

Major European transport corridors and their role in the Republic of Moldova development

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Abstract

In this work, was presented the transport system from a geographical and economical point of view, as a result, the accent was placed on the spatial structure of the transport networks and on the connection between transport system and international economic relations. The objective of the Transport Corridors Project for Moldova is to improve road transport connectivity and safety on selected road sections along expressway one and the north-south transport corridor in the country. Also, were set the development priorities of these corridors and its formation to European parameters. The study was concluded with the presentation of some recommendations: supports strategic infrastructure investments to develop an improvement program for transport corridors, liberalization of national railway networks, as well as restoring effective activity of fluvial transport.

Key-words: transport, corridors, transport system, infrastructure, development.

Introduction

Transport corridors are receiving an increasing level of attention. Transport corridors can be seen as pillars of transportation networks - connecting major centers of articulation - and towards which freight and passenger flows converge. Usually, they lie at the intersection of economic, demographic and geographic spaces as they perform both market-serving and market-connecting functions. Therefore, the corridor as a notion is neither temporally nor spatially unchallengeable, but rather dynamic, contingent on such key factors as economic context (e.g. trade liberalization), investments in infrastructures, and technological changes (e.g. information corridors) and policies.

According to TEN-T guidelines, the development and improvement of transport corridors serve to achieve the important common goals such as the smooth operation of the single market and the reinforcement of economic and social cohesion (Šakalys A., Palšaitis R. 2006).

Corridors highlight a new aspect in the study of urbanization over an extended region. Although they have been considered as the structure behind the

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development of several urban systems, corridors must also be measured as the structure behind the regional development. Transport corridors link in a cohesive regional structure. They are extra axe supporting interactions between places, they are places of spatial accumulation. Theoretically, corridors provide an apprehension of territorial homogeneity over a heterogeneous landscape. This is particularly the case in East and Central Europe where regional economic cohesion is growing, along with international trade.

As a result of intensive construction works along main transport corridors, major motorways and trunk roads reach national borders, ensuring faster and safer transportation.

Role of transport corridors in deepening integration

A transport corridor is a generally linear area that is defined by one or more modes of transportation like highways, railroads or public transit which share a common course.

Transport corridors—major routes that facilitate the movement of people and goods between regions and between countries—have existed for millennia. They enable regions and countries to offer high-capacity transport systems and services that reduce trade and transport costs by creating economies of scale. Regional corridors are particularly important to landlocked countries, where they are economic lifelines, often providing the only overland routes to regional and international markets.

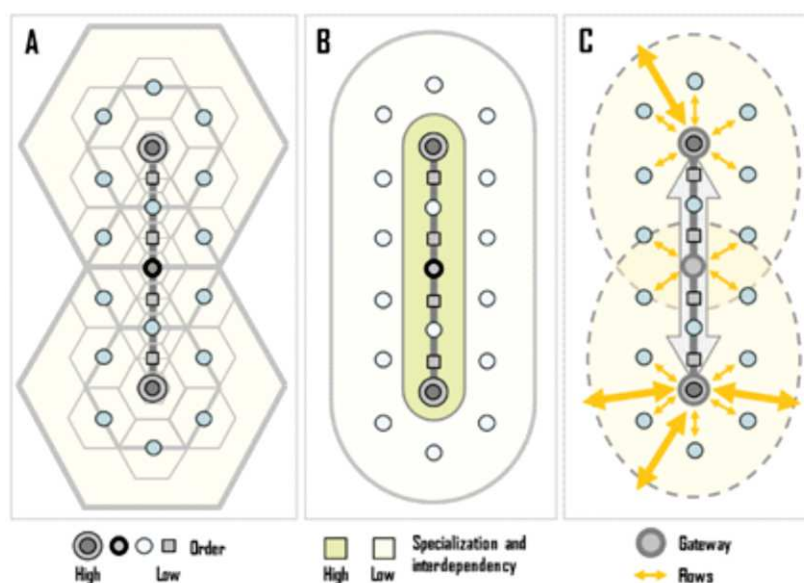
It is of conventional wisdom in development theories to consider inequalities as a structural factor of spatial accumulation (Dwyer, 1990). Transportation among other factors reinforces spatial inequality by linking a priori the most productive places. Large cities, as highly productive entities, are fundamental structures of global and regional spatial accumulation, and thus represent strong incentives to be bonded by an efficient transportation network. When a set of large cities are interacting at the regional level, they reinforce the regional spatial inequality of accessibility by their corridors of interaction; transportation corridors. From an economic perspective, transportation corridors provide two fundamental attributes for territorial development: lower distribution costs and land supply for diverse activities. Since spatial accumulation tends to occur at productive places where there are adequate land supply and accessibility, corridors are in that context an efficient regional urbanization structure. The emergence of transportation corridors, as a process, is the overlay in time and space of diverse transportation modes where they (the corridors) become the structure of urban regions. We can no longer speak of a set of interacting cities, but of a regional transactional space composed of diverse - more or less linked - specialized economic functions; a new spatial region.

Geographical and historical conditions create a basic set of regional inequalities in accessibility that the subsequent economic, demographic and

transport developments strengthen. Contemporary urban regions have their anchor points along a fluvial axe, a coastal plain, a natural harbor, or any geographical feature providing accessibility, notably an efficient maritime / land interface. This by no means implies similar landscapes, nor similar economic conditions and processes of spatial accumulation. We suggest here that corridors are the structure behind the emergence of most urban regions where transportation supports transactions and spatial accumulation along a privileged axe. By privileged, we entail an axe being serviced by different types of infrastructure, where one mode may be more present than another.

Transport corridors are commonly linking gateways to the inland. The functions of centrality and intermediacy are particularly relevant since one focuses on gateways as an origin or destination of traffic while the other focuses on gateways as intermediate locations where transshipment is performed. While central locations obviously correspond to large metropolitan areas, intermediate locations have developed a rather unique geography. Corridors themselves can be understood within three main paradigms (Figure 1).

Figure 1. Corridors and Regional Development



Source: Rodrigue, J-P (2004) "Freight, Gateways and Mega-Urban Regions: The Logistical Integration of the BosWash Corridor", *Tijdschrift voor Sociale en Economische Geografie*, Vol. 95, No. 2, pp. 147-161

The first paradigm is the most traditional as far as geographical theory is concerned. The central places theory mainly considers cities as structurally

independent entities that compete over overlapping market areas. Under the location and accessibility paradigm an urban region is considered as a hierarchy of services and functions and the corridor a structure organizing interactions within this hierarchy. Transport costs are considered a dominant factor in the organization of the spatial structure, as the hinterland of each center is the outcome of the consumers' ability to access its range of goods and services. Because of higher levels of accessibility along the corridor, market areas are smaller and the extent of goods and services being offered are broader. Thus, differences in accessibility are the least significant along the corridor. This applies well to the consumption based functions of a corridor.

The specialization and interdependency model considers that some cities can have a level of interaction and that transportation could be more than a factor of market accessibility, but also of regional specialization and of comparative advantages. The Megalopolis concept introduced by Gottmann in 1961 acknowledges the creation of large urban corridors structured by transportation infrastructures and terminals maintaining interactions.³⁹ Accessibility and economies of scale, both in production and consumption, are factors supporting the development of such entities where urban areas are increasingly specialized and interdependent. The main assumption is that the accessibility provided by the corridor reinforces territorial specialization and interdependency along its main axis, and consequently the reliance on a regional transport system. This applies well to the production based functions of the corridor.

The distribution/flow model is one where a major gateway of an urban region acts as the main interface between global, national and regional systems. Under such a paradigm, three core structural elements are defining a regional corridor: 1) Gateways regulating freight, passengers and information flows. 2) Transport corridors with a linear accumulation of transport infrastructures servicing a set of gateways. They provide for the physical capacity of distribution. 3) Flows, their spatial structure and the underlying activities of production, circulation and consumption. The corridor becomes a logistically integrated axis. (Rodrigue J-P., 2004).

The characteristics that define a strategic transport corridor include:

- A corridor of substantial length, around 30-50 kilometers, covering a variety of land uses;
- A corridor which provides connections to, from and between cities or regional centers;
- Corridors which service areas of projected high population growth;
- Corridors which carry a high volume of passengers;
- Corridors which are experiencing a sustained growth in transport demand;
- Corridors which support major freight movements; and/or

³⁹ Gottmann, J. (1987) *Megalopolis Revisited: 25 Years Later*. College Park: The University of Maryland, Institute for Urban Studies

- Corridors which make a substantial contribution to economic growth and development.⁴⁰

Moving goods and people is the basic function of trade and transport corridors. Common objectives of corridor projects include improving infrastructure connectivity, facilitating the efficient movement of freight, and promoting economic growth by improving the competitiveness of exports and reducing the costs of imports or developing clusters of economic activity along the corridor supported by efficient logistics. (Kunaka, Charles, and Robin Carruthers, 2014, p. 13)

The main economic logic highlighting the economic efficiency of corridors is based on:

- The greater capacity of corridors in supporting trade volumes based upon the principle of economies of scale in transportation. This is likely to be the single most important factor behind the creation of corridors.

- Better integration between production and distribution due to cost and time efficiency along corridors. The corridor becomes an intermodal supply chain composed of gateways and inland ports.

- Greater reliability of distribution because of transport performance, but also because of a more coordinated governance (such as identifying critical infrastructure) and more efficient cross-border flows (for transnational corridors).

That why corridors can be classified in four modal structures; maritime, fluvial, land and air corridors.

Moldova's integration into the major Euro-Asian transport corridors

Transport corridors in general play an important role in achieving the medium and long-term objectives of the states. The Moldovan geopolitical state offers a possibility not to remain just in the background of current changes in the transit services market, but to act as a facilitator in the increase of trade connections of the most important transportation corridors between East and West.

Aiming to prioritize and focus the efforts on upgrading and improving important transport links between Europe and Asia, are presented main Euro-Asian transport corridors:

- Ten *Pan-European transport* corridors;
- *TRACECA* - Transport Corridor Europe-Caucasus-Asia;
- *BSRH* - Black Sea Ring Highway;
- *TEN-T* - Trans-European Transport Network.

The Pan-European Transport Corridors and Transport Areas has been developed along with three Pan-European Transport conferences. The set out of the first Pan-European Transport conference in Prague in 1991 was an appropriate concept for transport infrastructure, which became the corridor concept.

⁴⁰ Integrating Australia's Transport Systems: A Strategy for an Efficient Transport Future

At the second Pan-European Transport conference in Crete in 1994, the countries of Western, Central and Eastern Europe identified nine long-distance transport corridors as priorities for infrastructure development.

At the third Pan-European Transport conference in Helsinki in June 1997 a tenth corridor and the Pan-European Transport Areas for maritime basins were added.

These multi-modal Corridors (Annex 1), so called Helsinki Corridors, have a total length of about 48,000 km, of which 25,000 km are rail network and 23,000 km are road network. Airports, sea- and river ports and major terminals serve as nodes between the modes along these long distance interconnections between the Central and Eastern European countries.

The concept of a Pan-European Transport Infrastructure Investment Partnership promotes the establishment of all the necessary components for a future Pan-European Transport Network on the territory of the European Union, in the candidate countries for accession, the New Independent States (NIS) and beyond.

The Pan-European Transport Network consists of the following components:

- The Trans-European Transport Network on the territory of the European Union (TEN);
- The TINA⁴¹ Network, which is composed of the ten Corridors and the additional network components within the candidate countries for accession;
- The ten Pan-European Transport Corridors situated in the candidate countries for accession, in the NIS and beyond;
- The Four Pan-European Transport Areas (PETrAs) covering maritime areas; and
- The Euro-Asian Links, notably TRACECA (Transport Corridor Europe Caucasus Asia).

For most of the Corridors and Areas a Memorandum of Understanding (MoU) has been concluded amongst the participating countries, at the level of Ministers of Transport and with the European Commission.

It is a voluntary commitment between the participants, and has no legal binding character, but indicates the intention of the concluding partners to undertake joint efforts in the development of the Pan-European Transport Network.

These Memoranda of Understanding recommended, among others, to establish a Steering Committee, which promoted and monitored the progress and stimulated the action needed.⁴²

Particularly important from economic cooperation point of view for Moldova, in the area will be executed by sectors, such as:

Improvement of Road and Roadside Services on the section Leuseni -

⁴¹ TINA - Transport Infrastructure Needs Assessment

⁴² "Status of the Pan-European Transport Corridors and Transport Areas" by The European Commission

Chisinau – Dubăsari – Border with Ukraine - Project cost: \$18.2 million.

For the rail sections (Cristești-Jijia) – Ungheni – Chisinau – Bender – (Kuciurgan), route infrastructure rehabilitation, upgrading and electrification are foreseen with aim of increasing maximum train speed up to 140 km/h with transition from diesel locomotive traction to electric one. For sections Bender – Cimislia – (Carabuteni) – Basarabasca – Taraclia (Bolgrad) – Grececi – Etulia – (Reni) – Giurgiulesti – (Galati) reconstruction and technical re-equipment of railway stations and track facilities are foreseen (the cost of works is estimated to \$ 5.8 million).

TRACECA is an ambitious interstate programme aimed at supporting the political and economic development in Black Sea Region, Caucasus and Central Asia by means of improvement of the international transport.

The regional EU-assistance in transport benefitting our eastern neighbors is channeled under the TRACECA-programme, an acronym referring to Transport Corridor Europe-Caucasus-Asia. This EU programme was launched in 1993 to develop a transport corridor from Europe to China, via the Black Sea, the Caucasus, the Caspian Sea and Central Asia.

TRACECA aims at supporting political and economic independence of the Republics by enhancing their capacity to access European and World markets through alternative transport routes, encouraging further regional co-operation among the partner countries and increasingly being a catalyst to attract the support of International Financial Institutions (IFIs) and private investors.

The beneficiary countries of the programme are: Azerbaijan, Armenia, Bulgaria, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Romania, Tajikistan, Turkey, Turkmenistan, Ukraine and Uzbekistan.

In parallel to the EU assistance programme, most of the participating countries have also engaged in a political process to strengthen regional cooperation in transport, by signing the “Basic Multilateral Agreement on International Transport for Development of the Europe-the Caucasus-Asia Corridor” (MLA) in 1998. The implementation of this MLA is done through the Intergovernmental Commission (IGC) and the TRACECA Permanent Secretariat of the IGC, based in Baku. The countries who signed the MLA are Armenia, Azerbaijan, Bulgaria, Georgia, Iran, Kazakhstan, Kyrgyzstan, Moldova, Romania, Tajikistan, Turkey, Uzbekistan and Ukraine. The EU participates as an observer.

The strategic framework of the IGC TRACECA comprises a number of pillars in order to achieve the desired objective of delivering a sustainable, efficient and integrated multimodal transport system at both the EU and TRACECA levels:

- Assisting in the development of economic relations, trade and transport communications in Europe, Black Sea region and Asia
- Ensuring access to the world market of road, rail transport and commercial navigation
- Ensuring traffic security, cargo safety and environment protection
- Harmonization of transport policy and legal structure in the field of transport

- Creation of equal conditions of competition for transport operations.

The EU-support for this programme amounts to over € 180 million, via more than 80 projects in the areas of infrastructure development, legal harmonization, safety and security in transport as well as trade facilitation and logistics. In recent years there is an increasing focus on more sustainable modes of transport.

EU projects on safety and security in transport have resulted in the adoption by the countries of a TRACECA Regional Action Strategy on Maritime Safety and Security and Environmental Protection in November 2011, and a Regional Road Safety Action Plan also in November 2011. Projects supporting trade facilitation and logistics have resulted in the selection of potential hubs and pilot projects for logistics centers and Motorways of the Seas on the Black and Caspian Seas.

On-going TRACECA programme projects

1. Logistics Processes and Motorways of the Seas (2011 – 2014)

This project will enhance the development and implementation of coherent strategies for establishment of intermodal integrated transport and logistics chains underpinned by Motorways of the Seas. An important delivery of the project is the Master Plan. This Plan should indicate the priority projects, hard infrastructure as well as soft (trade facilitation) measures, on the medium term that can contribute to improved cargo sea and hinterland connections, in full compatibility with the revised TEN-T guidelines. The (political) commitment of the individual involved countries is crucial for success.

2. Civil aviation safety and security (2012 – 2015)

Activities cover the main aspects of civil aviation regulation and oversight, including in the areas of licensing and organization of market access, safety, security, air traffic management and environmental protection. For the ENP-countries support aims to ensure that beneficiaries which have signed a comprehensive civil aviation agreement with the EU or for which such negotiations are planned or in progress can participate effectively in the Pan-European civil aviation system.

3. Transport Dialogue and Networks Interoperability II (2012-2015)

This project will contribute to the achievement of the policy objectives defined in the Commission Communication on transport relations with the European Neighborhood Policy countries. Particular emphasis is to be put on improving coordination with and involvement of IFIs and participation of the private sector in transport projects.

4. Maritime Safety and Security II (2012-2015)

The objective is to support the further ratification and implementation of international maritime safety and security conventions as well as improving the level of quality of maritime administrations in the Black Sea and Caspian Sea partner countries with the overall objective of making shipping safer, more secure and environment friendly. This should promote the further alignment of the

maritime safety and security legislation with the relevant EU "acquis" in the field and especially with the EU's Third Maritime Safety Package.

Black Sea Ring Highway. (Annex 2) In April 2007, the Ministers of Foreign Affairs of the member states of the Organization for Economic Cooperation of the Black Sea signed, in Beograd, a Memorandum of Understanding for the construction (unification) of the above mentioned motorway.

The main target is to create an international road artery, through maintenance, reconstruction, rehabilitation, upgrading and construction of non-existing connections of the main and secondary road infrastructure.

The Black Sea Ring Highway will promote co-operation in the development of multimodal transport infrastructure, in order to have adequate road interconnections with the:

- Trans-European
- Pan-European and
- Euro-Asian Transport Networks.

Once the alignment of the highway is finalized, several of its sections will coincide with parts of the established European axis. That is why it is crucial to ensure well coordinated planning of road construction and restoration work, in order to strengthen links among the EU, Asian and Black Sea countries, who are invited to comply with the future international traffic requirements and standards.

According to the decisions of the Steering Committee and within the framework of its responsibilities, the BSRH JPTS is developing a series of actions with a view to promote the project:

- Identification of Existing Status - Definition of the BSRH alignment (main route and connections)
- Information Management
- New studies
- Financing
- Technical standards and interoperability
- Border crossing and customs co-operation. Operational aspects of transport
- Active communication with third parties.

The Trans-European Transport Networks (TEN-T, Annex 3) are a planned set of road, rail, air and water transport networks in the European Union. The TEN-T networks are part of a wider system of Trans-European Networks (TENs), including a telecommunications network (eTEN) and a proposed energy network (TEN-E or Ten-Energy). The European Commission adopted the first action plans on trans-European networks in 1990.

TEN-T envisages coordinated improvements to primary roads, railways, inland waterways, airports, seaports, inland ports and traffic management systems, providing integrated and intermodal long-distance, high-speed routes. A decision to adopt TEN-T was made by the European Parliament and Council in July 1996. The EU works to promote the networks by a combination of leadership, coordination,

issuance of guidelines and funding aspects of development.

These projects are technically and financially managed by the Trans-European Transport Network Executive Agency (TEN-T EA), which was established for this purpose by the European Commission in October 2006.

TEN-T promotes:

- Economic and social integration;
- Free movement of people, goods and services;
- Development in less favoured regions;
- Limiting environmental impacts;
- Contacts with neighbouring countries;
- Competitive energy production and supply;
- Renewable energy production;
- Efficient and secure energy supply.

A significant step forward towards creating a common transport network between the EU and its Eastern partners in the neighborhood was made in 2013 October, in Luxembourg at the Eastern Partnership Transport Ministerial Meeting, which aimed to increase integration between the EU and its Eastern European partner countries – Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine.

The partner countries have started reforms to align their transport systems with EU standards. The association agreements that the EU has negotiated with several partner countries envisage more regulatory convergence in transport. The most significant achievements of market integration are the signature and implementation of comprehensive aviation agreements that the EU has negotiated with Georgia and Moldova.

Conclusions:

Moldova is a strategic border between the EU and Eastern Europe and can become a transport hub for the region. Its existing road and rail network structure is generally well-suited to cope with traffic demand and the objectives of domestic and international connectivity. Lack of maintenance of the transport infrastructure and high logistics costs however hinder the development of the transport industry in Moldova.

The development of the Moldovan transport system and its integration into the EU transport system is directly connected with the development of transport corridors. This integration is highlighted by one serious problem – an inadequate technical level of separate links of transport infrastructure. Similarly, integration would expedite the implementation of EU standards, rules and requirements for all countries in order to ensure the adequate quality of transportation services.

Two vital European transport corridors pass through Moldova, providing unparalleled access to all parts of Europe, including major European ports and the fast-growing CIS market.

In order to exploit these benefits, Moldova is determined not only to

preserve, but also to enhance its infrastructural network and to improve its integration into the European network.

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Annex 1. Pan-European transport corridors

I	(North-South) Helsinki - Tallinn - Riga - Kaunas and Klaipeda - Warsaw and Gdansk <ul style="list-style-type: none"> • Branch A (Via/Rail Hanseatica) - St. Petersburg to Riga to Kaliningrad to Gdansk to Lübeck • Branch B (Via Baltica/E 67) - Helsinki to Warsaw.
II	(East-West) Berlin - Poznań - Warsaw - Brest - Minsk - Smolensk - Moscow - Nizhny Novgorod
III	Brussels - Aachen - Cologne - Dresden - Wrocław - Katowice - Kraków - Lviv – Kiev <ul style="list-style-type: none"> • Branch A - Berlin - Wrocław
IV	Dresden/Nuremberg - Prague - Vienna - Bratislava - Győr - Budapest - Arad - Bucharest - Constanța / Craiova -Sofia - Thessaloniki / Plovdiv - Istanbul.
V	(East-West) Venice - Trieste/Koper - Ljubljana - Maribor - Budapest - Uzhhorod - Lviv - Kiev. 1,600 km (994 mi) long. <ul style="list-style-type: none"> • Branch A - Bratislava - Žilina - Košice - Uzhhorod • Branch B - Rijeka - Zagreb – Budapest • Branch C - Ploče - Sarajevo - Osijek - Budapest
VI	(North-South) Gdańsk - Katowice - Žilina, with a western branch Katowice-Brno.
VII	(The Danube River) (Northwest-Southeast) - 2,300 km (1,429 mi) long.
VIII	Durrës - Elbasan - Skopje - Sofia - Plovdiv - Burgas - Varna. 1,500 km (932 mi) long.
IX	Helsinki - Vyborg - St. Petersburg - Pskov - Gomel - Kiev - Liubashivka - Chișinău - Bucharest - Dimitrovgrad -Alexandroupolis. 3,400 km (2,113 mi) long. Major sub-alignment: St. Petersburg - Moscow - Kiev.

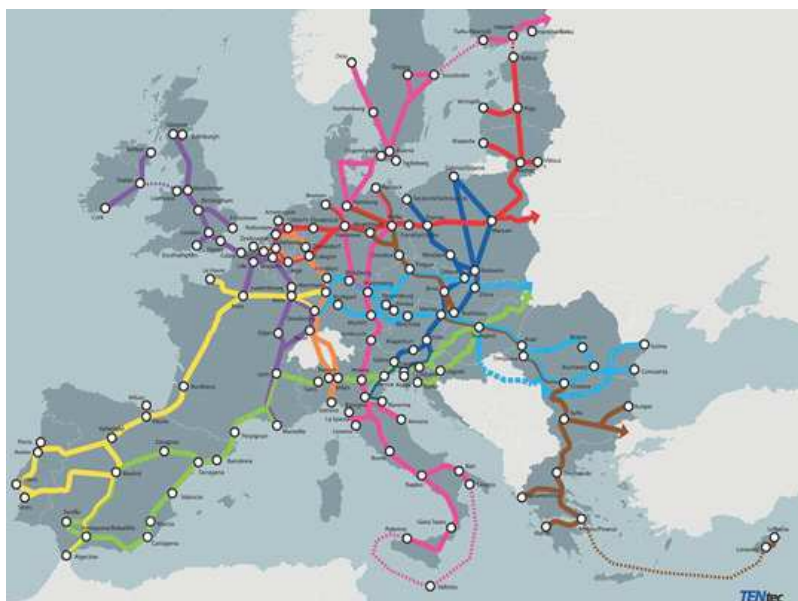
Source: www.wikipedia.org

Annex 2. Black Sea Ring Highway



Source: <http://www.blacksearing.org>

Annex 3. Trans-European Transport Networks



Source: <https://driveeuropenews.files.wordpress.com/2013/10/tent-network-nine-corridors.jpg>