The ForFITS model: introduction

Model development

The UNDA project

The development of this modelling tool is framed in the context of a project of the United Nations Development Account (UNDA), a capacity development programme of the United Nations Secretariat aiming at enhancing capacities of developing countries in the priority areas of the United Nations Development Agenda: http://www.un.org/esa/devaccount.

The project was undertaken by all the UN Regional Commissions. The UNECE had the lead (Terms of References).

It targets policy makers and technical experts and it aims to enhance international cooperation and planning towards sustainable transport policies.

UNDA project background

2008	The UNECE Transport Division called on the UN Development Account (UNDA) for funds to build this project together with all UN Regional Commissions
2009	The UN General Assembly endorsed the project
2010	The UN Department of Economic and Social Affairs (DESA) approved a Project Document describing in detail the major phases and activities of this three-year project
2011	Official project launched during a video conference involving all UN Regional Commissions
2011	Preparation of a global review on existing statistical data, policy measures and assessment tools concerning CO_2 emissions in transport
2011	Development and distribution of a questionnaire (available in Arabic, English, French, German, Russian and Spanish) to provide inputs for the preparation of the review
2012	International Expert Meeting (IEM) to disseminate information on the project, to share experiences and to explore possible synergies with other stakeholders
2012	Workshop with selected experts to gather comments on the review on statistics, mitigation polices, and modelling tools (released in a draft version in April 2012 and finalized in October 2012) and to receive feedback on a draft methodology of the ForFITS tool (released in April 2012)
2012	Model development and release of the first model prototype
2013	Finalization of the model development
2013	Preparation of user manual and training materials
2013	Capacity-building workshops and training activities for policymakers and technical experts in all the regions associated with the UN Regional Commissions.

Fundamentals

Name

The name reflects the UNDA project aim to foster sustainable transport policies "For Future Inland Transport Systems" (ForFITS).

Model availability and file structure

ForFITS was developed in the Vensim modelling environment and is structured in two components: a Vensim Packaged Model file (.vpm) and an Excel file (.xls) (Figure 1).

The VPM file contains the model, structured in a set of "views" containing the model components. This file can be opened with the Vensim Model Reader, a free software downloadable here: http://vensim.com/vensim-model-reader.

The Excel file, communicating with the VPM file, is the interface allowing users to enter inputs.

Figure 1   File structure

ForFITS.vpm
ForFITS Inputs.xls
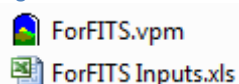
Both the files are freely available and can be downloaded on line on the UNECE web site: http://www.unece.org/trans/theme_forfits.html.

Scope

ForFITS was developed as a software tool capable to satisfy two sets of key requirements:
- the estimation/assessment of emissions in transport
- the evaluation of transport policies for CO_2 emission mitigation.

To achieve these targets, ForFITS evaluates transport activity (expressed in terms of passenger kilometres – pkm, tome kilometres –tkm, and vehicle kilometres – vkm), related vehicle stocks, energy use and CO_2 emissions in a range of possible policy contexts.

ForFITS is suitable for the analysis of transport systems having a regional, national and/or local dimension, with a primary focus on national systems.

ForFITS is a sectoral model, covering both passenger and freight transport services on all transport modes (including aviation and maritime transport), but mainly targeting inland transport (especially road, rail, and inland waterways). Pipelines are also considered in the model. Each mode is further characterised in sub-modes (when relevant) and vehicle classes. Vehicle classes are further split to take into account of different powertrain technologies and age classes. Finally, powertrains are coupled with fuel blends that are consistent with the technology requirements.

ForFITS does not provide information on the evaluation of the overall effects of changes in the transport system on the economic growth.

User manual

Content and structure

Besides this introductory document, the ForFITS user manual is structured in 4 main components:

    A. A section containing detailed information on the model coverage, a description of the model methodology, and a brief introduction on data requirements

    B. A section describing each view of the VPM file in detail, explaining the whole calculation flow allowing ForFITS to generate outputs

    C. A detailed description of the ForFITS Excel interface, including specific information on data requirements and instructions on how to enter data

    D. A file containing practical information on how to run the model once the inputs have been properly entered, and how to compare different scenarios (e.g. for policy assessment).