, Somalia, the Sudan and Tunisia, which were postponed to a later date.

C. Data-filling level

21. On 14 March 2023, before the third in-person training workshop was held, data entry, regardless of the quality of the values entered, reached the levels shown in blue in the figure below. On 31 October 2023, after the third in-person training workshop and individual coordination meetings were held, data entry, regardless of the quality of the entered values, reached the levels shown in red.

22. There is an increase in the level of data entry in all layers, owing to national coordinators' efforts to feed the platform with the required data, especially after providing them with the necessary explanations regarding the descriptive characteristics and their units, reviewing the status of the entered data, and providing comments on thereon in the individual coordination meetings. This indicates that the individual coordination meetings achieved their desired goals of raising data entry levels and updating and ensuring their accuracy, consistency and reliability.

Data entry level comparisons, 14 March–31 October 2023



Note: Regarding the road category, data are limited to the roads covered by the international road agreement between Arab countries, which is sponsored by ESCWA.

III. Expected activities in the next stage

23. ESCWA is currently working on completing the transfer of the GIS project for transport networks and facilities in the Arab region from the current cloud platform to the ESCWA integrated GIS platform, which allows separate registration for each country with its own username and password, and provides more advanced analysis capabilities compared with the current cloud platform.

24. The railway and road interconnectivity plans approved by the League of Arab States will be included in the project, so as to adopt road and railroad maps for countries that have recently joined ESCWA, and whose network maps are not available within the ESCWA international road and railway agreements.

IV. Recommendations

25. The ESCWA secretariat appeals to member States that have recently joined ESCWA and have not yet acceded to any agreements or memorandums of understanding in the field of transport (the Integrated Transport System for Arab States (ITSAS)), and urges them to take the necessary measures to accede to these agreements.

26. The ESCWA secretariat renews its request to member States that have yet to nominate national coordinators for the GIS project for transport networks and facilities in the Arab region, namely Algeria, the United Arab Emirates and Yemen, to nominate national coordinators for the project.

27. The ESCWA secretariat also renews its call to all member States to attend training courses and increase data entry levels in the platform, so as to achieve the desired benefit from analysing the performance of transport networks and facilities in Arab countries. This will identify weaknesses and investment priorities to develop these networks in a way that enhances their interconnectivity, so as to achieve greater regional integration.
