

EUROPEAN TRANSPORT SCENARIOS (SCENES)

CLIENT: *European Commission DGVII (Transport), IV Framework Programme for Transport*

YEAR: *1998-2001*

DESCRIPTION OF ACTIVITIES:

The project was part of the research studies awarded by EC Directorate General VII - Transport - in the IV Framework Research Programme launched by the Commission on achieving the objectives of the Common Transport Policies.

The main objectives of the SCENES consortium were to:

- develop detailed forecasts of the factors which will affect transport demand in the future and produce specific transport demand scenarios for 2020 and beyond;
- extend and enhance the STREAMS strategic transport model of the EU and apply the model to specific scenarios.

TRT was involved both in the definition of specific transport scenarios in the Western European countries and in the modelling work, namely TRT was responsible for the development of the freight transport model.

The modelling structure developed for SCENES was essentially a comprehensive 'Framework' for modelling at the European scale, in that all aspects of the transport market are accounted for in one shape or form within the model.

The focus of the model was the traffic to/from/within the EU15 countries plus eight Eastern Europe countries included in the list of the Accession Countries (Latvia, Lithuania, Estonia, Poland, Czech Republic, Slovak Republic, Slovenia, Hungary).

The model was built up using inputs from the detailed zonal level. Many parameters and data inputs within the model are also specified at the country level. A considerable effort was spent in estimating parameters and calibration data from the best data available at the time.

The freight model comprises three main parts, a Regional Economic Model which establishes the trade matrix, an Interface module which translates this monetary trade into transport volumes, and a Transport model, which assigns these flows to transport networks and undertakes the modal split. There is then a feedback of transport costs and times in the form of disutilities from the transport model back to the Re-

gional Economic Model Thirteen 'Transport Flows' were defined based on transport requirements of different commodities and on the aim of taking into account the different logistics families.

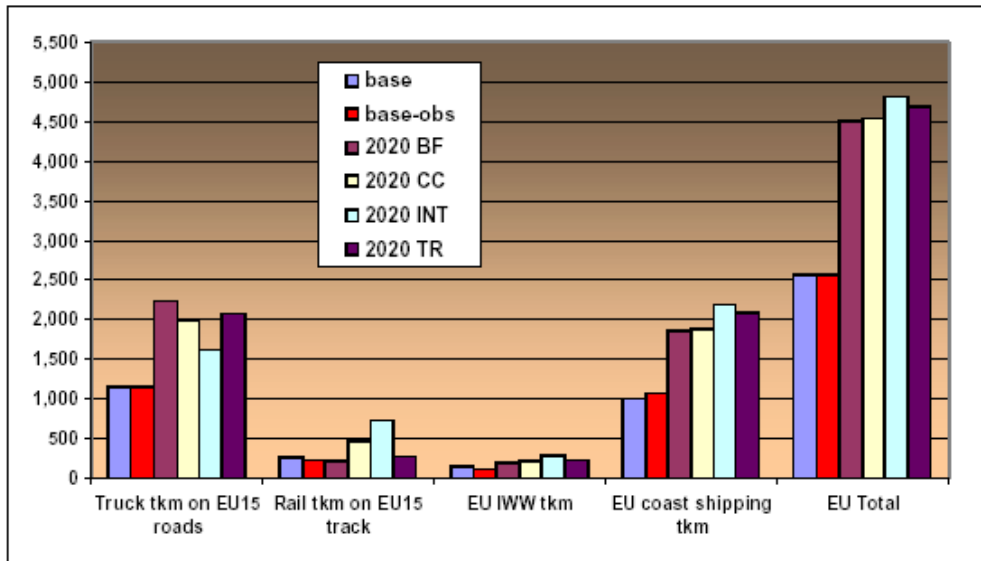
This latter aspect was especially linked to a further aspect of the work, consisting in a demonstrative loose connection between the SCENES model and the logistics appended module developed by TNO-INRO.

Eleven main modes of transport were implemented in the model (Heavy Goods Vehicle, Light Goods Vehicle, bulk rail, bulk ship, bulk waterway, product pipelines, air freight, container rail, container ship, container waterway, and shuttle rail. Each mode includes a set of "network modes" which can be used to simulate the various phases of a shipment in a detailed way (e.g. ship in port, ship in navigation, loading/unloading, etc.). Each mode was available to a set of flows according to its specific features with respect to the nature of the flows, which are grouped into four handling categories with similar requirements: Solid bulk, Liquid bulk, General Cargo, Unitised freight.

The model was calibrated to reproduce national aggregate totals of travel by mode, and known international patterns of freight transport. The model was used to model four scenarios. These Scenarios were designed to demonstrate a range of eventualities regarding the evolution of transport costs by mode through time, together with assumptions for the future development of population, GDP, car ownership, employment, and future transport networks.

The results of the model for the different scenarios shared a sharp growth of freight traffic at the horizon of 2020. From the 2.500 Billion of tons*km in 1995, the total demand forecast is about 4.500 Billion tons*km in 2020. In the base scenario road transport strengthen is role of leader mode, roughly doubling the total traffic. Rail traffic increases significantly only in the Intervention Scenario – which assumes that road transport costs are raised – and in the Constant Cost scenario – where the transport prices are kept constant over time. The model provides results by country, by mode of transport and by flow allowing for a detailed analysis of the future trends of freight demand.

Tonne-km travelled on EU territory, 1995 & 2020, by mode (tonne-km *10⁹/annum)



Tonne-km travelled within EU countries, Truck (tonne-km *10⁹/annum)

