Development of a database system for the calculation of indicators of environmental pressure caused by transport

The scope of this paper is to summarise a methodology developed for TRENDS (TRansport and ENvironment Database System—TRENDS). The main objective of TRENDS was the calculation of environmental pressure indicators caused by transport. The environmental pressures considered are associated with air emissions from the four main transport modes, i.e., road, rail, ships and air. In order to determine these indicators a system for calculating a range of environmental pressures due to transport was developed within a PC-based MS Access environment. Emphasis is given on the latest features incorporated in the model and their applications.

One of the recently developed features of the software provides all options for simple scenario analysis including vehicle dynamics (such as turnover and evolution) for all EU15 member states. This feature is called the Transport Activity Balance module (TAB) and enables the production of collective results for all transport modes as well as a comparative assessment of air emissions produced by the various modes. Traffic activity and emission data obtained according to a basic (reference) scenario are displayed for the time period 1970-2020. In addition, a detailed assessment of the results produced by TRENDS was conducted by means of comparison with data found in the literature.

Finally, vehicle emissions produced by the model for the EU15 member states were spatially disaggregated for the base year, 1995 and GIs maps were generated. Examples of these maps are displayed in this document, for the various modes of transport considered in the study. (C) 2005 Elsevier B.V. All rights reserved.