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Sustainable Freight Transport Systems: Opportunities for Developing Countries

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EGYPT'S POLICIES FOR SUSTAINABLE TRANSPORT

by

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Egypt's Polices for Sustainable Transport

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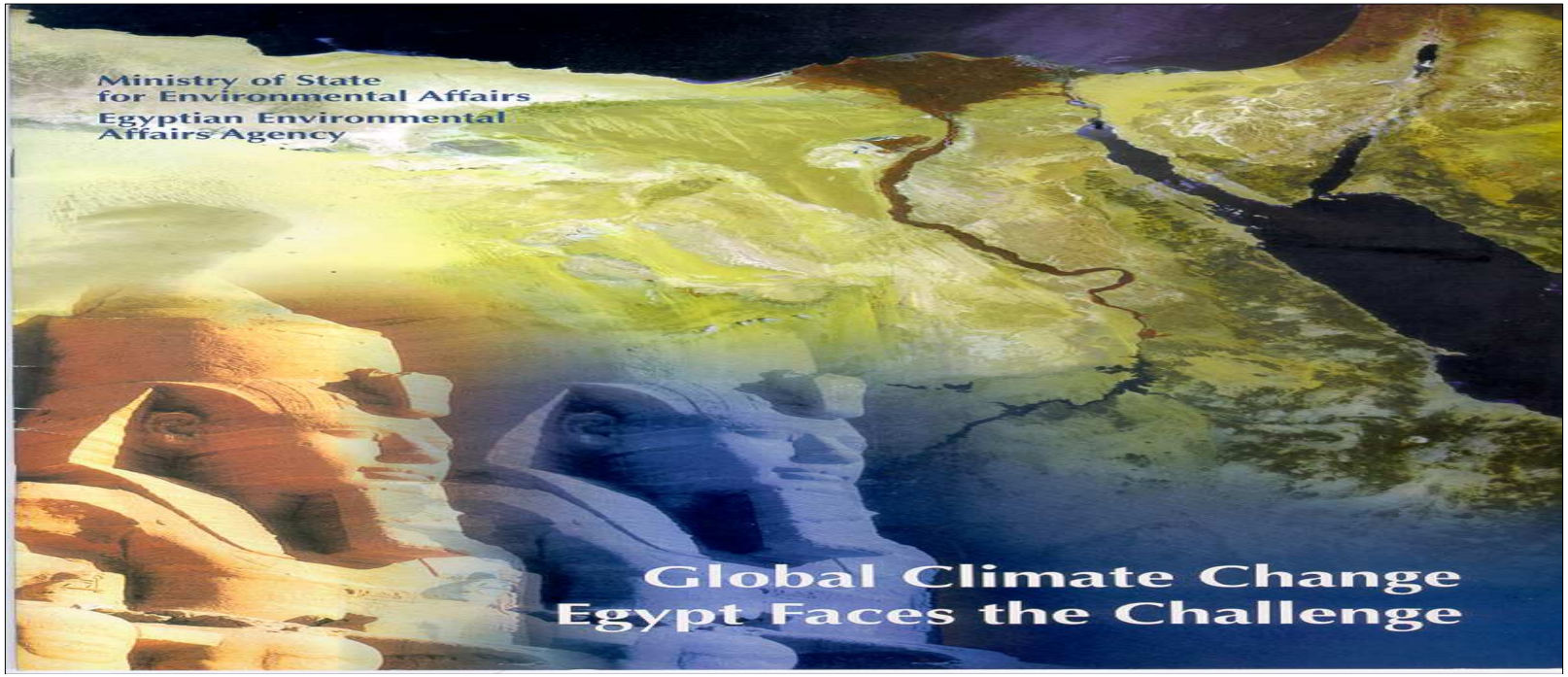
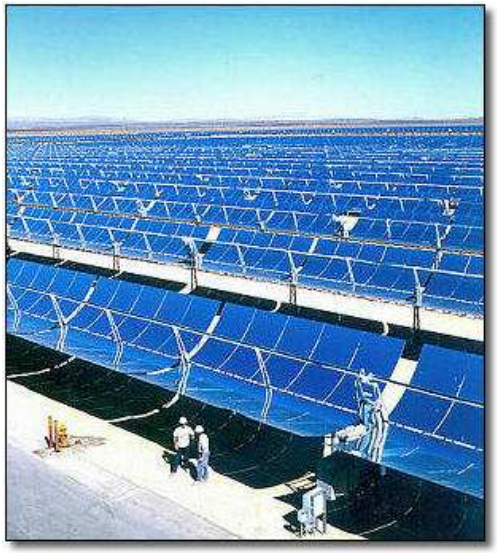


Overview

- Introduction to Mitigation
- Opportunities for Developing Countries
- Low Carbon Growth
- Promote Mitigation and Clean Technology
- Transportation in Egypt
- Policies to improve Air Quality
- Positive Actions in Transportation Sector in Egypt

What is Climate Change Mitigation?

- Mitigation is any actions that cuts net emissions of greenhouse gases by:
  - reducing sources of greenhouse gases
  - Increasing sinks of greenhouse gases
- Includes but is not limited to technological, political, structural or financial action



Source: Wordpress

Climate change and temperature

Mitigating Greenhouse Gases: A Shared Global Responsibility

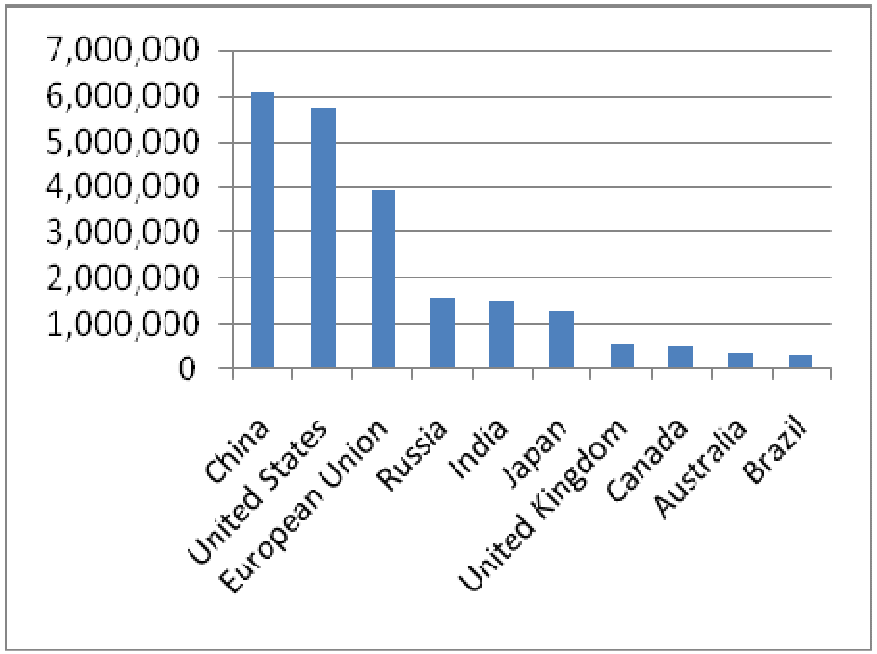
- IPCC projects that global emissions need to be reduced by at least 50% by 2050 to limit temperature increase to 2°C
- Developed countries will need to undertake majority of emission reduction
- Without emission reduction and mitigation in developing countries not possible to meet this goal
- Egypt Emissions represent almost 0.6% of the Global Emissions

Source: Fotolia

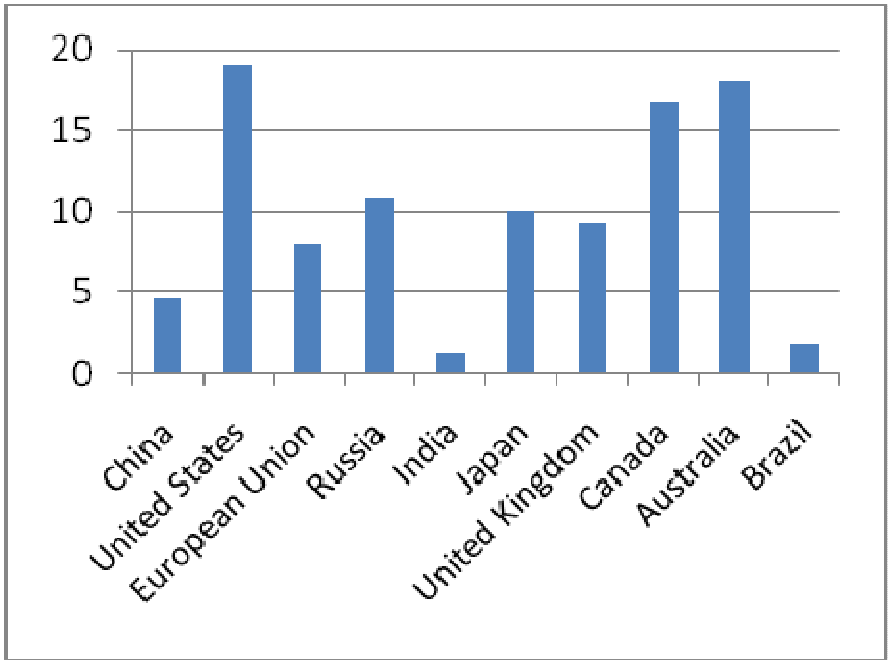
Source NASA (Clementine)

GHG Emissions by Country and Per Capita

Annual CO2emissions
(in thousands of metric tons)



CO2 Emissions Per Capita
(metric tons)



Mitigation: Opportunities for Developing Countries

- **Access to financing** to promote **green growth**
- **Receive advanced technology** from developed countries (technology transfer)
- **Develop capacity** to introduce and maintain new technologies
- **Accelerate the path to a green** economy and sustainable development

Source: UNITAR

Co-Benefits Resulting from Mitigation

- Cost savings through improved energy efficiency
- Reduction in local air pollution resulting in improved health
- Enhanced diversity of energy mix and energy supply security
- Improved local employment, e.g. through decentralized energy production
- Improved local industrial development

- **Policies** aiming at mitigating **GHG emissions can provide a broad range of more immediate air pollution benefits to public health** in the countries that implement these **GHG mitigation measures**.
- **Conversely, not acting or postponing actions to reduce GHG emissions will fail to achieve the health benefits**

Embedding Low Carbon Growth within a Green Economy

- **Greening the economy** refers to the process of
  - reconfiguring businesses and infrastructure to...
  - ... deliver better returns on nature, human and economic capital investments
- **Greening the economy results in:**
  - Reducing greenhouse gas emissions
  - Extracting and using less natural resources
  - Creating less waste and reducing social disparities

Embedding Low Carbon Growth within a Green Economy (cont.)

- **Greening the economy** necessitates **reshaping** and **refocusing policies**, **investments** and spending towards:
  - **Clean technologies**
  - **Renewable energies**
  - Water services
  - **Green transportation**
  - Waste management
  - **Green buildings and**
  - **Sustainable agriculture and forests**

- May include **sector-specific fiscal stimulus** package

Policy Instruments to Promote Mitigation and Clean Technology

- Regulations and standards
- Taxes and charges
- Tradable permits for carbon emissions
- Financial incentives
- Voluntary agreements
- Information instruments for the population
- Funding research in the area

Questions to Assess Mitigation Options and New Technology

- **What** are the **investment costs** of introducing the option, both direct and direct?
- **What** are the **major obstacles** to the investment?
- **Is** the option **consistent** with other **policy goals** (e.g. health goals)
- **What capacities** need to be **in place** to introduce the option? (e.g. institutional capacity, man-power, trainings etc.)
- **Will** the option **perform well** and in a sustainable manner?
- **Is** sufficient **information available** to make an **informed choice?**

Criteria for Selecting Mitigation Options

- **Environmental effectiveness**
- **Cost effectiveness**
- **Distributional effects (including equity)**
- **Institutional feasibility**

Source: Wordpress

Sectors with Mitigation Potential

- Energy
- Industry
- Waste
- **Transport**
- Buildings
- Agriculture
- Forestry

Source: The Guardian

Source: UNITAR

Mitigation Options: Transport

- Efficiency technologies
  - More aerodynamic cars
  - Hybrid motor engines
  - Reduced friction technologies
  - Kinetic energy recovery breaking
- Alternative fuels
  - Biofuels
  - Electricity
  - Hydrogen (fuel cells)
- Consumer behavior
  - Buying smaller cars
  - Driving more efficiently
  - Increase share of rail and water transport
- Infrastructure/policy changes
  - More accessible/ affordable urban public transport
  - More bicycle lanes
  - Fuel taxes
  - Traffic/congestion charges

Transportation in Egypt

Transportation in Egypt (cont.)

- *Egypt* is the largest Arab country, with more than 85 million inhabitants, and is the second most populous country in Africa.
- Almost 50 per cent of the populations live in urban areas, and the rest in compact rural settlements surrounded by intensively cultivated irrigated land along the River Nile.
- The transport sector is a major consumer of fossil fuels and therefore contributes a significant share of the country's emissions of greenhouse gases (GHGs).
- In 2003–2004 the transport sector was responsible for 29.16 % of overall energy consumption and about 31.6 million tones of CO2, representing nearly 26 % of the energy-related CO2 emissions (OEP, 2004).

- The demand for energy in the transport sector has been growing with the population, economic growth.
- The Transport Sector Development Plan, which covers the years to 2017, includes measures to promote public passenger transport and encourage a modal shift of cargo transport from road to railways and inland waterways.
- In addition, the government has for many years pursued a policy of gradual liberalization and privatization of the transport sector (EEC, 2005).
- In 2003–2004 the volume of people transported by road had reached nearly 115.6 billion passenger/km, while freight transport amounted to nearly 43.1 billion tones/km (State Information Service, 2006).
- For railways, the policy goal is a revitalization of the sector and the development of better service quality by Egyptian National Railways (ENR), which is state-owned and highly subsidized.
- The rail system delivered 76.1 billion passenger/km in 2003–2004; while freight was only 4.7 billion tones/km.

- Egyptian National Railways is presently undertaking significant investment in order to modernize and upgrade the railways and extend its network.
- Egypt's inland waterways, the River Nile and canals, are severely underutilized for transport. Primarily designed as an irrigation system, in 1995 the inland waterways carried approximately 3.6 million tones of freight, which represented only 3.3 % of the total tones/km transported (EEC, 2005).
- The energy consumption of freight transportation is rapid growth, 90 % share of all freight, while the opportunities for more energy-efficient rail and inland waterway transport are clearly underutilized.
- The transport demand is concentrated on a few transport corridors starting from or ending in Cairo; and the transport patterns are influenced by the imbalance between exports and imports (the value of imports being about twice the value of exports in 2002).

Egypt's main transport indicators

Indicator	2002–2003	2003–2004
Railways		
Passenger/km (million)	46,185	76,090
Ton/km (million)	38,444*	4,758
Railway length (km)	9,432	9,467
Roads		
Passenger/km (million)	113,570	115,845
River transport		
Ton/km (million)	309	2,375
Pipeline transport		
Million tons	6,489	6,680

Source: State Information Service (2006).
*This figure, although given in the SIS document, appears far too high and is most likely an error.

Policies to improve Air Quality

- Mitigation options for the transport sector outlined in the first national communication included the following:-
- Energy efficiency through improvement of vehicle maintenance and tuning-up of vehicle engines.
- A programme to use compressed natural gas as a vehicle fuel.
- Reintroduction of electrified railways in intercity and intra-city transport.
- Intensifying the use of environmentally sound river transport systems.
- Extending metro lines to newly developed cities.
- Encouraging private sector participation in financing and managing the new metro lines.

Positive Action to Mitigate Transportation Emissions

- ***CNG as a transport fuel***

  As part of the national policy to switch from oil to natural gas in all consuming sectors, the use of natural gas as a transportation fuel was endorsed as a means to improve air quality and public health.

EEAA-New NG Bus

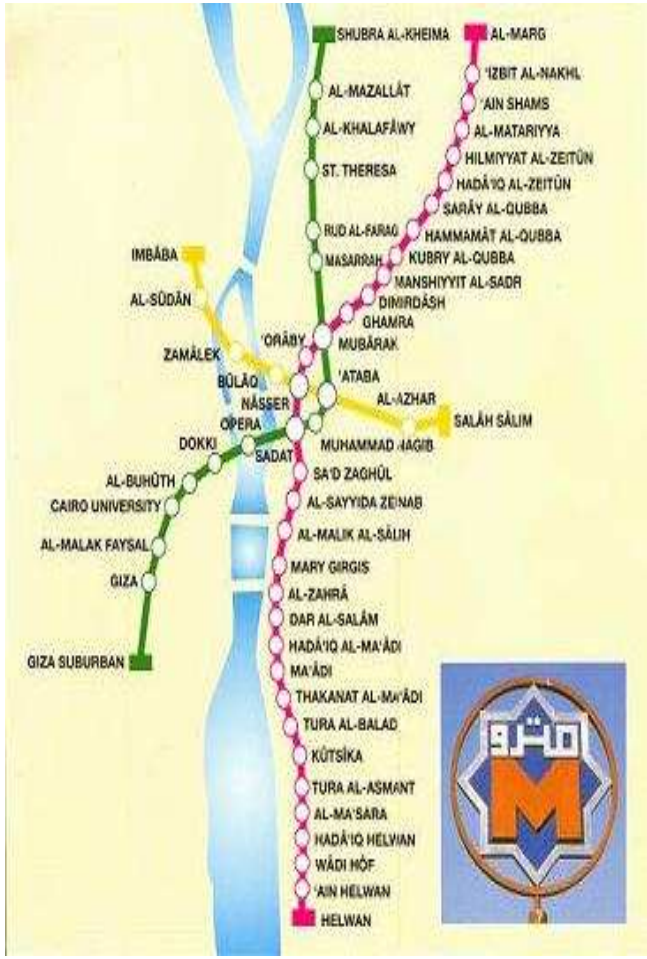

NGV
شركة الغاز الطبيعي للسيارات
NATURAL GAS

Electrification of railways

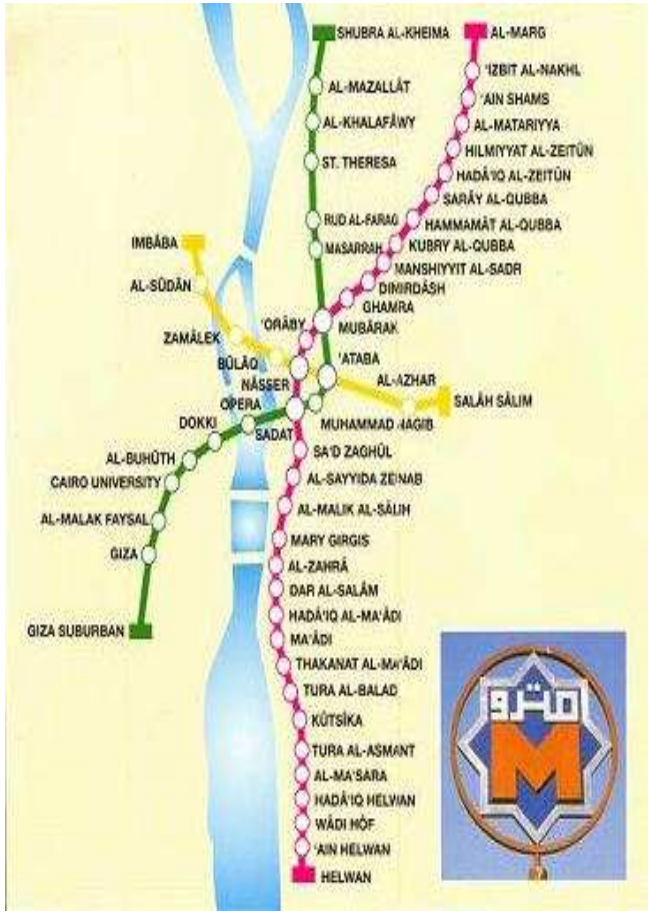
- Historically, Egypt was second to the United Kingdom in introducing railways in the 1880s.
- Rail plays a vital role in passenger transport in Egypt, with a total share in 2003–2004 of about 39%. Most of the rail system operates on gas oil (diesel). A preliminary study on the feasibility of railway electrification was carried out in 1999, using the Cairo–Alexandria line as a test case.
- As Egypt is a net importer of gas oil, which is subsidized by the government for domestic use, and as part of the government's "switching to gas" policy.

Cairo underground metro

- A major step to upgrade Cairo's transport system has been the construction of an underground metro, the first of its kind in Africa and the Middle East.
- The 63 km underground network links the three governorates comprising Cairo metropolitan region: Cairo, Giza and Qalyoubia.
- The network comprises two lines: line 1, which was completed in 2000, is 44 km long and currently carries 1.5 million passengers per day; line 2, 19 km long, was completed in 2005 and is now used by 1.2 million passengers per day.



- Nowadays a third line under implementation, from Cairo International Airport to west of Cairo, The new line, about 33 km in length, will have a design capacity of 2.1 million passengers per day.
- It is expected to take 13 years to complete. Three additional lines are also envisioned for the year 2022 (Egyptian Tunneling Society, 2004).



The National Program for Taxi Replacement

- In 2008, Egyptian Government stated a new law to assist taxi-owners for replacement their old Taxies over 20 years old are not allowed to operate starting July 2011.
- The first phase implemented from April 2009 to March 2010 through local banks mobilized by the GoE succeeded in replacing over 21,272 taxis, from 35,000 Taxi, that would replace later.
- Incomes of taxi-owners are expected to increase by 40%, while at least 21,250 jobs are sustained and a further 10,500 direct and 1,000 indirect new jobs will be created in the form of drivers, as well as staff of vehicle factories, car maintenance and car scrapping companies.
- The project will also lead to a reduction of up to 0.6 million metric tones of CO_2 equivalent over a 10 year period.

Conclusion

- **The transport sector** is a major consumer of fossil fuels and therefore contributes a significant share of Egypt's emissions of air pollutants and GHGs.
- Transport problems are particularly acute in the Cairo metropolitan area, one of the world's megacities with a population of more than 17 million.
- GHG mitigation options for the transport sector outlined in Egypt's first national communication to the UNFCCC included a number of policies and measures;
- Some of which have been highly successful – such as improved energy efficiency through vehicle maintenance and tuning-up of vehicle engines, phasing out of leaded gasoline and a programme to encourage the use of CNG as a vehicle fuel.

Conclusion (cont.)

- Others, such as the reintroduction of electrified railways in intercity and intra-city transport, intensifying the use of environmentally sound river transport systems;
- Extending underground metro lines to newly developed cities and testing electric and hybrid buses, are in need of further development.
- A new initiative has just started in Egypt to develop an integrated plan to realize a long-term sustainable transport sector. It's aimed to reduce the growth of energy consumption and the related greenhouse gas emissions of the transport sector, while simultaneously mitigating the local environmental and other problems of increasing traffic.

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Thank You

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