

# HORIZONTAL ACTIONS FOR INTEGRATION AND COORDINATION OF THE MANAGEMENT OF THE TRANS- MAGHREB MOTORWAY AXIS



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Union for the Mediterranean  
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in partnership with



Groupe des ministres de transport  
de la Méditerranée Occidentale





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## 1. INTRODUCTION

At the 7th Conference of the Ministers of the GTMO 5+5 (Group of Transport Ministers of the Western Mediterranean<sup>1</sup>), held in Algiers on 13 March 2012, the Ministers decided, among other actions, to increase the coordination of management activities between the organizations responsible for managing the Trans-Maghreb Motorway in the countries it runs through while ensuring total interoperability and uniform management in terms for the quality of the service provided to users, which will help give the project a more global and regional vision.

This action line is the transverse or horizontal line of the project to complete the central section of the Trans-Maghreb Motorway which has received the support of the Union for Mediterranean (UfM). The Trans-Maghreb Motorway Axis was submitted by the Technical Secretariat of GTMO 5 +5 to UfM Secretariat for its labelling. On 10 February 2012, the project was labelled showing the UfM's support of the project.

Since it was labelled, the Secretariat of the UfM and the Technical Secretariat of the GTMO 5+5 have worked in partnership to promote the project. One of the priorities of this work was the design, development and optimal integration of the horizontal component (which aims to strengthen the activities for coordinating operation of the axis between the agencies responsible for its management) with the infrastructure component. This process resulted in the development of a road map that begins with the preparation of this document, which reflects the current situation and proposes actions designed to integrate and coordinate operation of the motorway axis more effectively at regional level.

This document will serve as a basis for discussions during a joint UfM/GTMO 5+5 initiative, which will consist of two-day work session dedicated to strengthening the horizontal activities relating to the integration and management of the Trans-Maghreb Motorway axis. These sessions will bring together all parties potentially involved and interested in the development of the horizontal component of the Trans-Maghreb Motorway axis project in order to raise awareness of the regional dimension of the motorway and its potential, and to jointly define a concrete action plan for development of this component.

In particular, this document will present six priority areas for action that should form the focus of the two work sessions and the action plan. These are: trade facilitation, funding and road pricing, multimodality, road safety, training and the regional level of the Trans-Maghreb Motorway. At the end of each section, we will propose a series of actions to be included in the action plan that aim to develop each of the six areas in terms of the activities to coordinate the operation of the axis. The document will also be used to publicize this initiative among the international organizations that may be interested in participating. These include the International Road and Transport Union (IRU), which signed a memorandum of understanding with the Secretariat of the UfM on 17 April 2013 in order to strengthen their cooperation,

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<sup>1</sup> The members of the GTMO 5 +5 are the ministers responsible for transport of the ten countries in the region: ministère des Transports (Algeria), ministerio de Fomento (Spain), ministère de l'Écologie, du Développement durable, des Transports et du Logement (France), ministero delle Infrastrutture e dei Trasporti (Italy), ministry of Transport (Libya), ministry for Infrastructure, Transport and Communications (Malta), ministère de l'Équipement et des Transports (Mauritania), ministère de l'Équipement, du Transport et de la Logistique (Morocco), ministério da Economia e do Emprego (Portugal), et ministère du Transport (Tunisia).

especially in the area of transport facilitation and border crossings and that of professional training in the road transport sector.

## 2. STRUCTURE AND CONTENT OF THE DOCUMENT

The themes developed in the next sections are presented as follows:

- **Trans-Maghreb Motorway Axis: state of development.** This section describes the state of development of the infrastructure and its key characteristics.
- **Trade facilitation.** This chapter deals with aspects whose improvement will reinforce trade facilitation. In practical terms, these include border crossings, the services they provide and the design of their infrastructure, and the adoption of UN conventions (e.g. the International Convention on the Harmonization of Frontier Controls of Goods, the TIR Convention, the International Convention on the Simplification and Harmonization of Customs Procedures or the Revised Kyoto Convention, and the ADR) and the benefits associated with them.
- **Funding and road pricing.** This chapter addresses the relationships between the state and the concessionaires and between the users and the concessionaires that may be established for the management of the motorway. It also includes the eventual implementation of a single electronic toll system at regional level.
- **Multimodality.** It analyzes the multimodality concept of the infrastructure, i.e. interrelations between the Trans-Maghreb Motorway axis and other modes of transport. Emphasis is placed on the importance of having efficient connection points (ports, logistics platforms, airports, industrial zones, etc.) without forgetting the issue of economic viability.
- **Road Safety.** This section defines and identifies the segments with accident black spots. It then highlights the need for minimum equipment along the infrastructure that helps prevent accidents and/or reduces their seriousness and a common signage system.
- **Training.** This area deals with the essential role of training in ensuring professionalism and good practices among the personnel involved in the activity of the axis. It is necessary to identify the most suitable training activities for each group of employees concerned.
- **Regional level of the Trans-Maghreb Motorway.** This involves compiling and planning the complementary infrastructure on the axis. This is necessary to ensure that the axis functions correctly on a daily basis and that the abovementioned areas are properly developed.
- **Work sessions dedicated to strengthening the activities for integration and management of the Trans-Maghreb Motorway.** This chapter presents the context and objectives of the work sessions, as well as any items of interest to be addressed.

### **3. TRANS-MAGHREB MOTORWAY AXIS: STATE OF DEVELOPMENT**

With a length of approximately 7500 km, the Trans-Maghreb Motorway axis must link the major cities and capitals of the five Maghreb countries, from Rosso (near Nouakchott) to Amsaad (near Tobruk). The motorway will consist of a minimum of 2x2 lanes, and will be increased to 2x3 lanes in certain sections in order to adapt to traffic volumes.

The Trans-Maghreb Motorway is a regional project of considerable magnitude, but it should also be considered on a much wider scale:

- as part of a continental African network (it is axis number one on the trans-African highway network<sup>2</sup>),
- as part of a Mediterranean network (the trans-Mediterranean transport network, TMN-T),
- as the culmination of a future fixed link with Europe through the Strait of Gibraltar, and the origin of motorways to African countries via the Tangier-Lagos, Algiers-Lagos and Tripoli-Cape Town axes.

These three dimensions serve to highlight the project's enormous interest in the medium and long term for the Maghreb region and for the Mediterranean as a whole.

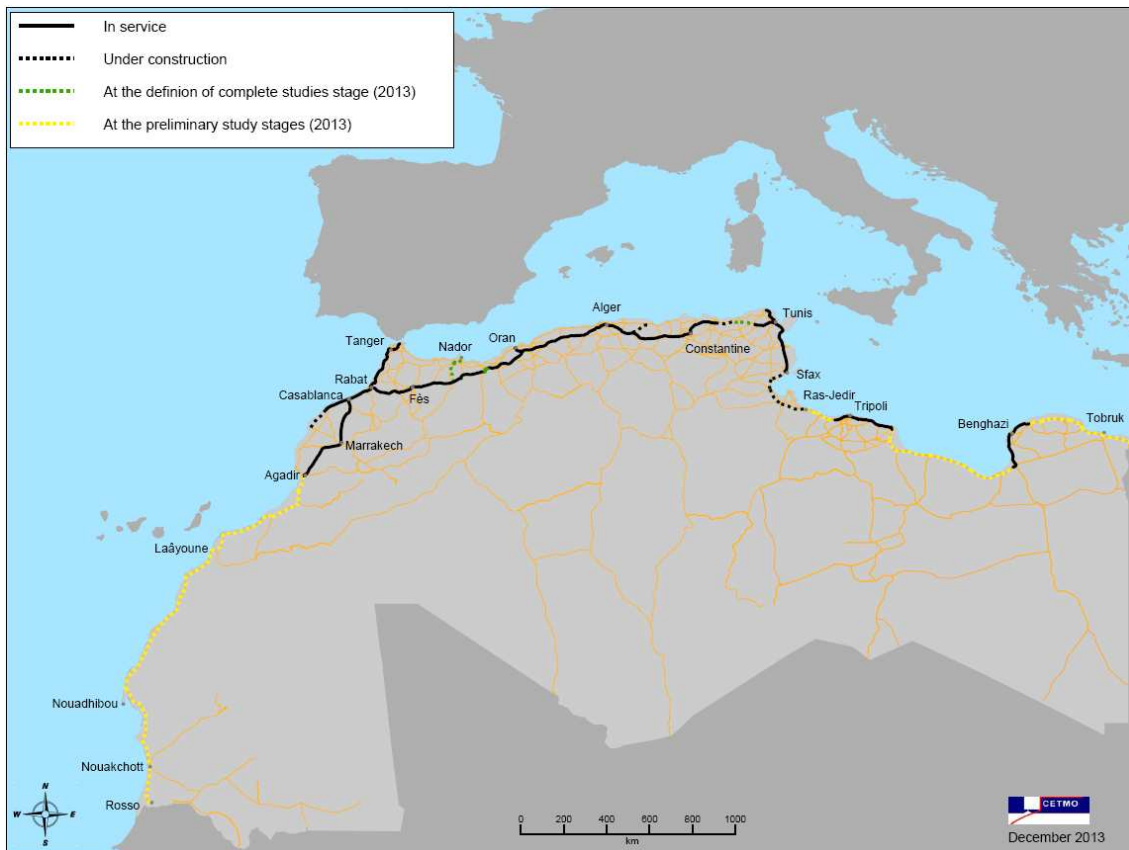
For the section between Agadir (Morocco) and Ras-Jedir (Tunisia), known as the central section, 97% of the axis is in service or in the process of being constructed. The remaining 3% corresponds to the border sections. The other sections (Agadir-Rosso and Ras-Jedir -Tobruk) are currently at the preliminary study stage. Map 1 shows the progress of the different sections of the Trans-Maghreb Motorway.

The progress of the two physical sections labelled by the UfM that the Secretariat of the UfM is seeking to promote is as follows:

- For the link between Oujda (Morocco) and the end of the east-west Algerian motorway, which covers a distance of 23 km, the national company Autoroutes du Maroc (ADM) has launched an appeal for consultation on the development of the detailed design study and the study on traffic and economic and financial viability through a public tender process at the request of the Ministère de l'Équipement, du Transport et de la Logistique.
- The other section in the study phase is between Boussalem (Tunisia) and the Algerian border. Specifically, the consultant employed by the Ministère de l'Équipement is in the process of concluding the preliminary-design; this will make it possible to define and evaluate alternative routes through a multi-criteria analysis that will enable the best option to be chosen.

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<sup>2</sup> The Trans-African Highway network comprises transcontinental road projects in Africa being developed by the United Nations Economic Commission for Africa (UNECA), the African Development Bank (ADB), and the African Union.

**Map 1 – State of development of the Trans-Maghreb Motorway axis**

Source: own elaboration, CETMO

## 4. TRADE FACILITATION

The fact that the Trans-Maghreb Motorway passes through more than one country involves the application of specific regulations in each country that sometimes differ from one country to another and may compromise the effectiveness of the axis.

It is therefore necessary to work on the standardization of the motorway axis, both on a technical level and in terms of the management and control of documentation, in order to promote interoperability and to ensure that the whole axis is as coherent as possible.

The action plan must take into account two fundamental aspects that are integrated:

- the physical structure and the organization of border crossings;
- the main international conventions for trade facilitation.

### 4.1. Border Crossings

This section provides ideas in terms of services offered and operational mechanisms such as designing border crossing points to allow for passing through borders (customs and other control procedures) more efficiently, thereby allowing greater fluidity in trade and transport operations.



#### **4.1.1. Services Associated with Border Crossings**

There are a number of services and actions that can contribute to improve the comfort and speed of users of border crossings.

One of the main actions is to share information that could be very useful to other administrations and agencies. The isolation among different agencies and the lack of coordination in their respective interventions are the main obstacles to a more efficient border services. This behaviour generally leads to duplicating inspections and creating bottlenecks at borders.

From a technological standpoint, adopting electronic information exchange systems can be very useful, not only among agencies within a single country, but also at the regional or neighbourhood level (for 2 or more countries). This tool would allow important flows of customs data to be stored, transferred, processed and exchanged. Properly implemented, this system would save time and money, although it could cause redundancy and delays if the information is needed on paper once it has already been archived electronically. The electronic single window is an example of these electronic information systems. They would improve connections among agencies. Entering basic information only once and providing standard documents would allow relevant information to be shared among all parties involved in the import, export or transit process.

Another useful service, from a work organization point of view, is the submission of advance information to customs by operators so that they can carry out risk analysis even before vehicles and containers arrive at border crossing offices; this would enable them to anticipate those operations and shipments that, for one reason or another, require more thorough checks, and to process other movements more quickly.

Facilitating trade at border crossings can be achieved by creating border cooperation agreements (relating to hours of operation or standards and certifications) and reducing or moving the checkpoints at starting or destination point of the international transport, so that goods can travel more freely to their destination. A very positive factor is the existence of relationships between different national customs offices within a region. An example<sup>3</sup> of this can be seen in the framework of the WCO's North of Africa, Near and Middle East (MENA) committee, which meets on a regular basis to strengthen the cooperation of its services within the region and has led them to organize some joint activities.

Inspections for the purposes of taxation, safety, the environment, border control, security and health are necessary. But the way these inspections are carried out, including the selection of goods requiring inspection, depends on each individual country. Exhaustive inspection of goods is thus one of the main causes of high border-crossing times in some countries.

Customs offices around the world have gained extensive experience in collaboration with other border agencies with the purpose of defining particular risk profiles that allow them to employ physical inspections according to the level of potential risk associated with the freight. In combination with investing in equipment (such as scanners) or the introduction of simple

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<sup>3</sup> Example taken from the regional action plan in *Étude régionale sur la facilitation du commerce et les infrastructures pour les pays du Maghreb*, June 2012, from the World Bank.

mechanisms, such as TIR EPD, these measures can help strike a balance between inspections and efficiency in customs procedures.

#### 4.1.2. Border-Crossing Infrastructure

The design of border checkpoints must consider the importance of aspects such as security, the adoption of measures that contribute to facilitating trade and reducing times for export and import processes must be taken into account when these operations are carried out at the border and to facilitate the passage of goods in international transit.

Studies on best practices and benchmarking with respect to the movement of goods across borders have been conducted by various organizations<sup>4</sup>. Some suggestions are as follows:

- The implementation of "green lanes" for vehicles using the TIR convention that have been subject to advance electronic information reporting, as is the case at the Turkish border crossing point of Kapikule on the Bulgarian border.
- Use several primary inspection lanes to increase the efficiency of border checkpoints, including one express lane for vehicles associated with the TIR convention on goods transport.
- Create by-pass lanes for vehicles that must proceed to a second, more detailed physical inspection, such that the inspection facility can be accessed without blocking or delaying the rest of the vehicles.
- Have back-in angle parking areas in restricted zones of border checkpoints for each primary inspection lane.
- Have customs inspection teams and border security guards together in primary inspection lanes and secondary inspection areas.
- Install non-intrusive detectors for radioactive materials, narcotics and illegal chemical products throughout the length of the border checkpoint access motorway.
- Install licence plate scanners at the entrance of each primary inspection lane.
- Immediately move vehicles that pose a risk to protect secondary areas.
- Design border checkpoint management tasks to prepare border infrastructure strategies combining five-year strategies with yearly action plans, allowing for finding and distributing sufficient funds and resources.
- Design a border checkpoint design manual incorporating national standards to be developed and continually updated.
- Cooperate with neighbouring countries to develop border checkpoint infrastructure and equipment strategies.
- Consider creating a national agency specializing in the design, building and maintenance of border checkpoints.

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<sup>4</sup> Some reference studies on best practices and benchmarking: *"Handbook of Best Practices at Border Crossings- A Trade and Transport Facilitation Perspective"*, UNECE Secretariat, Genève, 2012; *"Étude régionale sur la facilitation du commerce et les infrastructures pour les pays du Maghreb"*, Banque mondiale, 2012; *"Best Practices in Corridor Management"*, Banque mondiale, 2005.

The participation of agencies and institutions familiar with the characteristics and problems of the transport industry can be very helpful with defining services and designing border checkpoints.

In fact, the World Customs Organization (WCO) is already active in projects in this field in the region. It is in the process of developing a border checkpoint in Ras Jedir and also plans to work on the crossing point between Tunisia and Algeria. Considering its involvement in these activities, its presence at the work sessions designed to strengthen the horizontal activities relating to management of the axis could be very useful as an example of best practices, and these same projects could represent a point of reference in the future action plan for other similar regional initiatives.

#### **4.2. Adoption of facilitating conventions of the UN: International Convention on the Harmonization of Frontier Controls of Goods, TIR Convention, Revised Kyoto Convention and Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).**

According to a study carried out by the World Bank<sup>5</sup>, not all of the Maghreb countries have all of the essential legal instruments that form the minimal basis for facilitating trade, especially for the movement of goods by road and in a multimodal environment. Many of these tools are found in international conventions.

The main international conventions having to do with facilitating international trade that affect customs relationships on land are presented in this section.

##### **4.2.1. International Convention on the Harmonization of Frontier Controls of Goods.**

The International Convention on the Harmonization of Frontier Controls of Goods is a framework convention designed to establish coordinated and harmonized means between the contracting countries in order to facilitate border crossings.

This convention was signed by the contracting parties on 21 October 1982 and since then has been amended by Annex 8 regarding road transport and Annex 9 regarding rail transport.

The harmonization convention has 57 contracting parties, including Tunisia and Morocco.

##### **Basic principles of the International Convention on the Harmonization of Frontier Controls of Goods.**

The International Convention on the Harmonization of Frontier Controls of Goods is a framework convention that establishes the basic principles that the contracting parties should use in the organization of controls related to the international movement of goods in order to facilitate border crossings.

It therefore aims to accelerate border procedures and to speed up and minimize as much as possible the formalities to be completed at borders through the appropriate coordination of controls and harmonization of procedures and documents. To achieve this, it establishes the principle of mutual recognition of checks carried out by the authorities of the signatory

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<sup>5</sup> *Étude régionale sur la facilitation du commerce et les infrastructures pour les pays du Maghreb*, provisional report. World Bank, June 2012.

countries. This makes it possible to simplify, coordinate and reduce the checks at borders, mainly as a result of the definition of various international certificates that are recognized by the contracting parties, thus preventing the duplication of certain control procedures.

In particular, the harmonization convention provides for the following basic principles:

- Transfer of control procedures from border checkpoints to the departure and final destination points of transport operations.
- Harmonization of procedures and controls, especially through coordination of border checkpoint opening hours among neighbouring countries that share a border and the implementation of coordinated control procedures between the different authorities that may be involved in border crossing processes (e.g. customs, immigration, transportation, veterinary services, etc.).
- Reduction and coordination of the controls carried out at borders through the establishment of a single window and joint border controls between the authorities of the bordering countries.
- The establishment of an international vehicle weight certificate and technical requirements for weighing stations designed to avoid repetitive weighing procedures carried out by international transport operations in the various countries, and to limit these repetitions to suspicious cases through mutual recognition of the international certificate issued at the initial weight measurement.
- The establishment of an international technical inspection certificate for vehicles to ensure that these controls are not carried out at borders.
- Recommendations for adopting simple, harmonized procedures, especially in terms of the required documentation, for the granting of visas for professional drivers to allow them to cross borders multiple times.
- The adoption of more straightforward border crossing procedures for urgent or fragile consignments such as live animals and perishable goods.
- Systematization of the process to provide the relevant people with timely information in a harmonized and coordinated manner, especially with regard to specific requirements, changes in regulations or procedures and the current traffic situation at borders.

#### **Operation of the International Convention on the Harmonization of Frontier Controls of Goods.**

As this is a framework agreement, it is not prescriptive or intrusive. However, its implementation may be facilitated by the sharing of good practices in a bilateral or regional framework and including it within the framework of technical assistance programmes.

#### **Benefits of the International Convention on the Harmonization of Frontier Controls of Goods**

Its advantages are obviously numerous for administrations, which can streamline the management of their staff, as well as for trade and international transport operators, which make cost and time savings due to the harmonization of procedures and documents and the

reduction and acceleration of border procedures, thereby improving international transport services.

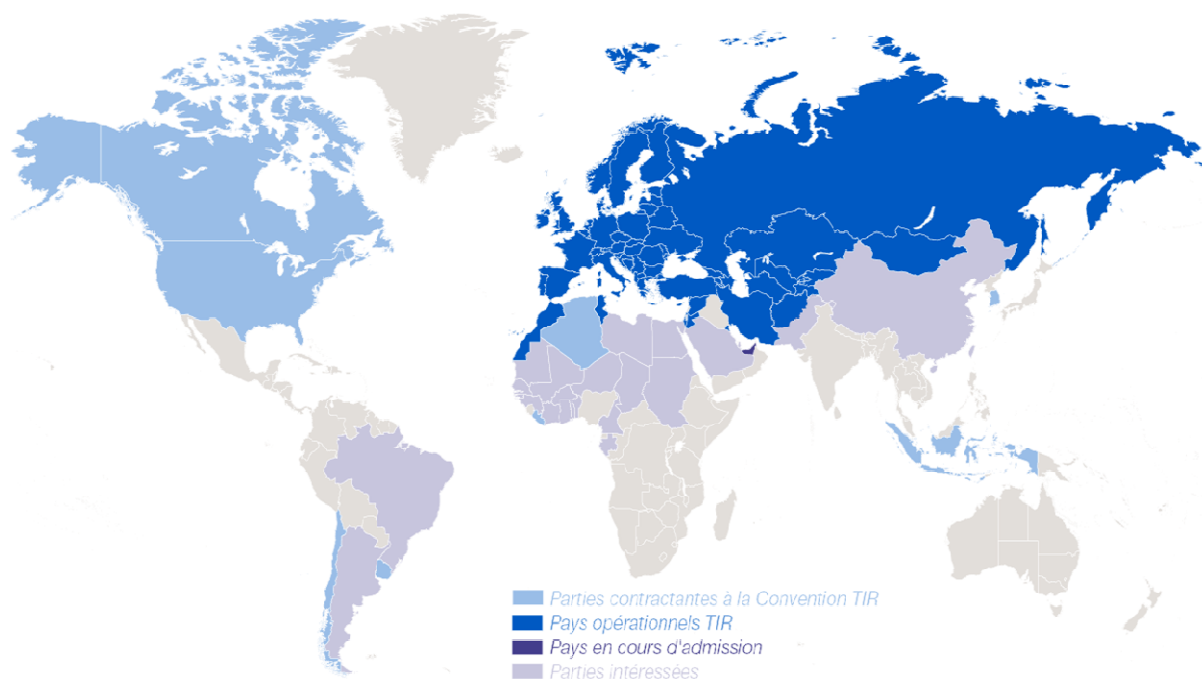
#### 4.2.2. The TIR Convention<sup>6</sup>

Among the measures to facilitate trade within activities that use and manage the motorway axis, the adoption and complete implementation of the TIR convention for goods transport was one of the proposed actions.

The TIR Convention (Transports Internationaux Routiers, 1975): TIR is the leading system for international road transit that allows for the movement of goods in customs transit.

Moreover, accession to the TIR Convention has already been the subject of various recommendations from regional bodies and institutions, such as the Council of Transport Ministers of the Arab League, the group of experts for North Africa of the UNECA, etc.

**Map 2. Geographical coverage of the TIR Convention**



Source: IRU website

The TIR Convention currently has 68 contracting parties and is actually used by 58 countries, especially in Europe and Central Asia, the Caucasus and the Middle and Near East, thereby facilitating and ensuring more than three million transport operations per year. Morocco and Tunisia are contracting parties and use the convention, while Algeria, despite being a contracting party, does not use it. Libya and Mauritania are interested parties.

#### Basic principles of the TIR Convention

The TIR regime is an example of good practices for transit policy. In fact, it is the only regimen designed for global international transit. The TIR Convention offers an internationally

<sup>6</sup> Manuel TIR. Convention douanière relative au transport international de marchandises sous le couvert de carnets TIR (Convention TIR 1975), neuvième édition. NATIONS UNIES 2010, New York et Genève.

recognized procedure to facilitate the transport of goods in transit through the use of a standard, internationally recognized customs document, which also serves as proof of existence of an international guarantee. The TIR regimen is based on six pillars:

- Goods must be carried in containers or vehicles that are approved for use by customs and accompanied by an agreement certificate;
- Import or export duties and taxes whose payment is suspended during TIR transportation must be covered by a valid and internationally recognized financial guarantee;
- Goods must be accompanied by a customs document that is recognized worldwide (the TIR Carnet), opened in the country of origin and serving as the customs transit declaration, the control document, and the proof of the international financial guarantee for the customs authority in the country of origin, transit and destination;
- The customs control measures adopted in the country of origin must be accepted by the transit and destination countries (mutual recognition of procedures and controls);
- Access to the TIR system for national issuing and guaranteeing associations and for transport operators is subject to the approval of the authorities of their country of establishment in line with the conditions and minimum criteria established by the convention.
- The implementation in public-private partnership of electronic risk management tools (SafeTIR and TIR EPD) that provide traceability and the online tracking in real time of each TIR journey.

### **Benefits of the TIR Convention**

As regards Customs control measures at frontiers, the TIR system clearly has advantages for Customs administrations, as it reduces the normal requirements of national transit procedures. At the same time, in the absence of irregularities, the system avoids the need for physical inspection in countries of transit other than checking seals and the external conditions of the container.

In terms of documentation, since the TIR Carnet is sufficient to cover the entire international transit operation, it dispenses with the need to operate national guarantees and national systems of documentation and reduces the risk of presenting inaccurate information to Customs administrations.

The implementation of electronic risk management systems helps reinforce the safety and overall efficiency of the TIR system.

Customs services are not the only beneficiaries, however; there are also advantages for commerce and transport carriers. The TIR system encourages the development of international trade, since goods may travel across national frontiers with a minimum of interference by Customs administrations, thereby reducing delays in transit and enabling significant economies to be made in transport costs.

In reducing the impediments to international traffic by road caused by Customs controls, the TIR system enables exporters and importers to select more easily the form of transport most suitable for their needs.

The TIR Convention provides relatively simple access to the required guarantees which are a sine qua non for the transport and trade industry to benefit from the facilities of Customs transit systems.

#### **4.2.3. Revised Kyoto Convention<sup>7</sup>**

The Revised Kyoto Convention (RKC) entered into force in 2006 and consists of a 1999 revision to the 1974 Kyoto Convention. Developed by the World Customs Organization (WCO), it is an international agreement that seeks to harmonize and simplify customs practices and procedures in international trade. This convention contains the legal text, standards and directives to define the key legal terms established by customs law and procedures. Thus, the member states that are contracting parties are encouraged to adjust their national legislation accordingly, based on the definitions and regulations established by the RKC, so as to achieve effective harmonization of customs practices in all contracting countries. The RKC is therefore an effective instrument for modernizing and harmonizing customs regulations and practices, and helps build modern customs administrations.

#### **Basic principles and operation of the Revised Kyoto Convention.**

Countries wishing to become a contracting party to this international convention must commit to uphold the following binding principles:

- Transparency and predictability of Customs actions.
- Standardization and simplification of the goods declaration and supporting documents.
- Simplified procedures for authorized persons.
- Maximum use of information technology.
- Minimum necessary Customs control to ensure compliance with regulations.
- Use of risk management and audit-based controls.
- Coordinated interventions with other border agencies.
- Partnership with the trade.

The WCO promotes the implementation of the RKC through awareness raising and training initiatives. There are currently 84 countries that are contracting parties to the convention. Among the Maghreb countries, Morocco and Algeria are signatories<sup>8</sup> (thereby accepting the

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<sup>7</sup> Information obtained from documentation prepared by the World Customs Organization and the United Nations Economic Commission for Europe. Specifically, from *Revised Kyoto Convention* and *WCO Research Paper No. 6: Benefits of the Revised Kyoto Convention*, by Tadashi Yasui in February 2010 and the *Trade Facilitation Implementation Guide* website of the UNECE.

<sup>8</sup> According to information in the document *Présentation de l'Organisation mondiale des douanes et de ses instruments*, World Customs Organization, 2006.

conditions of the Revised Kyoto Convention), while Tunisia is studying the possibility of acceding<sup>9</sup> and Libya and Mauritania are not signatories.

### **Benefits of the RKC.**

Due to the legally binding nature of the RKC, Contracting Parties promote and maintain efficient and modern Customs procedures consistent with international standards, and ensure that legitimate trade is facilitated. In addition, it assists an RKC Contracting Party to attract foreign direct investment (FDI).

For systems that are fully implemented, new advantages could be defined, such as faster release and lower trade costs. Some measures which are expected to reduce trade costs may include fewer Customs formalities, reduced data requirements, and higher predictability in release times and the necessary Customs procedures.

Another significant benefit would be greater foreign direct investment and enhanced competitiveness due to an efficient and simplified Customs system. When goods are traded faster at lower cost, traders will obtain higher competitiveness in domestic and international markets.

#### **4.2.4. Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).**

The Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) was adopted on 30 September 1957 and amended by a protocol on 28 October 1993.

The technical annexes are constantly updated and published on a regular basis.

It is worth noting that the European Union has fully integrated the ADR and its annexes into its internal legislation. Indeed, for this type of transport operation within the European Union, European legislation simply refers to the ADR, and all changes to the ADR automatically apply within the European Union.

To date, the ADR has 48 contracting parties, including Morocco and Tunisia.

Because of the highly technical nature of this agreement, countries deciding to enter into the ADR may set a timeline for the various phases of its entry into force.

#### **Basic principles of the ADR.**

The main objective of the ADR is to increase the safety of the international transport of dangerous goods by road by defining the appropriate conditions that allow transport under optimal safety conditions for drivers, the staff involved in handling the goods, other road users, and the control and rescue teams in case of accidents.

Thus, the ADR includes:

- Classification and identification of the dangerous goods admitted for international transport based on their state and the danger they pose (explosives, flammable, radioactive, toxic, corrosive, etc.).

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<sup>9</sup> According to a news article dated 4 March 2013 on the website of the Directorate General of Customs of Tunisia ([www.douane.gov.tn](http://www.douane.gov.tn)).



- Transport conditions (packaging types and requirements for the construction of packaging, labels, acceptable amounts for transportation and any possible incompatibilities between products), documentation, and the provisions concerning loading, unloading, handling and storage.
- The initial and continuous training requirements for drivers and personnel, depending on the categories of goods and the type of danger posed.
- Requirements concerning the technical construction and conformity of road vehicles and containers, tanks or not (technical inspection: ADR, ABS, tank approval, etc.).

### **Benefits of the ADR**

The advantages of the ADR are numerous for public authorities, especially for control teams and emergency and rescue services in case of accidents, for transport companies and their clients, and for other road users.

Firstly, the classification of dangerous goods admitted for international transport, their identification based on their nature, state and the danger they pose, and their corresponding labels allow everyone to see the dangerous nature of the goods being transported and thus adjust their driving accordingly. Furthermore, in case of accidents, the emergency and rescue services are immediately aware of the type of danger they face and therefore know the type of intervention required.

The principle of the ADR technical control of vehicles and tanks and the initial and continuous professional training requirements for drivers and personnel is an effective tool for preventing accidents.

Moreover, the ADR technical approval, the professional qualification of drivers and the harmonization of labelling can simplify border crossings by limiting controls as much as possible through the application of the mutual recognition principle.

### **4.3. Actions proposed**

- Definition of Best Practices/Rules/Regulations for practical implementation of the Conventions and related calendar;
- Technical Assistance for the accession process for these Conventions;
- Training of public officers in charge of enforcing these Conventions.
- Feasibility studies of border crossings

## **5. FUNDING & ROAD PRICING**

Actions to consider for the development of this area are:

- The first action consists of describing the funding in terms of the concessionaire-state relationship. The current missions and future objectives of the various concessionaires will be addressed for each country. In this regard, special attention will be paid to the

subject of infrastructure funding through the choice of a private concessionaire, by taking into account recent experiences in the European context.

- The second action is to describe the concept of charging for the road network from the perspective of users by explaining the bases of the tariffs, their technical implementation and the state of the art of road charging in the Maghreb. The medium-term goal of this action is to establish the principles for the establishment of an interoperable electronic toll system throughout the entire Trans-Maghreb Motorway axis.

## 5.1. Concessionaire-State Relationships

### 5.1.1. State of the art

#### Algeria

Two organizations are linked to the construction and management of the motorways in Algeria. The Agence nationale des autoroutes (ANA) is the agency in charge of the processes of designing and constructing the motorway network in Algeria, as well as preparing the reports consulted by the companies that conduct studies and construct equipment and infrastructure.

The other organization is Algerienne de gestion des autoroutes (AGA), which, under the Ministère des Travaux publics, is responsible for implementing plans and programmes relating to the management, operation and maintenance of the national motorway network and its installations.

Among AGA's future goals are the optimization of the motorway infrastructure and the promotion of its integration with other modes of transport, with infrastructure that conforms to international standards in the area of safety and services and the development of operation and maintenance techniques for the motorway network in Algeria.

In terms of this last point, it is anticipated that a foreign partner, chosen by means of an international tender process whose specifications will be prepared by AGA in 2014, will support AGA by assuming responsibility for the infrastructure operation in accordance with international standards.

#### Morocco

In Morocco, the fundamental mission of Autoroutes du Maroc (ADM) is the construction, maintenance and operation of the motorway network awarded by the state. Each motorway section awarded to the ADM is subject to a concession contract that sets out the rights and obligations of the grantor and the concessionaire.

Funding of the motorway infrastructure based on tolls allowed the company to implement a strategy for developing the motorway network and to achieve a high level of construction. The toll was introduced in 1991 on the existing motorway linking Casablanca with Rabat. In 2008, while the construction of the motorways between Fes and Oujda and between Marrakesh and Agadir was under way, the construction of an additional motorway programme was entrusted to ADM.

## **Tunisia**

In Tunisia, Law 86-17 of 7 March 1986, on the revision of the legislation relating to the public domain of the state, constitutes the legal framework that made it possible to retain the principle of establishing a toll on Tunisian motorways and to entrust the operation, maintenance and construction of facilities, equipment and ancillary facilities to the company Tunisie Autoroutes, which was created for this purpose, in accordance with the terms of the agreement and the specifications for the operating concession approved by A1 (Tunis-M'saken, M'saken-ElJem and ElJem-Sfax), A3 (Tunis-Medjez ElBab) and A4 (Tunis-Bizerte).

The concession agreement defines the purpose of the concession and its base, the financial and technical conditions applicable to it, and the rights and obligations of the parties.

### **5.1.2. Best Practices**

In order to define the concessionaire-state relationship for the management of motorway infrastructure, it may be useful to learn about other models operating in other regions or countries in order to select those that best suit the needs and characteristics of the Maghreb region.

The management methods currently being employed and the processes followed by the European countries of the GTMO 5+5 for implementing them, as well as details of the process whereby motorways can become profitable "businesses", can serve as references for the countries concerned (which follow a public enterprise model) in order to move towards an optimized management model that takes all aspects of the service life of the axis into account: construction, operation, maintenance, funding, etc.

A model that should be considered is the "PPP" (Public Private Partnership) for Highway Infrastructure, with the aim to capitalize on international experience. Indeed, PPPs are, at the moment, a modest but critically important percentage of the overall highway and roadway network, and the segments that are PPPs are often critical components of national and regional systems for mobility.

The private partner may be tasked from government with the design, construction, financing, operation and management of the infrastructure. Various sources of funds are used, from exclusively "real tolls" (users pay a fee to use the motorway) to a combination of "real tolls" and "shadow tolls" (payments from the government to the private concessionaire based on the traffic volumes) to exclusively "shadow tolls" or direct-payment (based mainly on the availability of service, but also on various factors such as congestion, minimum performance criteria and safety) mechanisms.

Another potential funding mechanism will be analyzed, based on the "ancillary revenues" derived from the commercial development and the land use arrangement along the motorway, such as service stations, restaurants, etc.). In this regard, the "Model Highway Initiative" will be presented as an example of PPP in the fields of highways. Such initiative contributes to the idea of revitalizing the ancient "Silk Road" between China and Europe in connection to the fact that 40% of the transportation time is being lost at the borders, due to inappropriate procedures, and that some 30% of the transport cost is attributable to illicit payments.

The initiative promotes the development of ancillary roadside infrastructure along the main road routes linking Europe and Asia, in accordance with international standards and best practices. Ancillary roadside infrastructure includes:

- “soft” components, such as harmonized border crossing procedures based on the key United Nations multilateral trade and transport facilitation conventions such as TIR, ADR, etc., to improve the control and speed up formalities at the border;
- “hard” components”, such as rest and service areas (fuel stations, car wash, maintenance, hotels, shops, restaurants, safe parking areas, etc.), logistic centres and dry ports, border crossing points, etc.

The “Model Highway Initiative” will be geared by a “Regional Infrastructure Fund” which is to allocate funds for infrastructure projects, involving business community (international, national and local businesses) into the process of creation and modernization of ancillary roadside infrastructure on the basis of PPP mechanism.

## 5.2. Concessionaire–User

The relationships between motorway concession companies and the users of that motorway are established through the concept of pricing, which aims to pass onto users some or all of the costs generated by vehicle use and the construction of the motorway.

### 5.2.1. Basic Concepts of Road Pricing

There is a very wide range of ways of affecting the price for using the road network and its infrastructure and services. For these actions to be successful, it is particularly important to work on three key aspects, namely, an effective pricing design (the model to be implemented should respond precisely to the needs for which action is taken) proper technical execution, and, finally, public acceptance.

There are basically two main reasons for implementing road pricing charges, as a strategy for managing demand that involves setting a charge that dissuades a certain number of users from using the road during peak traffic times. The charge is applied with the aim of raising the awareness of drivers about the cost other drivers are charged so they can judge the value of their own trip. The other is the use charges to generate income is to generate funds. Charges are therefore established to maximize income or recover specific costs.

### 5.2.2. Collection systems

Collection is one of the most important aspects of the technical execution of road pricing. There are as many road pricing modes as there are available technologies.

Most traditional methods of collection do not involve the use of technology in the vehicle. These methods can be differentiated by the way they are performed, either as a tax increase on fuel (which penalizes the distance travelled, but does not penalize such things as the place of use or wear levels from traffic) or the collection of a toll from the users of certain roads (which means other taxpayers are not subsidizing infrastructure users) using toll stations with barriers and channelled traffic.

A technologically more advanced system than the previous one is the use of microwaves (short-range communication systems). This requires vehicles to have electronic tags for vehicle and/or user identification, overhead gantries on the road to detect and identify the vehicle, and technology to guarantee each user is correctly charged.

It is also possible to use technologies based on the global navigation satellite system (GNSS) that determine the position and time of the vehicles. To calculate amounts and charge users, the vehicles must be equipped with an on-board unit (OBU) and have the coordinates of the charging points.

A system that is generally used more as a support than a basic collection system is the automatic plate recognition system using video cameras. It contributes the accuracy of reading plate numbers when processing video images taken on the road or at overhead gantries. This system makes it unnecessary for vehicles to be equipped with on-board equipment.

As road pricing policies become more complex, their relationship with the operating model and technology become more critical, which means that new road pricing strategies for road use call for the use of more suitable technological developments that can register such features as cargo, distance travelled, exhaust emissions, location and time.

Regardless of the technical system used to actually implement a pricing strategy designed to efficiently obtain optimum results, it must take into account the existence of occasional users. In order to guarantee equal treatment, access to the system must be simple and require the minimum effort. Occasional users therefore represent one system restriction.

### **5.2.3. Road Pricing in the Maghreb**

The position of the three countries covered by the central section of the motorway axis is very similar in terms of road pricing. In all three countries, the charging mechanisms and systems are based on the user-pays principle through the use of tolls. The amount of the toll is measured based on the journey travelled (in km) and the vehicle category, so that tolls are calculated as closely as possible to users' level of use of the infrastructure.

Tolls for using the motorway can be paid in cash (banknotes and coins) or by credit cards or special cards for the motorway. In addition, an electric toll system is being set up with the aim of reducing the bottlenecks that occur at some toll stations at certain times of the day throughout the year. Par example in Morocco, 18 electric toll lanes were installed and tested at cross-line toll barriers of Kenitra Centre, Bouznika, Tit Mellil, Airport and Bouskoura, as well as the stations on the interchanges of Skhirat, Bouznika and Mohammedia with the aim of gradually replacing traditional toll systems. These lanes were locally tested, and a full-scale test was done in January 2014 which allowed verifying the system in its real operational. In Algeria, the users of the highway will be forced to pay from the end of 2014 or mid-2015, deadline for the completion of 56 toll stations whose construction began in 2013, and since mid-2010, the electronic toll system has been gradually installed throughout the Tunisian motorway network<sup>10</sup>.

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<sup>10</sup> Information obtained from different digital media sources: "Tunisie autoroutes, le télépéage en attendant le Free Flow" ([www.gnet.tn](http://www.gnet.tn)).

Description of road pricing system used in the countries through which the Trans-Maghreb Motorway passes, it would seem clear that the application of a single system based on the same principles, regardless of the country in which one is driving, would be viable. This is because the basis for road pricing is the same in all of them. The price to be paid is a variable amount that is calculated according to the assessment of the type of vehicle used, depending on its physical characteristics (basically its height and number of axles), and according to the distance travelled.

### 5.3. Electronic Tolls<sup>11</sup>

The section has a highly ambitious medium-term goal: to define the principles needed for the establishment of an interoperable electronic toll system throughout the entire Trans-Maghreb Motorway axis.

In addition to applying a common road pricing system for the whole of the motorway, another interesting way of improving its regional vision would be to use a road toll system based on the same technology, which would help improve the interoperability of the infrastructure. At present, drivers who prefer to use this payment system in the different countries in the region are forced to install multiple electronic devices in their vehicles and this represents an inconvenience for the growing levels of international road traffic. In this field, in order not to jeopardise the opportunities for interoperability with the European motorway concession companies, ADM opted for the EN15509 standard. It aims to ensure standardization of badge encoding and the model of the transactions of the electronic tolls.

The existence of an interoperable electronic road toll system brings advantages not only for users, but also for the surrounding area. It greatly contributes to a reduction in the risk of accidents and thus improves road safety. It also helps reduce cash transactions and cut congestion at toll booths, particularly during heavy traffic periods. It also leads to a reduction in the damaging effects on the environment caused by the stopping and starting of vehicles and by traffic congestion. It can also be used to increase the use of information technologies in road transport, as this kind of device can be used for other kinds of services and applications, such as real-time traffic updates and tourist information.

If a single electronic toll system is to be defined and developed for the Maghreb, its interoperability would have to be ensured at a technical, procedural and legal level. The interoperability of electronic toll systems requires technical compatibility between the equipment belonging to the different agents. This compatibility relies on the existence of common rules that define the way in which the machines interact.

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<sup>11</sup> Definition of the issues to be resolved before implementing a single electronic toll system is based on the work carried out in this field by the European Commission, which resulted in the preparation of certain directives: *DIRECTIVE 2004/52/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 29 April 2004 on the interoperability of electronic toll road systems in the Community, and COMMISSION DECISION of 6 October 2009 on the definition of the European electronic toll service and its technical elements (2009/750/EC)*. We have also consulted the document, *The European Electronic Toll Service (EETS). Guide for the Application of the Directive on the Interoperability of Electronic Road Toll Systems*. Directorate General for Mobility and Transport, European Commission, 2011. This contains more information on the European road toll system.

Some initiatives that are already under way in the area of interoperable electronic toll systems may serve as references:

- The European Electronic Toll Service (EETS).
- The Spanish/Portuguese case.

#### 5.4. **Actions proposed**

The future action plan could consider conducting studies on road pricing for the whole Trans-Maghreb Motorway axis, firstly to generate the funds required to ensure sustainability of the infrastructure, and secondly to provide maintenance. The objective is to attain a standardized road pricing system.

The incorporation of new information and communication technologies in payment systems would help simplify the process and ensure a much smoother traffic flow.

- A feasibility study to define and apply a common road pricing system for the whole motorway through the use of electronic toll systems based on the same technology, and thus enable a single payment device to be used throughout the entire length of the Trans-Maghreb Motorway axis.
- Identification of the necessary equipment installed on the roadside and at all motorway exits to identify vehicles and collect the corresponding fees.

## 6. **MULTIMODALITY**

The Trans-Maghreb Motorway (the central segment of which is now practically complete) is expected to act as a dynamic driving force for trade, given that it services more than 50 cities, almost half the international airports and all the principal ports and railroad terminals in the region.

In addition to this major road axis, the various ministries responsible for national infrastructure are working on the planning and construction of branches and links with the most important points of the region in a socio-economic, industrial and commercial point of view.

Furthermore, in recent years, policies aimed at the transversal integration of transport chains and logistics have been implemented in the Maghreb region. For the current and, in particular, the future transportation of goods, it is essential to ensure that the different modes and sectors in the transport chain are effectively interwoven.

In this context, the most important points are ports. The goal is to establish good communication that promotes the smooth departure and arrival of goods at ports. It is therefore essential that the transfer process between sea and land modes is carried out as efficiently as possible.

Based on previous observations, the actions under consideration for the development of this area are:

- An analysis of the port system and its links with the Trans-Maghreb Motorway axis;

- An analysis of the connections between the Trans-Maghreb Motorway axis and areas of socio-economic interest in the region;
- The proposal for a "corridor study" that will enable priority links to be chosen.

## **6.1. Multimodality in Goods Transport.**

### **6.1.1. The Ports System**

International trade in the Maghreb region is characterized by the importance of maritime transport, since the majority of trading exchanges are made via the Mediterranean. The countries in the central segment of the Trans-Maghreb Motorway move a total of 220 million tonnes<sup>12</sup>. More than half of the goods carried (119 M tonnes) are bulk liquids, and the remainder is formed by bulk solids (61 M tonnes) and general cargo (40 M tonnes).

The importance of the ports that are closest to the motorway throughout the region as a whole is reflected in the high percentage of goods that they handle as a proportion of all the ports in Algeria, Morocco and Tunisia, i.e. around 95%. This percentage is equivalent to 209 M tonnes of goods transported.

A port is classified as close<sup>13</sup> when it is within less than a 20-kilometre radius of the central segment of the Trans-Maghreb Motorway, or one of its existing or planned branch roads with a capacity similar to that of the motorway itself. The ports of Oran and Bejaia in Algeria, Safi, Jorf-Lasfar<sup>14</sup> and Nador in Morocco, and Bizerte in Tunisia fall into this category.

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<sup>12</sup> 2010 data.

<sup>13</sup> This criterion covers the core ports in Algeria, Morocco and Tunisia in the GTMO 5+5 multimodal transport network, based on the proposal presented during the 17<sup>th</sup> Meeting of the Group of Experts GTMO 5+5.

<sup>14</sup> According to Autoroutes du Maroc, construction work on the El Jadida – Safi motorway began on 21 April 2013. This should help improve access between the towns of Jorf-Lasfar and Safi and the Trans-Maghreb Motorway axis. This project has financial support from the EIB.



**Table 1: Connectivity and flow of goods from the ports closest to the Trans-Maghreb Motorway.**

	Ports	Approx Dist TMM (km)	Road Connection	Type of road	Flow (tonnes)		
					Loading	Uploading	Total
<b>ALGERIA</b>	Alger/Dellys (1)	5	N11+US	2X2	1.621.615	6.735.612	8.357.227
	Annaba	5	N44	2X2	1.970.480	3.106.159	5.076.639
	Bejaia	5	N9	2X2	3.419.106	9.301.676	12.720.782
	Bethioua/Arzew (2)	10	N11/N13	2X2	52.708.959	1.512.012	54.220.971
	Oran	5	N2+US	2X2	579.628	4.420.960	5.000.588
	Skikda	*	N3+US	2X2	23.257.732	3.408.623	26.666.355
	<b>TMM DZ</b>	-	-	-	<b>83.557.520</b>	<b>28.485.042</b>	<b>112.042.562</b>
	<b>Total DZ</b>	-	-	-	<b>83.695.312</b>	<b>34.196.316</b>	<b>117.891.628</b>
<b>TMM/TOT (%)</b>	-	-	-	<b>100</b>	<b>83</b>	<b>95</b>	
<b>MOROCCO</b>	Agadir	10	N1	2X2	1.144.400	2.143.098	3.287.498
	Casablanca	5	N1+US	3X3	9.419.254	13.656.309	23.075.563
	Jorf-Lasfar	*	A5	2X2	4.940.627	11.743.333	16.683.960
	Mohammedia	10	N9	2X2	1.729.361	9.676.302	11.405.663
	Nador	5	N15+US	2X2	609.339	1.581.301	2.190.640
	Safi	*	A5	2X2	4.222.853	2.011.172	6.234.025
	Tanger	15	N1+US	2X2	902.207	1.201.966	2.104.173
	Tanger Méd. (3)	10	N16	2X2	1.320.197	1.460.015	2.780.212
	<b>TMM MA</b>	-	-	-	<b>24.288.238</b>	<b>43.473.496</b>	<b>67.761.734</b>
	<b>Total MA</b>	-	-	-	<b>27.443.202</b>	<b>44.572.996</b>	<b>72.016.198</b>
<b>TMM/TOT (%)</b>	-	-	-	<b>89</b>	<b>98</b>	<b>94</b>	
<b>TUNISIA</b>	Bizerte	5	P8	2X2	328.410	3.660.374	3.988.784
	Gabès	*	LR	1X1	1.776.110	2.996.749	4.772.859
	La Goulette	15	R23	2X2	260.802	536.647	797.449
	Radès	10	R33+US	2X2	1.597.491	4.699.027	6.296.518
	Sfax	10	P1+US	2X2	2.200.389	2.817.199	5.017.588
	Skhira	*	LR	1X1	4.688.773	1.189.285	5.878.058
	Sousse	5	P1+US	2X2	785.536	1.457.430	2.242.966
	<b>TMM TN</b>	-	-	-	<b>11.637.511</b>	<b>17.356.711</b>	<b>28.994.222</b>
	<b>Total TN</b>	-	-	-	<b>12.834.050</b>	<b>17.515.237</b>	<b>30.349.287</b>
<b>TMM/TOT (%)</b>	-	-	-	<b>91</b>	<b>99</b>	<b>96</b>	
<b>REGION</b>	<b>TMM REGION</b>	-	-	-	<b>119.483.269</b>	<b>89.315.249</b>	<b>208.798.518</b>
	<b>Total REGION</b>	-	-	-	<b>123.972.564</b>	<b>96.284.549</b>	<b>220.257.113</b>
	<b>TMM/REG (%)</b>	-	-	-	<b>96</b>	<b>93</b>	<b>95</b>

(1) Data for the Ports of Alger and Dellys are presented jointly.

(2) Data on the Ports of Béthioua and Arzew are presented jointly.

(3) Data for the Port of Tanger-Med do not include transshipment goods (20,196,257 tonnes) because they do not participate in multimodal transport and would significantly vary the results.

TMM Trans-Maghreb Motorway

US Urban segment

LR Local Road

\* Pending construction

Source: CETMO-FLUX Database, CETMO Maps

It is advisable to be able to distribute goods arriving from foreign ports quickly and efficiently across the region. To achieve this, it is useful to have a good transport network that makes it possible to reach all destinations while accomplishing to quality requirements that ensure the protection of the product carried.

However, equally if not more important than the distribution network is the interface that links it with the ports. Regardless of how good the distribution network may be, if goods cannot be carried away with sufficient fluidity, bottlenecks will form around the port area and this will result in an inefficient system. The same is true of products intended for export; the port should be able to absorb the necessary demand without creating a nuisance for the

population. Thus, the connections with a port's hinterland represent one of the most important factors in that port's development. This does not simply mean the existence of infrastructure; one must also take account of features such as the speed, capacity and quality of the traffic system, as this will affect decisions regarding transport times and infrastructure risk.

Port connections are limited by the physical location of the ports themselves, each of which is surrounded by an urban landscape that develops in proportion to the port's importance and in many cases further complicates its connectivity by hindering the development of large road axes in its immediate surroundings.

One way of responding to the saturation of the road network and the lack of space in the port itself could be to use rail transport to carry goods away from the area immediately surrounding the port or urban area (or to bring them to the port in the case of exports) and later, where necessary, to transfer the goods onto road transport at intermodal terminals. This is precisely the procedure that applies at dry ports, inland container terminals used to distribute the workload and reduce the storage space required in the immediate environs of the port. In general, these are connected directly to seaports by rail, and it is possible to allow goods to exit by both road and rail transport.

However, the most effective way of ensuring fluidity at the entrance and exits of ports is the establishment of United Nations international conventions that prevent the inactivity of containers or trailers in ports and allow them to be transported directly to their destinations where control procedures are performed.

Other recommendations<sup>15</sup> to be borne in mind in order to improve the efficiency of the port-hinterland system include ensuring that connections are properly integrated during the development of strategic transport plans and encouraging greater coordination between the increased loading capacity of vessels, port infrastructure and connections with the hinterland.

### **6.1.2. Intermodal Terminals**

Also of interest in terms of freight transport connections and multimodality are logistics platforms and rail transport. The option to redistribute flows towards other modes of transport or other corridors is a good solution when any part of the infrastructure is close to saturation. The use of logistics centres for goods consolidation is another decision that reflects a more efficient use of transport.

Let's take a look at the situation<sup>16</sup> in each individual country. In Morocco<sup>16</sup>, the job of planning logistics platforms is the responsibility of the Ministère de l'Équipement through the Agence Nationale de Développement de la Logistique. The main container platforms are in Casablanca (130 ha planned by 2015) and Tangier (50 ha by 2015). The area known as Grand Casablanca is also the logistics hub for all the other platforms (distribution, agro-food products, cereals, construction).

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<sup>15</sup> Information drawn from *Hinterland Connections of Seaports*, United Nations Economic Commission for Europe (UNECE), 2010.

<sup>16</sup> Information on the logistics platforms in Morocco was obtained from *Stratégie Nationale de développement de la compétitivité logistique. Synthèse de la stratégie et du Contrat-Programme 2010-2015*. Ministère de l'Équipement et des Transports, Morocco.

In Algeria, the Trans-Maghreb Motorway plays a very important role in logistics development, because there are plans to build a considerable number of industrial estates<sup>17</sup> along the route. For example, at the end of 2012, construction work began on the logistics hubs of Tixter (Ras El Oued), Ighil Ouberouak and El Kseur to decongest the Port of Bejaia.

In Tunisia, an agreement was signed, also at the end of 2012, for collaboration with the EIB on the construction of a logistics platform 25 km from Tunis with an area of 168 ha. It will one day be connected by road, rail, sea (with the Ports of Radés and La Goulette) and air (with Tunis-Carthage International Airport).

The LOGISMED project is operative throughout the Mediterranean and its aim is to create Euro-Mediterranean logistics platforms using quality criteria that guarantee its good practices and competitiveness in order to strengthen the logistics sector in the region. Its inauguration is anticipated to take place in mid-2013.

## 6.2. Multimodality in Passenger Flows (Airports)

The airports in the countries that make up the central section of the Trans-Maghreb Motorway do not boast significant freight-transport figures. However, they are important in terms of passenger traffic. Considering departures and arrivals (passengers in transit<sup>18</sup> were not taken into account so as not to affect transport multimodality), 34 million passengers pass through these airports a year<sup>19</sup>. Of this number, 84% travel through airports near<sup>20</sup> the motorway.

The most notable case is Morocco, where the percentage is as high as 92%, largely due to the proximity of Casablanca Airport, which alone accounts for nearly 50% of the passengers that pass through Morocco's airports. In Algeria, this percentage is 81%, which is equivalent to 6.6 million passengers, and in Tunisia, it is 75%, equivalent to 8.2 million passengers.

Of the passengers not counted (16% of the total number of passengers that arrive or depart from the airports in the three Maghreb countries), of note is Djerba Airport in Tunisia, which only accounts for 7% of the travellers in the region. Without considering this airport due to its condition as an island, it is clear that, when choosing an airport, the distance factor is more relevant than whether or not it belongs to the core network.

Specifically, the core airports not counted account for 2% of travellers in the Maghreb, whereas those outside the core network at a distance of more than 20 km from the Trans-Maghreb Motorway account for 7% of passengers.

The table below specifies the main flow figures and characteristics of land connections of the main regional airports:

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<sup>17</sup> For more information on the location, size and accessibility of the different industrial estates planned in Algeria, consult <http://www.aniref.dz/index.php/fr/#>.

<sup>18</sup> Because Tunisia provides total figures for passenger flows through its airports (without differentiating between incoming and outgoing passengers and passengers in transit), the different figures presented in this section include passengers in transit for this country.

<sup>19</sup> 2010 data.

<sup>20</sup> "Nearby airports" were understood to be only those less than 20 km from the motorway that form part of the core network of the GTMO 5+5 multimodal transport network, based on the proposal presented at the 17th Meeting of the Group of Experts GTMO 5+5.

**Table 2: Passenger Connectivity and Flows at Main Maghreb Airports**

	Aéroport	Aprox dist TMM (km)	Road Connection	Type of road	Flow (Passengers)		
					Arrivals	Departures	Total
<b>ALGERIA</b>	Alger	5	TMM	3X3	2.185.408	2.161.246	4.346.654
	Annaba	10	N44	2X2	199.424	203.161	402.585
	Constantine	5	TMM	3X3	310.515	318.800	629.315
	Oran	5	N4	2X2	531.492	550.556	1.082.048
	Setif	5	TMM	2X2	97.482	100.309	197.791
	<b>TOTAL TMM</b>	-	-	-	<b>3.324.321</b>	<b>3.334.072</b>	<b>6.658.393</b>
	<b>TOTAL DZ</b>	-	-	-	<b>4.081.167</b>	<b>4.107.522</b>	<b>8.188.689</b>
	<b>% TMM/DZ</b>	-	-	-	<b>81</b>	<b>81</b>	<b>81</b>
<b>MOROCCO</b>	Agadir	5	N1	2X2	768.643	787.205	1.555.848
	Casablanca	5	TMM	2X2	3.576.959	3.616.013	7.192.972
	Fes	5	N8	1X1	360.224	358.905	719.129
	Marrakech	20	N8+US	2X2	1.677.044	1.697.476	3.374.520
	Rabat	5	N6	2X2	178.160	179.613	357.773
	Tánger	5	N1	2X2	370.051	377.634	747.685
	<b>TOTAL TMM</b>	-	-	-	<b>6.931.081</b>	<b>7.016.846</b>	<b>13.947.927</b>
	<b>TOTAL MA</b>	-	-	-	<b>7.520.340</b>	<b>7.624.576</b>	<b>15.144.916</b>
<b>% TMM/MA</b>	-	-	-	<b>92</b>	<b>92</b>	<b>92</b>	
<b>TUNISIA (1)</b>	Enfhida	5	TMM	2X2			0
	Monastir	20	C100e	2X2			3.461.925
	Sfax	5	P14	2X2			104.157
	Tunis	5	N9	4X4			4.601.371
	<b>TOTAL TMM</b>	-	-	-			<b>8.167.453</b>
	<b>TOTAL TN</b>	-	-	-			<b>10.834.810</b>
<b>% TMM/TN</b>	-	-	-			<b>75</b>	
<b>REGION</b>	<b>TMM REGION (2)</b>	-	-	-	<b>10.255.402</b>	<b>10.350.918</b>	<b>28.773.773</b>
	<b>TOT REGION (2)</b>	-	-	-	<b>11.601.507</b>	<b>11.732.098</b>	<b>34.168.415</b>
	<b>% TMM/REG (2)</b>	-	-	-	<b>88</b>	<b>88</b>	<b>84</b>

(1) The Tunisian figures do not differentiate between arrivals and departures.

(2) Given that the Tunisian figures only provide a total, the regional figures for arrivals and departures only include Morocco and Algeria.

TMM Trans-Maghreb Motorway

US Urban segment

Source: CETMO-FLUX database, CETMO Maps.

In terms of airport connections, the infrastructure has good connections with the Trans-Maghreb Motorway, given that many infrastructure elements do not have major construction restrictions in their surrounding areas because they are located outside urban centres. In many cases, this advantageous situation results in direct connections with the motorway, while in others, it includes direct connections with the main roads in the area.

### 6.3. A study of the trans-Maghreb corridor

The development of the Trans-Maghreb Motorway axis is part of a plan for regional infrastructure in which it has been assigned priority status. One aspect that must not be overlooked is the planning of the axis and the definition of the priorities in terms of the most interesting connections from the point of view of potential traffic.

Infrastructure scenarios based on demand forecasts for the Trans-Maghreb Motorway axis should therefore be constructed in order to adapt the infrastructure to these forecasts and prevent its saturation by identifying any possible bottlenecks in advance, thus making it easier to take decisions regarding the priorities for action on the entire motorway system.

In addition, the definition of a set of indicators based on larger dimensions will help establish a system for monitoring the performance of the motorway axis.

#### **6.4. Actions proposed**

- To study the relationships between the Trans-Maghreb Motorway axis and the areas of economic, commercial and social interest (ports, logistics platforms, industrial zones, tourist areas, technology parks, airports, new towns, etc.) in order to determine whether the links are sufficient or they represent bottlenecks in the multimodal chain.
- To create a trans-Maghreb corridor model that includes all road, rail and port links, based on traffic growth forecasts in the region and with a range of infrastructure development scenarios based on different time horizons, to analyse the connections of ports and other points of interest on the Trans-Maghreb Motorway in order to determine any possible bottlenecks.
- To propose actions to correct the bottlenecks based on a scale of priorities and to identify the most urgent investments.
- To conduct feasibility studies on the priority links on the Trans-Maghreb Motorway axis.

## **7. ROAD SAFETY**

Safety is one of the most important aspects in the creation of any kind of transport infrastructure, given the importance of saving lives. According to 2009 statistics from the World Health Organization (WHO), the Maghreb countries are among the 25% of countries with the highest road fatality rate per 100,000 inhabitants<sup>21</sup>. For this reason, the following are ideas aimed at improving traffic conditions on the Trans-Maghreb Motorway.

We shall first focus on accident black spots or segments of road where accidents are concentrated, with a description of the methods used to identify them and the importance of their technical characteristics. We shall then go on to discuss the existence of basic equipment that could help reduce current accident and mortality rates.

### **7.1. Infrastructure-related action to improve Road Safety.**

The improvement of road infrastructure and the introduction of procedures to be followed in the event of accidents can notably contribute to a reduction in the frequency and severity of road traffic accidents.

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<sup>21</sup> Thus classification includes 178 countries (Algeria does not feature in these statistics).

Prior to introducing improvements to the current network, a study on the causation of traffic accidents involving heavy vehicles should be conducted. The methodology for such a study is already available and has been used in both the European Union and some Arab League countries. Such a study would provide accurate data on the actual causes of accidents (human factor, infrastructure, equipment, other users, etc.), and thus make it possible to define, based on these data, the appropriate measures that would have a real impact on accidents.

This methodology allows harmonizing all the applicable criteria in order to identify the accident black spots and define the means required to inform users who are unfamiliar with the places in question of their existence.

Although there is no single international methodology for defining accident black spots, it must consider the number of fatal accidents during previous years per unit of road length in relation to traffic volumes. The collection and analysis of data on accidents and physical injuries is essential in order to be able to make an objective evaluation of road safety, define the priority areas for action and monitor the effects of the measures taken.

Once road segments with accident black spots have been assessed and the relevant corrective measures have been taken, safety inspections should take on more of a preventive role. Regular inspections are an essential tool in the prevention of the potential dangers that may represent a threat to road users.

A good strategic method for achieving better results with regard to road safety consists of establishing quantified targets for reducing the number of victims. In general, this kind of approach also brings greater benefits in terms of the efficacy of the measures introduced and the rational use of public resources. Another recommendation is to create a system for the regular and consistent exchange of best practices between member states.

There are international initiatives that categorize roads based on the level of danger they pose. The best known of these are the Road Assessment Programmes (RAP), which function in more than 70 countries worldwide.

Other initiatives may prove useful, such as those that study the nature of accidents, i.e. the main reasons, since these allow road-related reasons to be identified. In this context, there is an initiative by the IRU titled *League of Arab States Truck Accident Causation (LASTAC) Feasibility Study*.

## **7.2. Recommendations for Road Safety Equipment**

One of the most important elements of prevention of the dangers of road is the signage. The existence of a common signage system throughout the whole axis, understandable by all users of the infrastructure, is a measure that would implicitly improve the safety of road users by minimizing the number of ways in which the signs may be interpreted. Agreements reached on this issue should be given due importance in the regional plans for infrastructure development in order to use them in future collaborations that may be established between the countries involved.

Road equipment can also make a decisive contribution to the reduction of injuries in the event of collisions in places with a high risk of accident, as well as having a positive influence on

behaviour. For this reason, one must bear in mind the need for a minimum amount of equipment to help prevent and/or reduce the effects of any potential accidents.

Some aspects relating to passive safety<sup>22</sup> that can be introduced or improved to help reduce accident and injury rates include the condition and characteristics of the central reservation, (such as the use of safety barriers, the width of the reservation and the presence of hazardous objects), the characteristics of the motorway's surroundings (side barriers, placement of exit slip roads, description of the area alongside the road) and the characteristics of the horizontal signage. One factor that has an influence on the effectiveness of the various measures adopted is vehicle speed, given that travelling at 80 km/h is not the same as travelling at 120 km/h.

The need to install safety equipment arises when the motorway environment is not safe, according to the concept of a safe zone (an area free of fixed objects without dangerous gradients). The purpose of such equipment is to improve the survival rates of a vehicle's occupants in the event of an accident.

These devices include the following:

- Safety barriers
- Shock absorbers
- End protectors
- Transitions
- Emergency escape lanes

In addition to devices that are designed strictly for safety purposes, consideration should be given to the use of spaces that will also indirectly help reduce danger on the roads.

- Rest areas: These should ensure the availability of a space where people can rest or eat in order to reduce tiredness and fatigue during long journeys. This helps increase safety for both the driver and for all other road users once the driver has resumed his or her journey.
- Hard shoulder or recovery area. This is a space that is extremely useful in situations of emergency or unexpected stops, as it offers an extra space that will ensure that traffic flow is disturbed as little as possible.

### **7.3. Actions proposed**

- The creation of a common accident and incident register for the entire Trans-Maghreb Motorway axis.
- The definition and promotion of the implementation of indicators that allow the safety of the motorway to be estimated and black spots to be identified.
- Availability of secure parking areas along the axis in order to improve the safety of motorway users.

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<sup>22</sup> *El protocolo de evaluación de carreteras Road Protection Score*. RACC Foundation, September 2007.

- The identification of signage standards so that the motorway is considered as regional, trans-Maghreb infrastructure.
- A review of the existing complementary infrastructure that helps to reduce the severity of accidents.

## **8. TRAINING**

One of the most efficient "soft" components of a transport project is training. A number of programmes in the field of transport and logistics are already in progress, such as Logismed, designed by the European Investment Bank to create a network of logistics platforms in the Mediterranean region; these demonstrate the importance of preparing the ground through training programs aimed at achieving maximum operational efficiency on the infrastructure that handles freight and passenger flows. This illustrates the appropriateness of implementing training programmes specially designed for the Trans-Maghreb Motorway axis.

The main objectives of these programmes are to develop the skills of transport professionals and to improve their knowledge and ability to manage the key aspects of road transport operations, as well as to effectively improve the performance of commercial road transport in the area of safety.

These concrete actions in the field of training will be preceded by preventative actions to select training centres in each of the countries concerned in order to transfer the necessary programmes and organize regular training sessions for trainers so as to develop the skills required to deliver the programmes effectively and guarantee their harmonization at regional level.

In the initial phase, the training programmes and professional qualifications will be structured, and also created, or strengthened, through the national associations that represent road transport in each of the countries concerned.

### **8.1. Actions proposed**

#### **Facilitation of the implementation of training policies at internationally recognized standards.**

- Definition of applicable rules (law or regulations) for access to profession for passengers and goods movements.
- Definition of applicable rules (law or regulations) for professional qualification requirements of transport operators (passengers and goods).
- Definition of applicable rules (law or regulations) for professional qualification requirements of drivers (initial and periodic training, examination).
- Creation or reinforcement of national Associations representatives of the road transport sector:
  - Drafting of status / constitution;



- Assistance for the establishment of such association;
- Drafting of Cooperation Agreements and signature with competent Ministries to establish the appropriate Public / Private Partnership.

**Achieve formalization and professionalization of the Road transport sector actors, through solutions based on international practices adapted to client countries' context.**

- UfM Secretariat – IRU Academy cooperation in the establishment and accreditation of Training Institutes;
- Transfer of IRU Academy Programs to Training Institutes satisfying quality criteria;
- Translation of standards and training materials in required languages;
- Delivery of TTT and support in pilot programs delivering;
- (Sub)Regional Training program customization where/when appropriate.

## **9. REGIONAL LEVEL OF THE TRANS-MAGHREB MOTORWAY**

### **9.1. Regional vision**

The Trans-Maghreb Motorway represents for the Mediterranean region the key infrastructure in a potential trade and transport corridor; this corridor, which is understood as a coordinated set of transport and logistics infrastructure and services that facilitate the flow of trade and transport between the major centres of economic activity, is currently in the planning phase.

The goal of this regional vision involves the establishment of study and analysis activities aimed at defining all of the infrastructure to ensure that, over the years, the motorway assumes the backbone function of the regional network so that it can cope with the growing traffic flows in an appropriate and coherent way.

The results of the analyses and studies on the priority areas under consideration, especially, trade facilitation, funding and road pricing, multimodality, road safety, will make it possible to define a structure for the Trans-Maghreb Motorway axis and provide effective technical standardization that will promote interoperability and give the entire axis as much coherence as possible.

In particular, complementary infrastructure (border crossing points, electronic equipment for the automatic checking of customs documents, a seamless automatic toll system, maintenance points, rest areas, etc.) will be analysed from the road users' perspective, especially professional drivers who use the motorway frequently and systematically.

A preliminary analysis based on each country's plans and the completion of surveys in the field concerning the existing road will make it possible to establish a map of the entire motorway axis from the current structure.

Through close coordination with the actions included in the multimodality component, the operational structure can then be defined by taking into account the effects of commissioning all planned connections between the motorway axis and the areas of socio-economic interest in each country.

As a result, either the complementary infrastructure or the future facilities of the motorway axis can be properly planned in order to ensure the consistency of the infrastructure capacity and the freight and passenger traffic demand and also to establish coordination between the "hard" and "soft" components covered by the horizontal component of the Trans-Maghreb Motorway.

The financial requirements for each country and year will be determined and a complete road map will be defined.

## 9.2. Actions proposed

- "Regional" map of the location of the motorway showing the current structure and different development scenarios compatible with traffic growth forecasts.
- Thematic maps of complementary infrastructure.
- "Regional" road map of the Trans-Maghreb Motorway Axis (time and implementation costs).

## 10. WORK SESSION ON THE HORIZONTAL ACTIONS FOR INTEGRATION AND COORDINATION OF THE MANAGEMENT OF THE TRANS-MAGHREB MOTORWAY AXIS

One of the aims of this document is to raise awareness on unique issues to the motorway. Its implementation should ensure that the axis is perceived as a single regional infrastructure and not a series of separate national projects. The document therefore discusses facilitating trade (border crossings and international conventions), funding and road pricing, multimodality, safety and training.

This awareness-raising process must be ongoing. It cannot be treated as an isolated event. For this reason, a work session of two days is proposed where different topics related to day-to-day motorway activities will be discussed. This work session should also help raise the awareness of a larger group of players in the transport and logistics industry in the Western Mediterranean region.

Based on this report and the work sessions - and by undertaking joint management of the axis for a truly regional approach to the infrastructure - a concrete action plan will be developed in cooperation with all parties involved in the development and management of the Trans-Maghreb Motorway Axis. This action plan should cover not only the actions in this document that generate the most interest among the parties, but also those that may arise during the work sessions.

Based on the information contained in this document, the structure of the work session could be as follows:

- **Introduction.**
  - Objective of the work session.

- The physical state of the Trans-Maghreb Motorway Axis: description of the state of the infrastructure and the next steps to upgrade the infrastructure in each of the countries involved.
- **Trade Facilitation (implementation of international conventions of facilitation and design of border crossings).**
  - A brief presentation and identification of the most appropriate conventions that should be considered for acceptance by the countries covered by the motorway axis. Definition of the actions to be taken for the adoption and the entry into force of the conventions.
  - Examples of good practices in the development and running of border checkpoints that could serve as references.
- **Funding and road pricing.**
  - An overview of the motorway funding systems in Europe, especially innovative ones, that may help optimize the resources available.
  - Presentation of the different road pricing systems in place in other countries in order to identify the key challenges to obtaining a common system.
  - The model to follow for the establishment of an interoperable electronic toll system on the motorway axis in order to give it a more regional sense. Presentation of initiatives related to the concept of interoperable electronic toll systems, opportunities and challenges.
- **Multimodality.**
  - Presentation of infrastructure outside the Maghreb region that can serve as good examples of multimodality with links to other modes of transport.
  - Examples of major port or logistics projects in the region that support multimodality.
  - Identification of the parameters to be used for the definition of a trans-Maghreb corridor that includes all modes of transport.
- **Road Safety.**
  - Examples of existing initiatives that help reduce accident rates as models to be implemented in the countries covered by the motorway.
  - Knowledge of the different strategies implemented to improve safety conditions in the Maghreb countries and the possibilities for improvement.
- **Training.**
  - Identification of priority training topics and the parties likely to receive specialized training courses.
- **Regional planning of the Trans-Maghreb Motorway.**

- Identification of the most important ancillary infrastructure that is required to ensure that the motorway axis functions correctly on a daily basis and that the abovementioned areas are properly developed.

- **Conclusions**

- Definition of the guidelines of the future action plan relating to the horizontal actions for coordinating the management of the Trans-Maghreb Motorway Axis.

The work session aims to be another step in regional integration of the transport system in the Maghreb. It will be a meeting for discussion, where the players involved in motorway management can exchange opinions and perspectives to strengthen dialogue and find points of common interest to move forward in terms of regional cooperation.