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ЭКОНОМИКА МЕЖДУНАРОДНЫХ ПЕРЕВОЗОК И ЛОГИСТИКИ: ИНТЕЛЛЕКТУАЛЬНЫЕ И ЦИФРОВЫЕ РЕШЕНИЯ И ПРАКТИКА

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Multimodal transport system challenges & prospects in Ethiopia

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ABSTRACT The article examines the importance of transport for the Federal Democratic Republic of Ethiopia, and also characterizes the existing state of the main types of land transport: road and rail. The article defines the territorial location of the industrial parks of Ethiopia, on the basis of which possible directions of multimodal transport corridors, existing, under construction and promising railway and road transport facilities are assigned. The external and internal factors influencing the formation of variants of the multimodal transport network scheme based on the methodology of designing the integrated development of a multimodal transport network are determined. This will be used to develop the scheme of the multimodal transport network of Ethiopia. The scheme will become the basis for the formation of a variety of possible strategies for gradually changing the appearance and capacity of multimodal transport network facilities and calculating options for the required freight and passenger flows along multimodal transport corridors.

KEYWORDS: Federal Democratic Republic of Ethiopia; transport network; multimodal transport corridors; scheme of the multimodal transport network of Ethiopia

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Научная статья

Проблемы и перспективы мультимодальной транспортной системы в Эфиопии

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АННОТАЦИЯ Рассматривается значение транспорта для Федеративной Демократической Республики Эфиопия, характеризуется существующее состояние основных видов наземного транспорта: автомобильного и железнодорожного. Определено территориальное расположение индустриальных парков Эфиопии, на основании которого назначаются возможные направления мультимодальных транспортных коридоров, имеющиеся, строящиеся и перспективные объекты железнодорожного и автомобильного транспорта. Приведены внешние и внутренние факторы, влияющие на формирование вариантов схемы мультимодальной транспортной сети на основе методологии проектирования комплексного развития транспортной сети. Данные исследования могут быть использованы для разработки схемы мультимодальной транспортной сети Эфиопии. Схема станет базой для формирования множества возможных стратегий постепенного изменения внешнего вида и пропускной способности объектов мультимодальной транспортной сети и расчета вариантов требуемых грузовых и пассажирских потоков по мультимодальным транспортным коридорам Эфиопии.

КЛЮЧЕВЫЕ СЛОВА: Федеративная Демократическая Республика Эфиопия; транспортная сеть; мультимодальные транспортные коридоры; схема мультимодальной транспортной сети Эфиопии

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INTRODUCTION

Transportation is a system comprising infrastructure, administration, motorized and non-motorized vehicles, trains, ships, aircraft and users. Analysis of the transportation system can take its engineering, economics or societal issues.

In Ethiopia, transportation is one of the most essential sectors with its extended impact in the habitants' day to day life as well as trade activities and tourism. More than 100 million people resides in Ethiopia, and they have the need for mobility in their day-to-day life such as commuting to and from work, school and other social interactions.

The country is among the fast-growing developing countries in Africa having defined targets to achieve in the coming 10 years. To date, 13 Industrial parks have been constructed and are operational in different regions of the country [1, 2]. These industrial parks give priority for the production of textile and apparel, leather &leather products, pharmaceuticals, Agro-processing, tourism, ICT and Mining & Energy. These industrial parks are substantial source of foreign currency for the government; furthermore, their contribution in job creation for the youth both in their construction stage and operation stage is significant. Therefore, the timely transportation of raw materials to these industrial parks and timely delivery of final products plays major role to the companies' profits.

Similarly, Ethiopia's economy is predominantly dependent on agriculture. Competent mode of transportation is mandatory for transporting these agricultural products both locally and internationally, particularly for agricultural products that are intended for exporting.

Being rich with historical assets that goes back more than 3000 years, Ethiopia is a major tourism destination. It is home to archaeological findings, historical monuments and natural resources to mention but a few. Hence, having efficient public and private means of transport will be a satisfaction to the tourists and this will increase the number of tourists coming to visit these destinations. In addition to the evident economic advantages, this is a guaranteed way of promoting the good picture of the country globally.

Ethiopia is a multi-cultured country with 11 regions and 2 chartered cities having more than 80 nations and nationalities. One of the main considerations for having strong social and economic integration between these regions is the existence of multi-modal transportation. Furthermore, Addis Ababa is not only the capital of Ethiopia, but also the capital of Africa. Different offices of the African Union, including its headquarter, is located in Addis Ababa.

The main land modes of transport in Ethiopia are road and rail [3–5].

Currently, toll roads on expressways are being adopted and construction of BRT (Bus Rapid Transit) is planned in the capital city, Addis Ababa.

MATERIALS AND METHODS

Ethiopia's road network has been improving each year. As of the end of fiscalyear 2017/18, Ethiopia had 120.171 kilometres (74.670 miles) of all-weather roads — about 32 % of the required road network in the country. In fiscal year 2017/18, the Government of Ethiopia (GOE) invested 33.9 billion Birr ($1.24 billion) in road construction. The Ethiopian Roads Authority plans to build an additional 10,000 kilometres of road at a cost of 41 billion Birr ($1.5 Billion) during the coming year. In the past fifteen years, the Government of Ethiopia has been vigorously engaged in new road construction as well as expansion of the existing road network through Ethiopia's Road Sector Development Programs (RSDP) (*Fig. 1*).

During the Growth Transformation plan (GTP) II period covering 2015/16 to 2019/20, the Government of Ethiopia anticipates a further expansion of the country's road network to 220.000 kilometres (136.701 miles). In the past, U.S. firms have bid on tenders for road design, construction and supervision services. However, most of them have not been price competitive. Ethiopia will continue to need construction vehicles (bulldozers, cranes, trucks, and forklifts), vehicle attachments, and mechanized and non-mechanized equipment to level and pour construction materials. Most projects open for international competitive bidding are funded either by the Government of Ethiopia (GOE) or major international financial institutions, such as the World Bank's International Development Association (IDA) and the African Development Bank (AFDB). In the coming years, international and domestic private investors can engage in the Ethiopian road construction projects (*Table*).

Ethiopia is aggressively working on building an extensive rail network. As a landlocked country, Ethiopia primarily uses the port of Djibouti as a gateway for the vast majority of its internationally traded goods (90 to 95 %), with most of the goods essentially transported to and from the port by trucks. This situation has made Ethiopia's trade logistics very expensive and uncompetitive. Ethiopia's reopening of diplomatic relations with Eritrea creates the potential for expanded logistics operations via the Eritrean ports of Assab and Massaewa. The government has plan to connect Assab (Massaew) (by the railway line Metema – Wereta – Weldia – Assab) to Sudan via Weldia (Which is connected by the railway line from Awash – Kombolcha – Mekele railway line). In addition, the project visibility has been studied to Kenay by connecting with

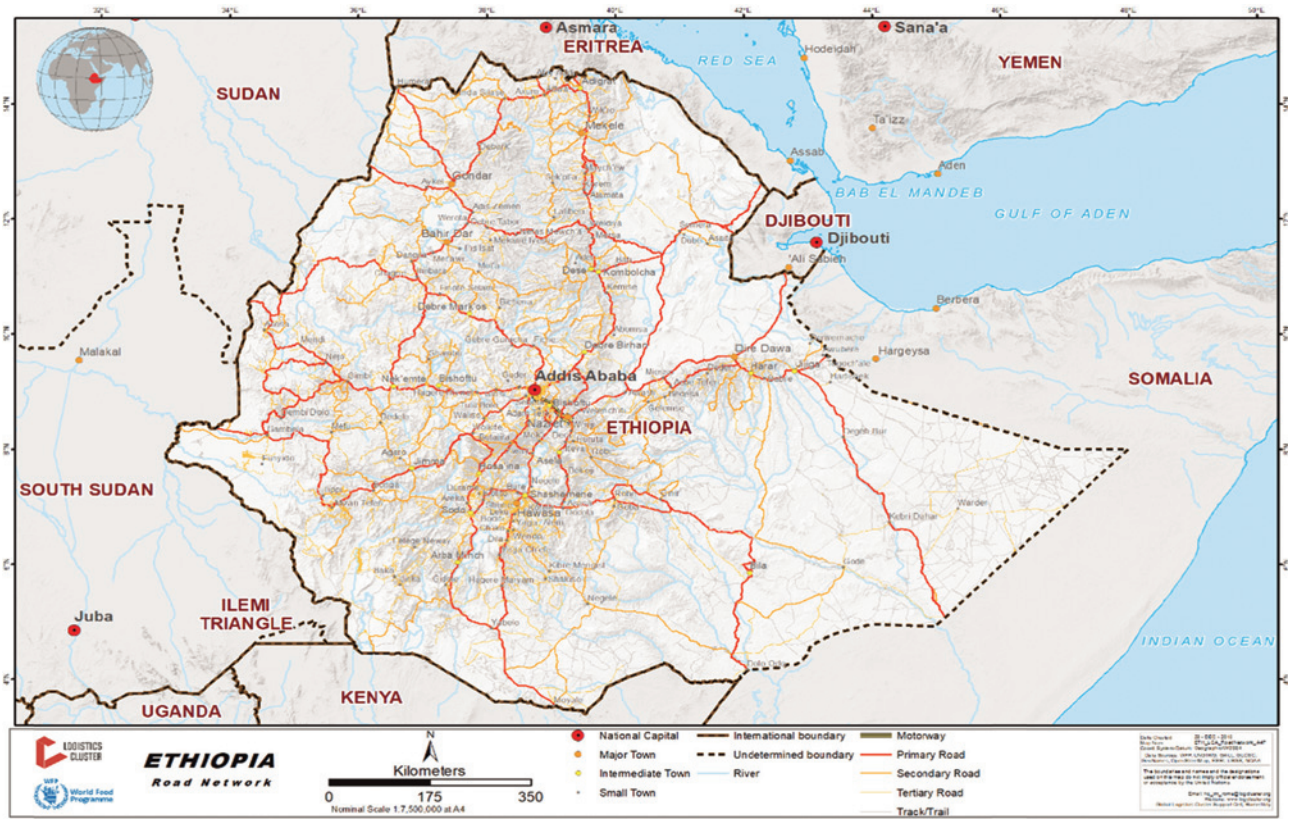

Fig. 1. Map showing Ethiopia road network

one of the most important railway line Mojo – Moyale (about 900 km) (*Fig. 2*).

The Government of Ethiopia (GOE) established the Ethiopian Railways Corporation (ERC) under the Ministry of Transport with a mandate to create a modern nationwide railway network, replacing the Franco-Ethiopian railway that is no longer in service. ERC recently completed a 656 kilometres railway network construction project that links the capital city Addis Ababa to the port of Djibouti. This railway expansion project was carried out by two Chinese companies, State-owned China Railway Group and the China Civil Engineering Construction Corporation. The new rail system started commercial operation in mid-2018. The two Chinese companies will operate and manage the $3.4 billion railway line for the next six years as local employees are trained to takeover in due course.

The other new completed railway line is Awash-Kombolcha-Hara Gebeya Railway Project, which has a length of 392 km, initiating from north east of the city of Awash and arrive to Hara Gebeya (Weldia) through the city of Kombolcha.

Table

Length of New Highways in Ethiopia by Type of Construction Financing

Road Network	Unit: Kilometers			
	2016	2017	2018 (Estimated)	2019 (Estimated)
Total Market Size	113.066	120.171	138.000	150.000
Total Local Production*	60.000	65.000	70.000	75.000
Total Exports		–		
Total Imports**	53.066	55.171	68.000	65.000
Imports from the U.S.***			2.000	4.000

Source: National Bank of Ethiopia
* indicates length of road projects carried out by local contractors.
** indicates length of road projects carried out by foreign companies.
*** indicates estimated length of road projects that can be constructed by U.S. companies Source: National Bank of Ethiopia

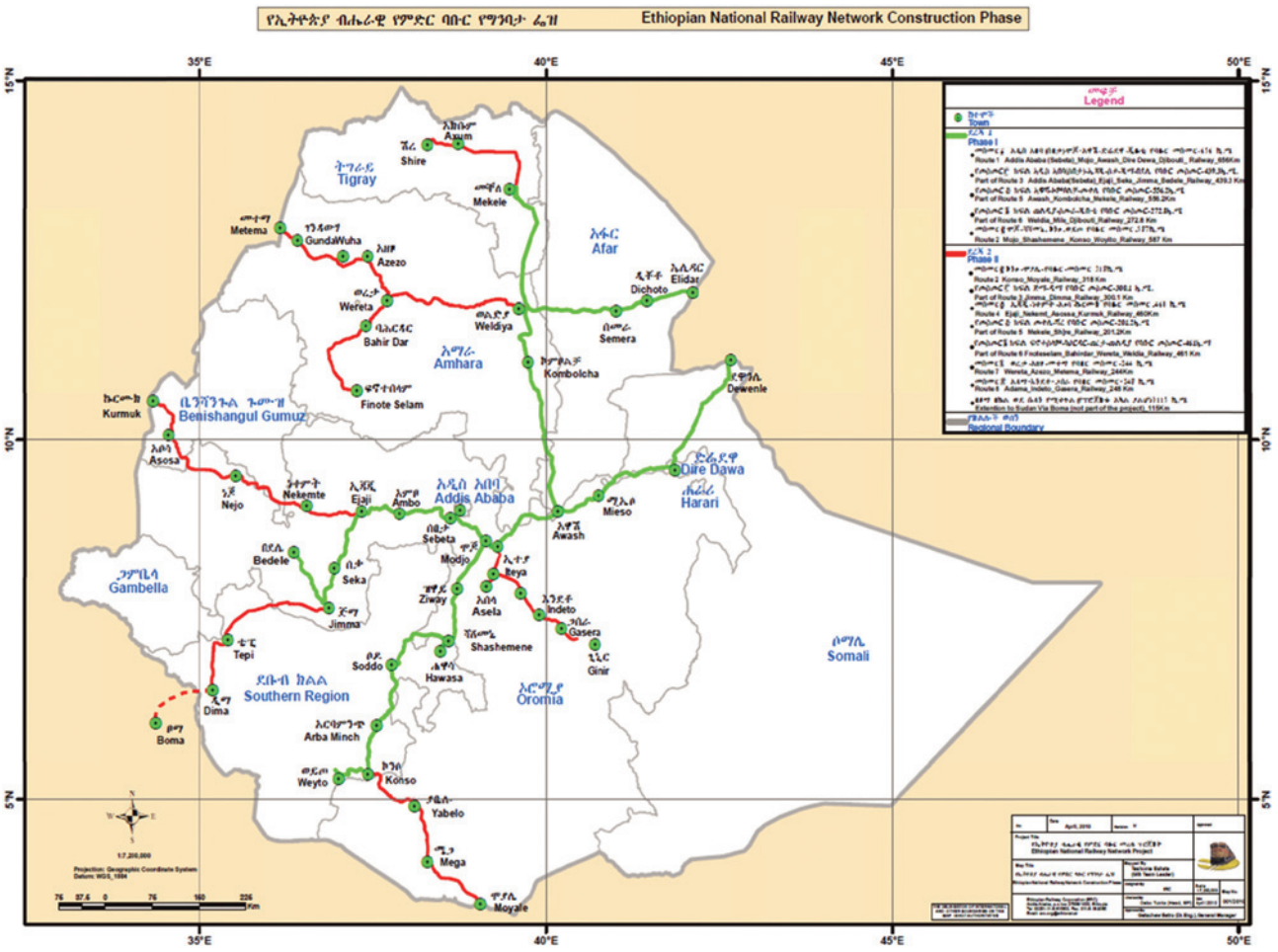

Fig. 2. Map showing Ethiopia railway network

The Awash-Kombolcha-Hara Gebaya (AKH) Railway Project has a significant importance as it connects the northern and eastern economic and traffic corridor of Ethiopia. The railway that has been building will connect the railway lines from Mekele to Hara Gebeya and then Addis to Djibouti, which is the main transport corridor for both passenger and freight traffic, and for transport of imported and exported goods via Djibouti Port. Furthermore, the construction of this railway will play an active and significant role in connecting the northern region of the country with the central part.

The Awash-Kombolcha-Hara Gebaya Railway Project which has a 1,7 Billion USD (is being funded by the Turkish EX-IM bank and the Swiss Credit Consortium in addition to direct government spending).

This infrastructure project will significantly improve Ethiopia's international trade by reducing traders' logistical costs and time of delivery. The new electric railway cuts transport time from Djibouti to Modjo (a dry port city 70 kilo meters away from Addis Ababa) from the current 84 hours to just 10 hours. Cargo capacity on the rail network is 3500 to 4000 tons of freight per train, with ERC anticipating 6 to 7 million tons of cargo per year in its first year of operation. Cargo volume will increase to 10 million tons in the mid-term.

It is internationally recognized that the Ethiopian economy is among the fastest growing economy of the globe. Transport sector is therefore one of the sub service Contributor of this Economic growth.

RESULTS AND DISCUSSION

There are problems for the formation of the multimodal transport system. They include:

- lack of physical facilities (IT infrastructure especially in the private sector);
- poor coordination among the sectoral agencies;
- reliance on paper documents, fax, and emails in the exchange of official information between government agencies and the private sector;
- lack fully fledged cargo tracking along the logistics supply chain;
- less capable of operators;

- there are close to 7.000 trucks operating on the corridor to Djibouti. Ownership of the trucking fleet is in the hands of operators of individual trucks, road transport companies, and associations of individual truck owners.

There are potential prospects for the development of the logistics industry. They include: government policy, Modjo logistics Hub (MLH) Project, the customs management system, electronic single window and other initiatives [6–8].

By the government of Ethiopia, it is well perceived that, the logistics industry is a critical element for the Ethiopian economy. Accordingly, the major strategic directions of the government are mainly building the capacity of the dry ports and enhancing Multimodal Transport system there by improving the logistics service.

The investments in infrastructure at Modjo Dry port support the facility to achieve three key objectives (as it is indicated in the WB document):

- to improve the efficiency of processing of current traffic flows;
- to increase the capacity of Modjo to process the projected increasing volumes of trade, including the interconnectivity between rail and road transportation;
- to facilitate the transformation of Modjo to become a logistics hub offering a wide range of logistics services to exports as well as imports and to support diversification into a wider range of higher value-added exported products.

Ethiopian Revenue and Customs Authority is now engaged its self to migrate from Assycuda++ system to the new and the state of the art Customs Atomization that can Manage:

- air Cargo E-freight including Advance Passengers Information (API);
- electronic submission of documents;
- e-payment and other paperless operations.

This Customs Atomization is emplacing based on the Kyoto Convention General Annex Guide lines.

In order to interface all stakeholders in single platform an ESW project is undertaking. Accordingly, a business process analysis and re-engineering to streamline stakeholders' processes and integrate into a common electronic Single Window platform is already Accomplished.

The other projects that enhance the logistics bottlenecks in general and the multimodal includes, among other things

- cargo tracking System;
- cargo scanning Machine at every entry point;
- OSBP with neighboring countries to avoid a duplication of efforts at borders and to harmonize and simplifying the customs practices.

CONCLUSION

The article considers the importance of transport for the Federal Democratic Republic of Ethiopia, and also identifies factors influencing the formation of variants of the multimodal transport network scheme based on the methodology of designing the integrated development of a multimodal transport network. This will be used to develop the scheme of the multimodal transport network of Ethiopia [9–11]. The scheme will become the basis for the formation of a variety of possible strategies for gradually changing the appearance and capacity of multimodal transport network facilities and calculating options for the required freight and passenger flows along the multimodal transport corridors of Ethiopia.

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