



INTERNATIONAL UNION
OF RAILWAYS

unity, solidarity, universality

Rail in Emerging Economies

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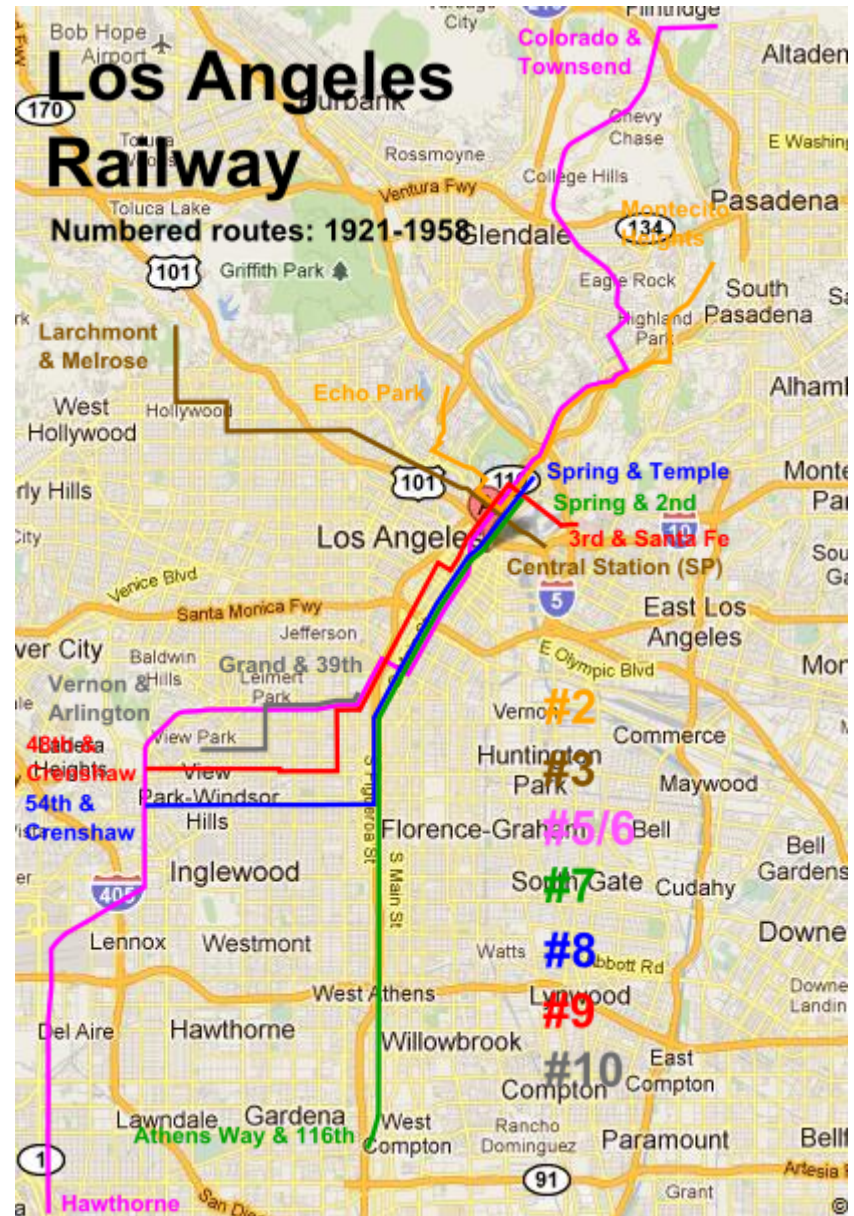
COP 17 Side Event

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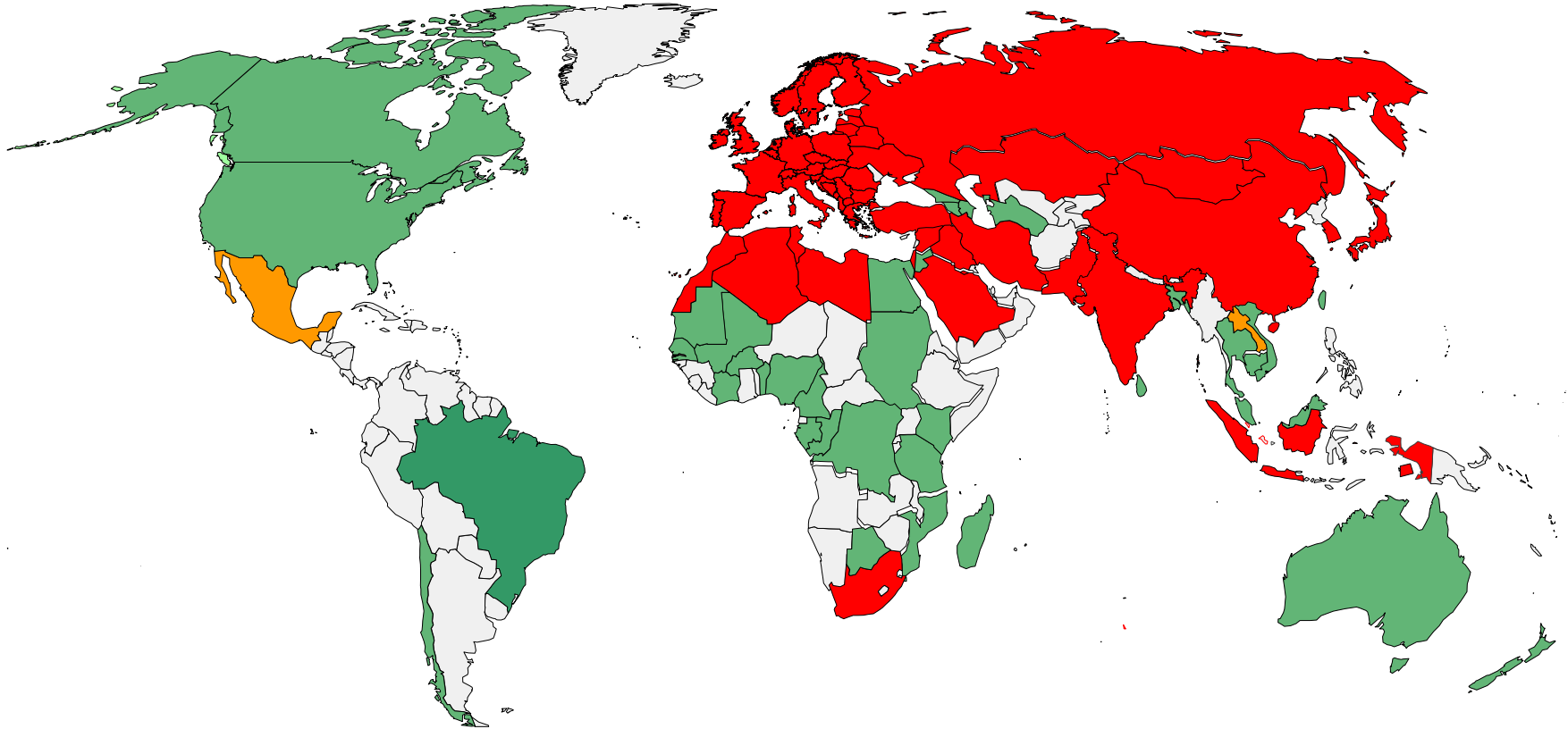
Cities without suburban rail

- Los Angeles once had a 1,100 mile rail network, with urban development clustered along the route
- The system was gradually run down post WW2 and now LA has serious traffic congestion and pollution



UIC: The International Union of Railways

200 members worldwide



Members ■ Active ■ Associate ■ Affiliate

The global rail sector today

- > **The rail sector directly employs over 7 million people worldwide, and many millions more indirectly**

Some examples of direct employment:

2 million in China.

1.4 million in India

1.1million in the EU

- > **Rail investment in 2009**

EU railways invested a total of 44 672 million euros

Turkey invested 606 million euros

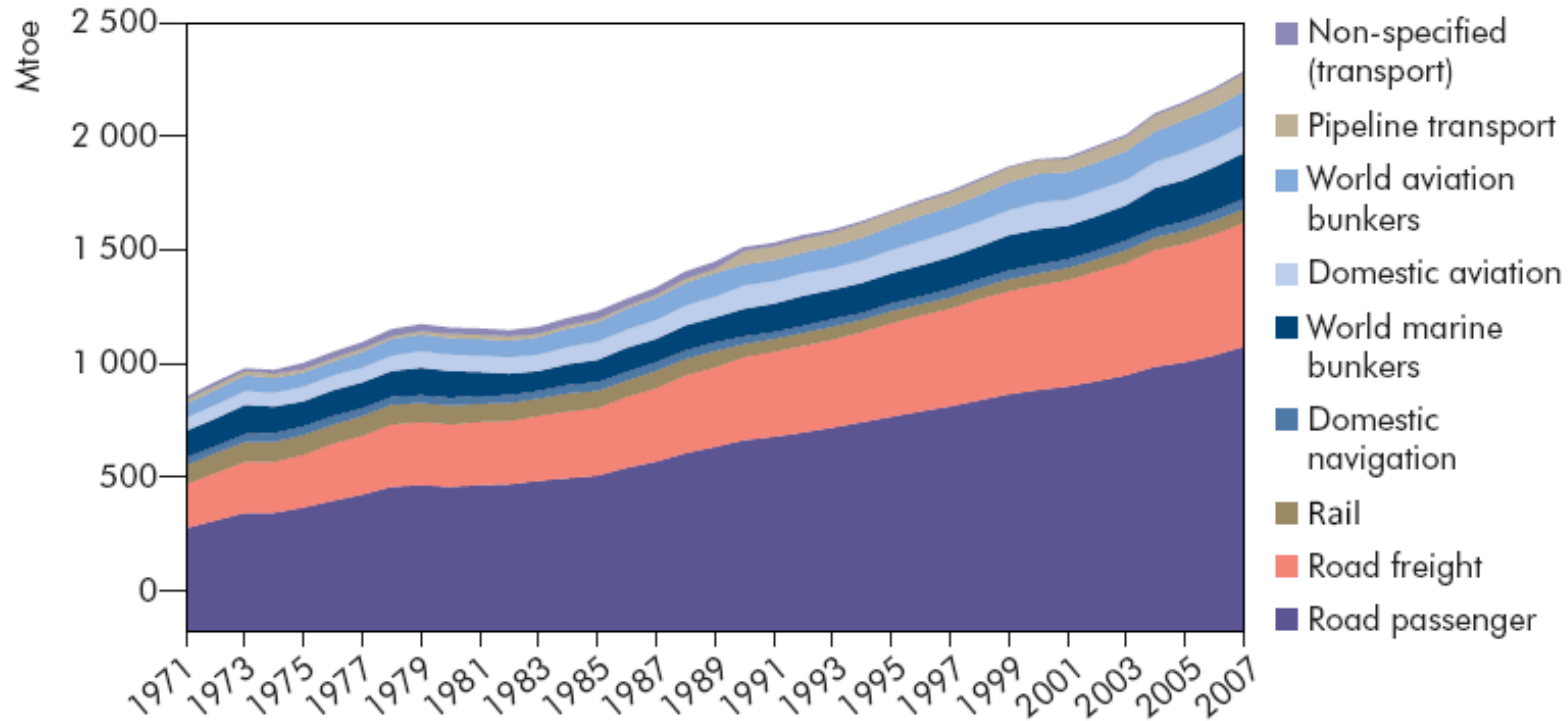
Korea invested 725 million euros

Kazakhstan invested 503 million euros

- > **Between 2000-2005, global rail freight grew by around 25% and land passenger traffic grew by about 19%**

Transport energy use

Figure 7.1 ► World transport final energy use by mode



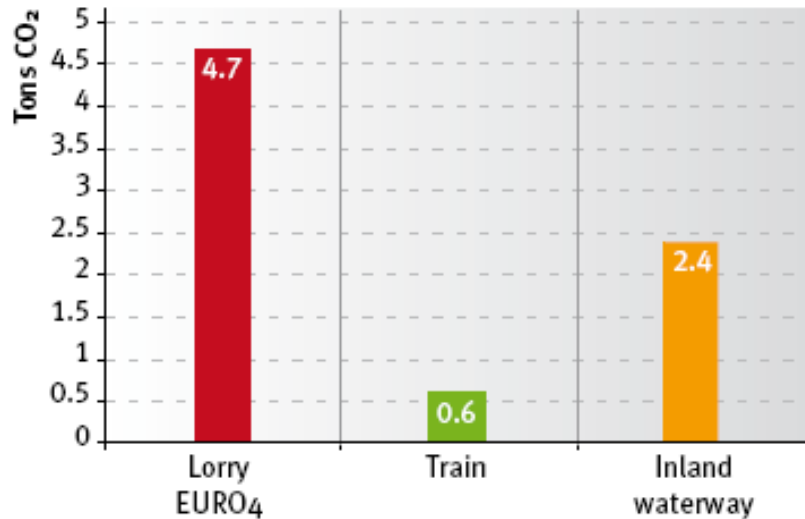
Source: IEA (2009b).

Globally, rail has a 6% global market share and 1% CO2 emissions

Rail and the environment



Carbon dioxide (100 tons cargo, Basel - Rotterdam, 700 km)



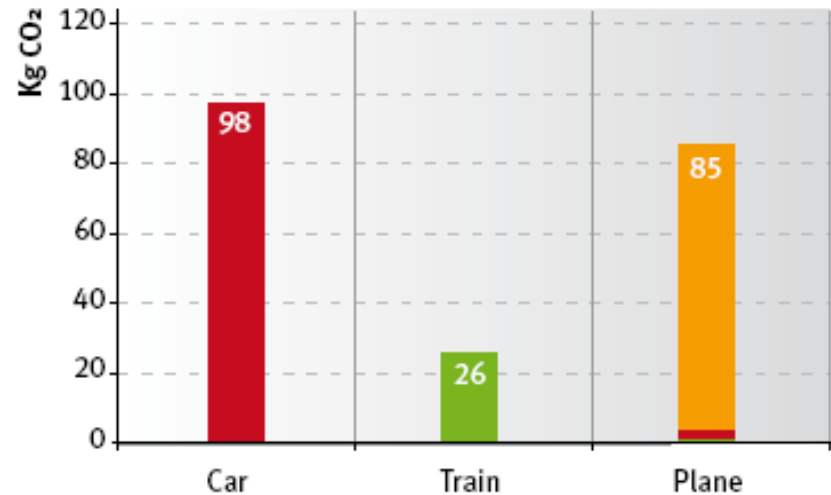
Source: www.ecotransit.org 2008

www.ecotransit.org

(global carbon footprinting freight)



Carbon dioxide (1 person Berlin - Frankfurt, 545 km)



Note: Plane emissions include travel to and from the airport; they are not increased to take account of the effect of emissions at high altitude.

Source: www.ecopassenger.org 2008

www.ecopassenger.org

(carbon footprinting passenger Europe)

Railways are continuing to improve...

European Targets 2030

50% reduction of specific CO₂ emissions from train operation*

40% reduction in total exhaust emissions of Nox and PM₁₀**

Vision 2050: European railways will strive towards

Carbon-free train operation and

Zero emissions of Nox and PM₁₀ from non electric trains

Noise and vibration levels are socially and economically acceptable

**Base year 1990: measured per passenger-km and gross tonne-km*

***Base year 2005*

...and UIC helps railways to do so

- > Energy & CO₂ database
- > EcoPassenger & EcoTransIT World
- > Energy efficient driving
- > Energy Billing
- > RailEnergy
- > International conferences
- > Studies and Reports
- > See www.uic-sustainability.org for information

RAILENERGY MAIN ACHIEVEMENTS ALLOCATED IN A TOOLBOX

THE OVERVIEW

HOW TO MEASURE & ANALYSE ENERGY IN RAILWAY SYSTEMS?

- COMMON SIMULATION METHODOLOGY
- FIRST UIC/UNIFE TecRec (100_001)

HOW TO DEFINE, BROWSE & COLLECT ENERGY DATA?

- RAILENERGY KPIs
- ENERGY & CO₂ DATABASE

HOW TO BENCHMARK ENERGY PERFORMANCE?

- RAILENERGY PERFORMANCE BASELINE
- RANKING OF SAVING POTENTIALS
- TECHNOLOGY ASSESSMENT REPORTS

HOW TO COMPARE & PRIORITISE DIFFERENT MEASURES?

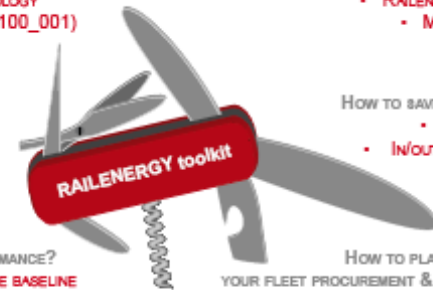
- COST-BENEFIT & EFFECTIVENESS
- RAILENERGY CALCULATOR
- MARKET READINESS

HOW TO SAVE ENERGY COSTS?

- LCC SCREENING
- IN/OUT OF SERVICE VIEW

HOW TO PLAN STRATEGICALLY YOUR FLEET PROCUREMENT & REFURBISHMENT?

- STRATEGIC ASSESSMENT REPORTS
- PRACTICAL CHECK LISTS FOR PROFESSIONALS



Case Studies

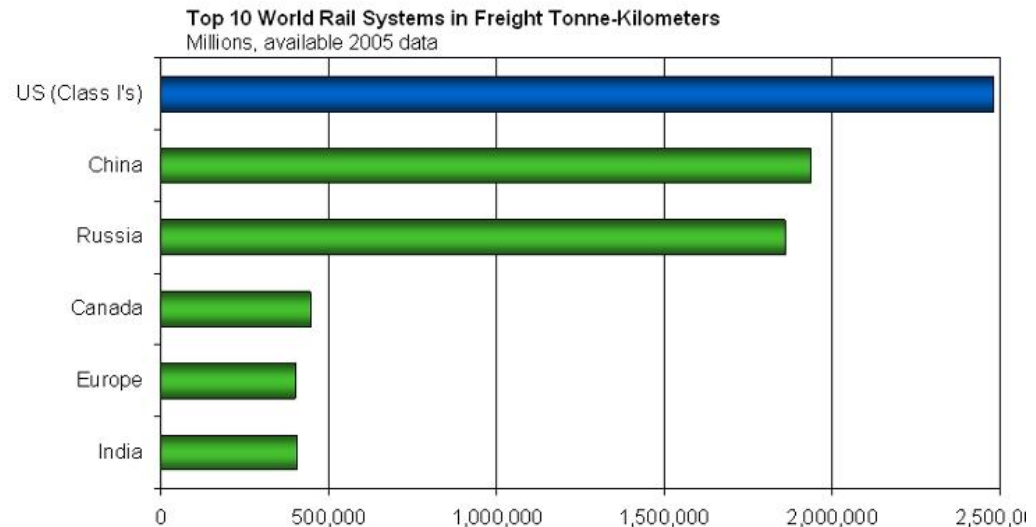
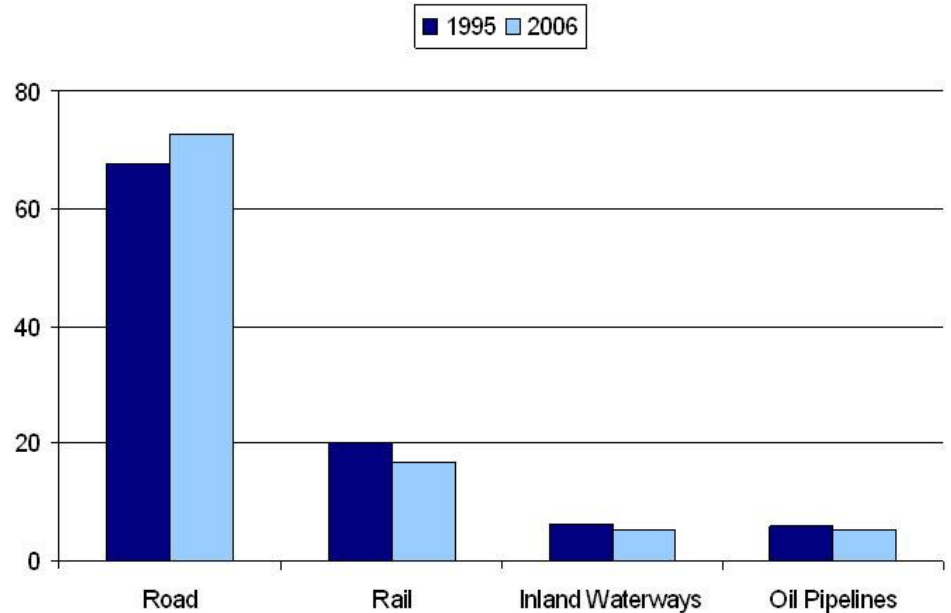
Commuter and suburban rail

- > **Commuter railways play a key transport role in Europe, Japan, Korea, USA and many other countries**
- > **Some examples**
 - South Africa - Metrorail - 1.7 million pax/day
 - Mumbai Suburban railway – 6.9 m pax/day
 - Manila Light Rail Transit - 0.5 million pax /day
 - Sao Paulo CPTM – 2.2m pax/day
 - Buenos Aries Commuter Line - 1m pax/day
 - Moscow, London, Paris...



Freight by rail

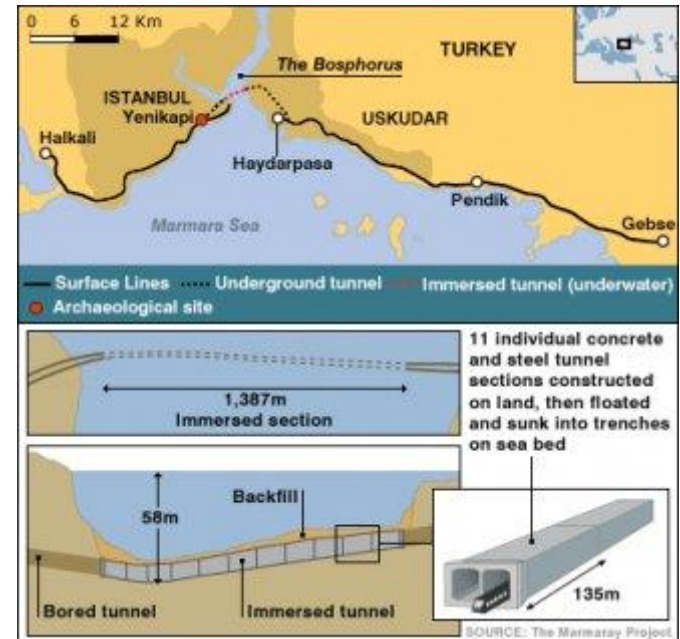
- Freight by rail is growing especially in combined transport and commodities.
- Between 1988 and 2008 international combined transport increased by 215%
- Mine and railway construction companies are looking at multi-billion dollar projects to transport copper and coal in Africa



Source: World Bank Railways Database, May 2007.

Turkey: Suburban Rail

- Major project to improve the rail network around Istanbul
- Includes the Marmaray Tunnel – the world's deepest undersea immersed tube tunnel dedicated to rail traffic, linking the European and Asian sections of Istanbul
- Upgrades to the suburban rail lines will increase Istanbul's rail usage from 3.6% to 27.7%,
- This would be the third highest in the world, behind Tokyo (60%) and New York City (31%).



Turkey: Ankara Konya High Speed

- The Ankara-Konya high speed rail line, a high quality double-track enabling speeds of up to 300 km/h, was inaugurated on 23 August 2011
- The travel time is now 1h 30 and the time will be reduced to 1h 15 after new high speed train sets are procured
- The line was completed in 4 ½ years, compared to an average high speed rail construction time of 5-13 years.
- General characteristics of the line
 - Total Length : 309 km
 - Length of construction : 212 km
 - Project speed : 300 km/h
 - Min. Curve Radius : 6500 m
 - Max. Slope : ‰ 16
 - Travel Time : 1 h 30 min
 - Cost : TL 950 mil.

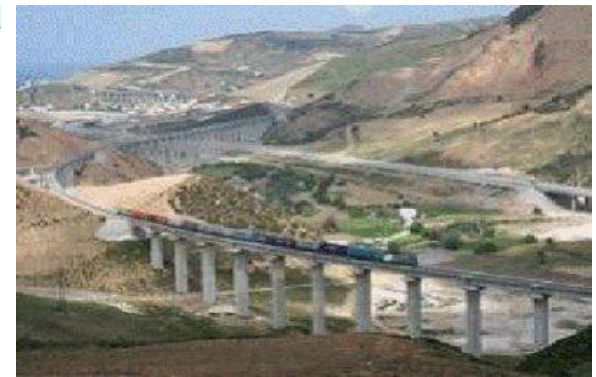
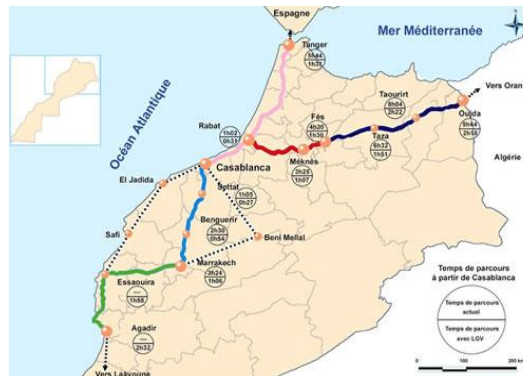


Mr. Recep Erdogan, Turkish Prime Minister, Mr. Binali Yildirim, Minister of Transport, and Mr. Süleyman Karaman, President and Director-General of Turkish Railways TCDD, in the driver's cab of the YHT high speed train during the inauguration of the new Ankara-Konya high speed section (© TCDD)

Morocco High Speed Rail



- On 29 September, construction began on the 200-kilometre high speed line connecting the main economic hubs of the country, Tangier and Casablanca, and running through Rabat, the administrative capital of the kingdom.
- Once the line has been fully completed, journey times between Tangier and Casablanca should be reduced from 5h45 to 2h10. The high speed services will boost traffic volumes, set to increase to 6 million passengers once the line enters into service.
- At these passenger numbers the line is forecast to reduce CO2 levels by 210,000 Teq CO2/year (for the duration of the entire master plan)



Ethiopia: Light Rail Addis Adeba

- Major project to restore Ethiopia's 100-year-old imperial railway, and there are even plans to build a new national network.
- In March 2011 Transport minister Deriba Kuma announced that engineering and design activity has commenced on the 2,516km railway construction project, which is expected to take five years to build.
- A MoU has been signed with China Railways Group Limited to build a 36.5km light rail line in Addis Abeba.



West Africa

- **The African Union and ECOWAS have sponsored a detailed study of a new rail link between Cotonou-Niamey-Ouagadougou-Abidjan**
- **A joint announcement on 7th October 2011 called for:**
 - High priority to be given to the delivery of the project;
 - Continue with Stage 2 of the study and
 - A concerted and collective approach to research and financing



UNION AFRICAINE



CEDEAO

Le 07 octobre 2011, s'est tenue à Cotonou (République du Bénin), la Réunion des Ministres en charge des transports et des infrastructures du Bénin, du Burkina, de la Côte d' Ivoire, du Mali et du Niger.

Les Ministres ont examiné les conditions de réalisation de l'étude sur l'Analyse de Marché et des Options pour la Mise en Œuvre, l'Exploitation et le Financement de la Liaison Ferroviaire Cotonou-Niamey-Ouagadougou-Abidjan.

Les Ministres ont réitéré l'importance de cette liaison ferroviaire pour le développement économique et social de la Région Ouest africaine, en tant que maillon essentiel du Plan Directeur d'Interconnexion des Réseaux Ferroviaire de la CEDEAO.

Les Ministres ont reconnu avec force, les rôles de leadership, de coordination, d'harmonisation et de facilitation dévolus à la Commission de l'Union Africaine dans le secteur des infrastructures et de transports sur le Continent.

Les Ministres ont réaffirmé à la Commission de la Communauté Economique des Etats de l'Afrique de l'Ouest (CEDEAO) et à la Commission de l'Union Economique et Monétaire Ouest Africaine (UEMOA), leur rôle incontestable de piliers de l'Intégration de l'Afrique de l'Ouest, notamment dans la mise en œuvre des différents projets et programmes du Secteur des Infrastructures.

Les Ministres ont salué le soutien de la Commission Européenne dans la réalisation de cette étude, initiative qui s'inscrit dans le cadre du Partenariat Union Européenne-Afrique pour les Infrastructures.

Les Ministres ont formulé des Recommandations et pris des engagements pour accélérer la mise en œuvre de cet important projet.

Les Ministres se sont enfin félicités de l'esprit de responsabilité, de franchise et de cordialité qui a marqué le déroulement de la Réunion.

Fait à Cotonou, le 07 octobre 2011

Sudan: North - South railway line

- Sudan in 2010 inaugurated a railway line that will reconnect the north to the south for the first time since the civil war split the country in two. According to the authorities, it will constitute a crucial economic link and consequently reduce the cost of freight transport.
- Built in the 1960s, the 446km railway line will once again link the town of Babanusa in central Sudan with the southern town of Wau.
- A 46 million dollar loan was financed by the Multi-Donor Trust Fund administered by the World Bank.
- The Sudanese government has contributed up to two thirds of the cost, with the remainder coming from international donors.

Cambodia: Rail network reconstruction

- Cambodia's rail network is due to be reconstructed by 2013
- Financing (dollars)
 - Asian Development Bank – 42 million
 - Australian government - 21.5 million
 - OPEC Fund for International Development – 13 million
 - Malaysia - contributed towards the building of 106 km of rail track.
- The total cost of reconstructing 600 km of track is expected to reach 141.6 million dollars.
- The Cambodian authorities hope the reconstruction will boost economic growth and facilitate trade with neighbouring countries.

Vietnam: High Speed 2020



- A high-speed rail line is set to link Hanoi with Ho Chi Minh City from 2020.
- This is considered to be among Vietnam's top three infrastructure projects, requiring more than 55.8 billion dollars' worth of investment
- The high-speed rail link will feature 27 stations along the route, with expected line speeds of 300 km/hr, enabling the 1570-kilometre journey from Hanoi to Ho Chi Minh City to be covered in 5 ½ hours.
- Vietnamese railways are planning to send over 6 500 staff for training abroad in preparation for the commissioning of this project.

Conclusions – are roads the only option?

- Roads are not the only option in emerging economies, and many countries are investing in rail
- Railways can form the backbone of a low-carbon transport system. Connections with other modes are vital
- UIC can provide support, assistance and advice to organizations developing rail projects



Thank you!

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