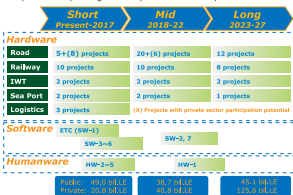


Sector or Activity Precinct	Number of Projects	Total Cost (Billion LE)
Total	24	40.8
Roadway	24	40.2
High Speed Railway	1	2.1
Other	23	38.1
Harbor Waterway	6	4.0
Seaports	5	6.2
Coastal	1	3.8
Passenger Terminal	1	1.1
Seaports	5	5.1
Maritime	5	1.3
Total	207	207.0

### The Staged Master Plan

The MINTS Transport Master Plan is staged over three consecutive five-year periods; namely, short-term (present to year 2017), mid-term (years 2018-2022) and long-term (years 2023-2027). **The staging and prioritization of the initiatives is founded on a multi-criteria analysis whose indicators were derived in close consultation with the client group.** The adopted staging concept links improvements while concurrently introducing logic in terms of implementation considerations, relational strength, modal capabilities, transportation system continuity as well as elements of affordability. The future role of public-private partnerships is seen as pivotal given anticipated limitations in public financial resources.



Sector	Ministerial Issue
<b>Road Sector</b>	SW 1: Streamlining MOTV responsibility covering all transport modes for integrated multimodal transport system and logistics SW 2: Training in modern road maintenance techniques
<b>Railway Sector</b>	SW 3: Expansion of ENR transformation plan (involving private sector and management)
<b>Inland Water Sector</b>	SW 4: Expansion of ICHP/IBT program



### Technology Transfer and Training

The planning process fully recognizes that Egyptian stakeholders must participate in visualizing and shaping their own future. This is of substantial importance in terms of ownership building and ensuring that MINTS is adopted as well as used following the completion of technical investigations. **Technology transfer** and training is therefore seen as one of the most important elements of MINTS.

A multi-stage training program was, in consultation with the client group, brought to successful fruition. This included training by members of the MINTS study Team as well as task-specific training by external specialists from Citilabs (CUBE software) and ESRI (GIS software). These classroom sessions were further enhanced by counterpart involvement in MINTS via practical, day-to-day "hands on" experience.

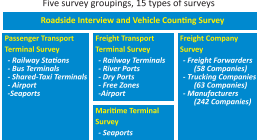


### The MINTS Vision for Transport

- The **intrinsic linking** of transport with the form and extent of the national developmental fabric, thus catalyzing a dynamic interaction between transport and Egypt's social as well as economic evolution, while concurrently cementing the Republic's important role in the international arena, both regional and beyond.
- Effective planning**, in concert with the shaping of developmental patterns which influence the location, scale, density, design and mix of land uses, thus enhancing the travel experience and creating safer as well as more convenient mobility opportunities.
- Defining 21st Century **sustainable and environmentally friendly** transport solutions that, for all of Egypt's citizens, seek to improve the quality, enhance the accessibility, and foster the affordability of systems and services needed over the next two decades and beyond.
- The development of an **integrated and multi-modal** transport concept within the broader context of national evolution while retaining sensitivity towards local norms, expectations and modal requirements inherent to the movement of persons and goods.

### National Model and Geodatabase

A massive national data collection exercise, one of the largest ever conducted in Egypt, was carried out across five major transport modes (road, railway, maritime, inland waterway and civil aviation sectors) during year 2010. Hundreds of thousands of samples were collected, processed and analyzed.



The MINTS **geodatabase** contains information collected via the MINTS transport surveys plus other supporting resources obtained from a variety of Egyptian institutions. This data base is seen as one of the most **comprehensive** in Egypt.



The national computerized transport model (**MnAM**) simulates passenger and cargo demand across all adopted modes of transport, for public and private means of conveyance. The MnAM is intrinsically linked with the MINTS geodatabase.



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**MiNTS: The Mir National Transport Study**  
Comprehensive System on The Master Plan for Nationwide Transport System in the Arab Republic of Egypt

### Background

MINTS, being a Republic-wide transport study, addresses the entirety of Egypt with emphasis on major national and international transport corridors. A basic premise of all investigations is that MINTS shall be comprehensive in nature; that is, adopt approaches designed to mitigate transport problems and contribute to the development of the nation. All (excluding urban) major modes of transport are addressed; however, the practical master planning focus lies with modes falling under the mandate of the Ministry of Transport; i.e. the road, railway, maritime and inland waterway sectors.

A **revolutionary spirit** has been kindled within Egypt. As societal and economic evolution continues, changes in transport activities and behavior will follow suit. Thus, the Master Plan retains sensitivity towards both the alleviation of present deficiencies as well as realization of a transport system founded upon sustainable growth and integrated, mutually supportive transport solutions.

### Goals and Objective

- Establish a **nationwide, multi-modal database** whose validity rests on a series of focused transport surveys and data collection exercises.
- Formulate overall strategies and policies for development of the **nationwide, transport fabric**.
- Develop an **integrated, multi-modal** transport master plan extending over a staged planning horizon to year 2027.
- Identify, within the master plan framework, **high-priority projects** and.
- Implement an **effective and productive** **institutions transfer** program with Egyptian counterparts.

### A Cooperative Approach

The final structure of MINTS was realized as a direct result of cooperative efforts and close liaison between the Study Team, the client group and other local experts. Considerable efforts were expended in gathering information, reviewing previous studies and holding numerous discussions to enhance knowledge of, and sensitivity to, local transport conditions, norms and aspirations.

### Schedule

The initial mobilization of the MINTS Study Team took place during December, 2009. The project culminated with submission of The Master Plan final report during March, 2012. Final documentation includes, in addition to The Master Plan report, **13 technical Appendix Reports** containing considerable detail for the interested reader.

### The Pillars of Success

A core obligation of MINTS is to support **good governance**, balance the needs of **society** with those of the **economy** while considering the long-term implications on the **environment**. Within that context, the Master Plan not only considers the creation of new infrastructure, but also strives to balance infrastructure building (**hardware**) with transport system management and efficiency by encouraging **software** (technology) and **humanware** (human resources) initiatives. The Plan Framework embraces realism at four principal levels, namely the level of response to (present and future) demand, allocation of demand within strategic corridors and linkages with land uses contained therein, modal use of transport systems/services, and the availability of (public and/or private) financial resources.

### Candidate Projects

MINTS has nominated a total of 103 initiatives, with an estimated implementation cost of **\$20 billion LE** (current price). These include both upgrading of existing assets plus realization of new projects/programs. Discussions with the client group confirm a realistic future public investment goal is on the order of \$0 billion LE per five year period. This clearly implies an important supportive role for private sector participation and/or alternative forms of sector funding.

Sector	Ministerial Issue
<b>Road Sector</b>	SW 1: Development of road function based design and capacity standards SW 4: Road safety initiatives (roadside engineering interventions)
<b>Railway Sector</b>	SW 5: Railway safety initiative SW 6: Introduction of state of the art systems and control
<b>Inland Water Sector</b>	SW 7: ICHP (navigation and control)

Master Plan Components

## Transport Sector Performance

While much has been achieved in the transport sector, considerable work remains to be done. A synopsis of the current (generally year 2010) performance profile follows. The overview nature of the presentation is emphasized; the intent is merely to provide a "baseline setting" as background to the Master Plan structure. Considerable additional detail is contained in project documentation.

### Software

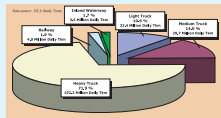
- Lack of modernization of the transport sector has led to low performance and poor capacity utilization. Some one-half of trucks, for example, travel empty.
- Externalities related to market access, administrative practices, lack of intermodal systems, regulatory frameworks and inability to operate in a competitive market all encourage shippers to use predominantly road transport for their cargoes.
- A sustainable framework for the transport sector as a whole requires **adapting the present approaches to the needs of modern transport**, with a predominant aim to facilitate market-responsive, customer-oriented operations and private sector involvement.
- Commercial utilization of the inland waterway and railway modes is predominantly for low value bulk cargoes transported between dedicated destinations. Cargo consolidation is hindered not only by the lack of available infrastructure and equipment, but also by the absence of management and operational know-how.
- Integration of river and railway transport into the Egyptian transport system (multi-modal dimension) is therefore very low to non-existent. On the contrary, **river and railway transport are confronted with unfair competition by road transport** that benefits from rules and subsidy mechanisms interfering in free market principles and allowing market prices that do not reflect true operating costs.
- Technological innovation is a driving force in modern logistics and defines the competitiveness of the transport systems and services. There is a **pressing need for the introducing of modern technology and logistics strategies** into the Egyptian transport market.

### Humanware

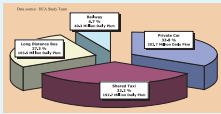
- The sector suffers from a severe **shortage of qualified staff**.
- There exists a shortage of training programs and human resource development.
- Qualified personnel, and a unified data system (ideally computerized and/or GIS friendly) encompassing all transport modes, are both lacking.
- Coordination between Ministries and organizations is complex and time consuming.** Approaches to transport planning, implementation and operations are currently fragmented among a myriad of organizations, entities and Ministries with little evidence of efficient, market-responsive overview guidance or control.
- Human resource responsibilities for transport activities are fragmented.

### Hardware

- The growing **dominance of road cargo** transport is leading to stagnation in the other transport sectors. The sector accounts for some 96 percent of daily tonne kilometer shipments. It obliges inland waterway and rail modes to focus present activities using old infrastructure and rolling stock/fleets that have exceeded their practical service life. Maintenance of existing assets suffers from a variety of ills.



- The largest part of **long-distance passenger** movements can be attributed to **road transport**; cars, buses and shared taxi carry some 93 percent of daily passenger kilometers. As a direct consequence, main roads are confronted with congestion, delays and environmental degradation.



- Road infrastructure is a valuable asset but inefficiencies exist due to less-than-optimum management (and policing), poor transport equipment (outdated and badly maintained) as well as abysmal safety practices.** Road fatality rates are among the highest in the Middle East–North Africa Region. Modern logistics and intermodality are largely absent.
- Operational efficiency and available capacity of railway transport is low, which fuels continuing contraction of the sector. Over the last three decades, freight shipped by rail has declined from some six to less than one percent of national tonne shipments. Containers are, at present, not a priority for the rail sector due to a lack of infrastructure both for handling and transporting of this growing cargo potential.
- Commercial inland waterway transport is very modest because of impediments in river infrastructure (locks, bridges, fairway) and operational considerations. River vessels are aged and not adapted for modern cargo transport.
- Civil aviation is, in comparison to land modes, modest accounting for less than one percent of national cargo and roughly three percent of daily domestic passenger activity.

## Planning for the Future

### Socio-economic Considerations

The population of Egypt has been steadily increasing over the past two decades at a pace slightly in excess of two percent per year, reaching an estimated 78.4 million persons in year 2010. Underlying reductions in future unit growth are seen as being achievable when coupled with intensified incentive and education programs. Still, population is expected to increase by almost 30 million persons over the MINTS planning horizon to **107.3 million persons in year 2027**. The impact of the January, 2011 revolution has exerted considerable impact on future economic growth. While longer-term expansion is seen as again reaching pre-revolution rates of growth, near term economic activity is forecast as being more sluggish, in particular the initial year following the Revolution when expected real **GDP growth** is in vicinity of one percent per annum. The average annual compounded rate of growth over the planning horizon is consequently expected to average a still-robust **5.3 percent**. GDP per capita is expected to increase from 13,900 to 24,600 constant LE between years 2010 and 2027.

### The Corridors

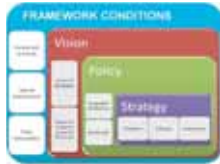
Eleven corridors (domestic and international, passengers and cargo) were defined. The most significant corridors are:

- The **Mediterranean** Corridor linking Libya with Palestine via Marsa Matruh, El Alamein, Greater Cairo (northern segment of Cairo Outer Ring Road), Ismailia, and the Suez Canal-North Sinai Area.
  - The **Intermodal Transport** Corridor linking the 6th of October Value Added Center with both the Alexandria-area seaports and Sokhna port. The corridor is expected to focus on the logistics of efficient freight flow.
  - The **Red Sea** Corridor parallels the Red Sea/Gulf of Suez between approximately Zafarana and Berneis, with a potential for strengthening the current linkage with Sudan. Key intermediate points are Gharbi, Hurgada and Safage.
  - The **Upper Egypt** Corridor paralleling the Nile River between Greater Cairo and Aswan, with a potential extension to create a new gateway to Sudan (Khartoum).
- Four additional corridors service east-west axes within Central and Upper Egypt. These connect Siwa and Gharbi; Farafra/Bahigia and Safage (via Asyut); Kharga and Safage (via Luxor/Queen), as well as Oxyntat and Berneis (via Aswan).



### The Planning Context

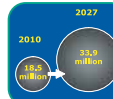
The MINTS planning approach involves, sequentially, national framework conditions, a **vision**, a **policy**, and a **strategy**, all leading to the Master Plan. Each component, that is, vision, policy and strategy, is based on a cascading and mutually reinforcing chain of activities. These evolve within a broader set of (non-transport) framework conditions reflective of a variety of conditions to include, for example, societal, economic and trade indicators.



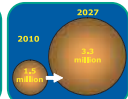
### Changes in Demand

Key implications of demand forecasts together with important socio-demographic characteristics are that **daily person trips are expected to almost double (18.5 to 33.9 million) while daily cargo activity will more than double (1.5 to 3.3 million daily tonnes)**.

#### Daily Person Trips



#### Daily Cargo (Tonne) Trips



The future modal implications include:

- Shift towards more efficient long-distance passenger transport via rail and bus modes, vis-à-vis shared taxi and private car transport; and,
- Shift towards non-road (railway, inland waterway) for cargo transport.

Characteristics	Year	2010	2027	Growth Rate (2010-2027)
Socio-Economic	Population (million)	78,359	107,281	1.4
	GDP (Constant '09 US \$) (LE)	1,092	2,642	2.4
	GDP per Capita (LE)	13,900	24,300	1.8
	Total Tonne-Km (million)	213	631	3.0
	Non-Road Tonne-Km (million)	8.0	62.0	7.8
	Non-Road Tonne-Km Mode Split (%)	3.8%	9.8%	2.6
	Long Distance Passenger Car Trips	329,323	443,500	1.4
	Long Distance Person-Km (million)	611	1,057	1.7
	Long Distance Rail Person-Km (million)	40	270	6.8

Note: Long distance person trips are those greater than 100km. Rail person trips includes inter passenger.



### Master Plan Benefits

The realization of the MINTS Master Plan will result in significant economic benefits with an EIRR (Economic Internal Rate of Return) of 17.8 percent.

The Master Plan is further expected to catalyze a string of positive initiatives for Egypt namely:

- The maintenance of the MINTS geodatabase;
    - Planning tool for government initiatives such as enhancement of road maintenance; and
    - Updating of the national transport model.
  - Reduction in global warming;
  - Greater mobility of the Egyptian population;
    - Better connectivity for all Egyptians with centers of activity;
    - Better connectivity between all regions of Egypt; and,
    - Enhanced international linkages.
  - Improved governance in the transport sector; and
  - Enhanced trade linkage especially via the critical Asia – Egypt – Europe axis.
- Efficient use of transport infrastructure;
    - Modal shift of cargo movements to the non-road sector; and
    - Integration of passenger services.
  - Improved transport safety;
    - Road safety initiative; and
    - Rail safety initiative.
  - Encouragement of private sector participation in the development of transport infrastructure;
  - Creation of jobs in the plan implementation; and
  - Modernization of transport logistics across Egypt.

The Master Plan will support government policy specifically:

## Nominated Priority Initiatives

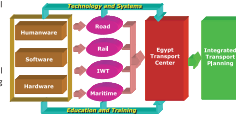
It is strongly urged that four initiatives be immediately considered for further feasibility or follow-on studies. All four are seen as being of critical importance to the realization of an Egyptian integrated transport system. The nominated projects and programs include not only infrastructure (hardware) projects, but also software and humanware initiatives. All have been ranked highly as part of the multi-criteria analysis.



### 1. Egypt Transport Center

The Egypt Transport Center, the highest-priority MINTS follow-on project, will play a crucial role in the enhancement and development of transport planning in Egypt. **The Center is seen as fulfilling a variety of critical functions**, among them:

- Maintain, enhance and expand the MINTS national transport model and national geodatabase;
- Carry out Ministry wide transport studies and reviews;
- Create "smart systems" for on-going data monitoring;
- Humanware development;
- Road safety systems as well as similar initiatives; and,
- Urban activities such as re-activating the recent CREATS (Cairo Regional Area Transportation Study) effort by integrating recent and on-going activities such as Metro network expansion.



### 2. Intermodal Transport Corridor

An important corridor for sustainable freight transport (involving road, railway, maritime, inland waterway sectors) is the proposed Intermodal Transport Corridor, linking the new 6th of October Value Added Center with both the Alexandria-area seaports and Sokhna port. The corridor is seen as directly linking with the EU "motorway of the sea" connecting Alexandria, Genoa and Koper ports. The corridor, and proposed infrastructure therein, will focus initially on container traffic between Egypt and Europe. But the corridor will also and gradually concentrate on traffic from Asia, in particular China, destined for the European (and Maghreb) markets with the 6th of October VAL Center providing in-country value added and logistical services. **These contemplated activities are seen as exhibiting a very high potential for job creation.**



### 3. Road Maintenance and Safety

Road Safety Initiative

- Nationwide focus on 3 E's: **Engineering, Education and Enforcement**. Likely role for Egypt Transport Center: intent is to establish, in the first instance, a cross-agency single national entity responsible for road safety.

Road Management and Maintenance

- Capacity development on targets officers with responsibility for **managing and maintaining road assets**. Improved road network management training ensures best performance and value-for-money is obtained from the road network, while concurrently offering quality facilities to road users.

### 4. Mediterranean Corridor

The fourth-priority package establishes the Mediterranean Corridor transport network. **This corridor is seen as fulfilling a number of domestic functions, including services to planned new settlements and contributing to the alleviation of current congestion in the Nile Delta.** The corridor includes realization of key links of the Cairo Outer Ring Road. Considerable potential exists for meeting the Republic's **international aspirations** along the Mediterranean coast. Corridor infrastructure is seen as offering a role for private sector participation.

