



TREMOVE

Final Contact Group Meeting, March 5-6, 2007, Leuven

MINUTES

Monday

Introduction to the TREMOVE project and related future plans of DG ENV (J. Delsalle)

See slides.

This is the last TREMOVE contact group meeting of this kind. How the Tremove Contact Group will be transformed into an expert group on transport modelling, and how next meetings will be organised is still to be defined. Next meetings will be linked to other models, in the field of transport and environmental policies.

There will be a common project with DG TREN, parallel modeling with TRANS-TOOLS and TREMOVE: Impact on demand and emission.

Problems during the development of the TREMOVE model: availability of statistics was low, this is improved the past few years; integration of TREMOVE in climate and air modelling, lack of a strong political support; missing aspects in the reproduction of transport demand and supply.

There were two independent reviews of the model, short term and long term recommendations were formulated - focus on road transport and integrate the other models less detailed.

New version 2.5: more user-friendly, improved dataset, extension of the scope of TREMOVE, revised baseline scenario. Training has been foreseen.

Main objectives 2007: FLEETS project (focus on vehicle stock data), model maintenance & improvement (by JRC), make an expert group on transport modelling (former TREMOVE Contact Group)

Overview of work performed under the TREMOVE contract for DG ENV (G. De Ceuster)

See slides.

J.-F. Larive: What exactly is the baseline scenario?

G. De Ceuster explains the baseline data. This is described extensively in the report, and all baseline data is public available on www.tremove.org

You don't need the source code to see the baseline information/reports/databases; they are available on the website.

W. Schade: Which kind of input database?

G. De Ceuster: More user-friendly: access database instead of text file.

M. Petrakis: What is the policy of the EC regarding the dissemination?



J. Delsalle: We want this model to be publicly available. There will be a community of users discussing the results; regular improvements will be done at the JRC so that the model is simplified and more user-friendly. We want to keep track of who is using it, so that we can update the users on the improvements/changes made to the model.

Remark of M. Petrakis: One of the targets should be the local administration of the different countries.

W. Schade: In terms of biofuels, does the type of car changes (i.e. are flexicars modelled)? Are electric cars modelled?

G. De Ceuster: Blended biofuel is modelled, no specific vehicle types, only the fuel changes. Hybrid cars are included, electric cars not, since consumer behavior parameters/price (subsidies) are not available.

Question: Does the price depend on the consumption? Do the technology costs depend on the volume?

G. De Ceuster: No.

Overview of other TREMOVE projects performed by TML (G. De Ceuster)

See slides.

W. Schade: Are traffic congestions taken into account?

G. De Ceuster: Yes, this is calculated, speed-flow functions are calibrated.

General TREMOVE model structure (G. De Ceuster)

See slides.

M. Petrakis: Is there a quality assurance report regarding emissions on the fleet database? In new member states emission factors might be influenced by less regular inspection. How many of the cars work in such a way that effects of catalytic converters and fuel data and emissions factors are representative? It is a very weak point for southern countries.

B. Van Herbruggen: emission factors are exogenous and taken from COPERT.

A. Mattucci: A correct geographical allocation of well-to-tank emissions is important.

J. Delsalle: for this reason, in the car CO₂ policy model calculations non-greenhouse gas WTT emissions have not been included

J.-F. Larive: suggests to exclude WTT emissions from TREMOVE, as it cannot be done correctly using emission factors

G. De Ceuster and B. Van Herbruggen: Including WTT emissions is important, certainly in the context of substitution between e.g. High speed electric trains and airplanes

P. Christidis: Is car ownership/endogenous scrappage modelled?

G. De Ceuster, B. Van Herbruggen: Car ownership forecasts are implicitly in the baseline provided by SCENES; Car owners and non-car owners are not separately modelled in TREMOVE. Scrappage rates are exogenous. For the Belgian model, we once included



equations to calculate the number of second hand cars sold to other countries. It is difficult to do for other country models, given lack of calibration data.

A. Mattucci: Is the availability of CNG taken into account?

B. Van Herbruggen: Yes, the availability of CNG in filling stations is a parameter in the car purchase choice logit model. A limited availability (low % of filling stations providing CNG) will limit the share of CNG cars in the model.

The TREMOVE model more in detail (B. Van Herbruggen)

See slides.

P. Christidis: If there is one motorway with congestion and ten without, how do you have a representative average?

G. De Ceuster: the model is used to make average predictions, not for specific road parts, if you want to do road pricing etc...you should use TRANS-TOOLS.

W. Schade: Are there different figures for the business car fleet and private car fleet?

B. Van Herbruggen: No, there was no good data found to do it decently, especially on the taxes for business cars, which differ significantly between countries (COWI looked into this). Nevertheless It is an important issue, a.o. since most company cars are running on diesel.

P. Christidis: Are taxis included, because they do more mileage than the average car, they buy a new one faster? Rental cars? B. Van Herbruggen: yes, they are included in the overall car fleet and scrappage figures and for larger cars TREMOVE also includes higher average mileages.

The TREMOVE Baseline (B. Van Herbruggen)

See slides.

P. Christidis: Why do you need to be consistent PRIMES projections?

Griet: it was requested by DG ENV. We only focussed on consistency with the growth rates of transport and energy consumption in PRIMES

Questions & answers on the TREMOVE model and baseline

J.-F. Larive: How about car efficiency in 2020?

B. Van Herbruggen: 140g CO₂/km is assumed in 2008/2009, after 2009 the baseline is constant

A. Mattucci: Provided that you have the data, is it possible to go beyond the 2030?

B. Van Herbruggen: Yes, we only need the transport forecast for these years to be able to do this.

F. Nemry: How about the scrappage rate in the ten new countries?



B. Van Herbruggen: We have historic age distributions for some of the countries, so we can estimate the scrappage functions. We will assume that age distributions in these countries will become more similar to the EU15 countries in the long-term future.

W. Schade: The fleet in the new countries changes in another way: People buy 20 – 25% new cars and the remainder buys second hand cars.

B. Van Herbruggen: We see this in the historic fleet age distributions that we use as input to the model, indeed. This is important for emissions, since the older vehicles don't always have catalyts.

Presentation on the TRANS-TOOLS model (M. Chen)

See slides.

TRANS-TOOLS is developed based on existing models like SCENES, ASTRA, ... and it is the largest comprehensive European Transport Network Forecasting model

P. Christidis: When will it be public?

M. Chen: Assignment models are being recalibrated now. They expect it this month.

B. Van Herbruggen: What is the scope for air transport?

M. Chen: It is focused on the intra-EU flights for passenger aviation, for freight it covers the whole world.

A. Mattucci: Can you add infrastructure links for the future year?

M. Chen: Yes, can be done easily via ArcGIS application.

A. Mattucci: It is difficult to define cost of air transport, how do you solve the problem?

A. Martino: Air network is split into conventional air network (price estimates based on tariff data for a number of routes) and budget airlines (based on data on revenues of some representative companies, e.g. Ryanair).

Presentation on the iTREN-2030 project (W. Schade)

See slides.

iTREN-2030 is a FP6 project that still has to start:

Objective is to develop an integrated transport, energy and emissions baseline until 2030, using TRANS-TOOLS, TREMOVE, ASTRA, POLES.

Future plans of JRC-IPTS (P. Christidis)

See slides.



Questions and answers on future model developments and model applications

J.-F. Larive: Why was PRIMES not mentioned in this presentation?

P. Christidis: JRC uses POLES as energy model, and will not invest in PRIMES. PRIMES is used by DG TREN. JRC and DG TREN will work on POLES and PRIMES in parallel.

M. Chen: Many data will be collected by several projects. Using and integrating these efforts to update the ETIS database might be useful.

P. Christidis agrees that this is an issue to be followed up.

A. Neuville: A feedback would be needed from transport models to macroeconomic models

Answer: CGE, ASTRA is included in TRANSTOOLS

Tuesday

Introduction (J. Delsalle)

Formulates key questions about the demand module and the improvement of policy runs scenario definition and model output.

Demand module – elasticities – alternative approaches

TREMOVE demand module structure and underlying theory; elasticities in TREMOVE (G. De Ceuster)

See slides.

The TREMOVE demand module is enlarged due to the several requests of the policy makers, although it was also asked to simplify it.

N. Schneekloth: How are the maritime and land-based transport related?

G. De Ceuster: They are completely separated in two separate models. Integrating has been considered as an option, but would enlarge the demand model even more. .

P. Christidis: If you make a new baseline, you have to calculate elasticities again, are they used for projections in the future?

G. De Ceuster: No, we calibrate the model for each year and each country. We calibrate the price elasticities based on the data from SCENES. We do not project.

P. Christidis: So you are replicating the SCENES elasticities.

G. De Ceuster: Not exactly, in a way the demand module is a faster meta-model for SCENES, but we use our own elasticities of substitution between the branches of the trees. Together with the Keller alpha's the elasticities then are defined. We have more modes and transport options than SCENES.

P. Christidis: This makes you follow the model shift of SCENES..

G. De Ceuster: If including new transport baseline data, note that you have to make sure



that your prices and volumes are consistent. Otherwise TREMOVE will work, but will have anomalies in the price elasticities. This depends on the original dataset.

J. Delsalle: Data from the SCENES model is used, but this model was never validated.

G. De Ceuster: no other EU wide model was available for what we needed.

J. Delsalle: The base year is 95, so you calibrate elasticities based on 95 and in TREMOVE you use figures updated up till 2005, so it gives a wrong view about the present situation. There should be a simpler way to calibrate the model more accurate.

P. Christidis: It is better to calibrate the model based on real data instead of a baseline of 95.

G. De Ceuster: We calibrate the model for each year.

Comparison of TREMOVE elasticities with literature (D. Fiorello)

See slides.

Group discussion on demand module structure and elasticities

D. Fiorello on a question of F. Nemry: all literature costs are based on money prices (without time costs).

A. Neuville: Isn't it possible to run simulations with changes in prices and look what the effects are, to derive elasticities this way?

G. De Ceuster: It is possible, but we didn't. We calculated the price elasticities analytically.

S. Proost: The time component differs but is about 50% of generalised price on average. To compare generalised price with money price elasticities, roughly the latter would have to be multiplied by 2.

A. Neuville derived fuel price elasticity once from a TREMOVE fuel price increase simulation run performed by J. Delsalle, and found a fuel price elasticity she evaluated as too low. (as compared to values of elasticities of fuel consumption with respect to fuel price in literature in the order of -0.25 to -0.3 in the short run and -0.6 to -0.7 in the long run). P.

Christidis made a similar exercise with similar results.

P. Christidis: Does TREMOVE include a fuel efficiency elasticity, i.e. an endogenous relationship between fuel price and vehicle fuel efficiency.

S. Proost: A large part of the reaction to fuel prices is covered by a move to more fuel efficient cars (in literature). This is a complex issue because car manufacturers design their models around their expectations about fuel prices. A lot of car models that came on the market were driven by price expectations of a few years back. In TREMOVE simulations a increase in fuel price, will lead to a shift toward more fuel efficient vehicle types (small car types, diesel car types in the model); though for each vehicle type in the model, the fuel consumption is fixed to the baseline level. If one wants to represent these issues very well in TREMOVE, one should add extra different types of cars in TREMOVE (with varying fuel efficiency).



P. Christidis: Suggests to compare with SCENES price elasticities. And how far away are SCENES elasticities from the figures in literature?

G. De Ceuster: This could be something to discuss in the iTREN project

A. Neuville: in the baseline, you have the assumption that the target of the agreement with ACEA will be met. What is the influence of this on the elasticity?

S. Proost: It will become smaller, because the share of the fuel price becomes smaller in the total generalized price.

P. Christidis: Do you have time series of the elasticities?

G. De Ceuster: Yes, but they are fairly constant, that is why we did not present it.

P. Christidis: How do you calibrate those trees: you have more coefficients to calibrate than data.

O. Ivanova: The number of observations of the demand shares are exactly equal to the number of equations to be solved.

B. Van Herbruggen: CES functions are used as they require a minimal number of coefficients (Keller's Alpha's) to be calibrated.

M. Beuthe: Only own price elasticities have been presented, no cross-price elasticities. The latter are also important.

S. Proost: CES are exogenous. REMOVE we want to make sure to calibrate the model based on SCENES or national forecast data (if you have better data, the output will be better). The CES functions are calibrated and used for policy simulations, not for forecasts.

P. Christidis: Is the projection on the fleet vehicle type/technology accurate?

B. Van Herbruggen, O. Ivanova: The choice of the technology is based on the purchase model, not the demand model.

P. Christidis: If you use a reliable demand model.

O. Ivanova: They are estimated on the time series.

Modelling demand: Issues (S. Proost)

G. De Ceuster: Does TRANS-TOOLS include explicit car ownership modelling?

A. Martino: No.

M. Beuthe: You have separate modules for separate countries, this is not ideal for freight transport modelling?

G. De Ceuster: Yes, we have different models per country, the transport flow on their territory that is covered. We have thought of other solutions, but those would increase the complexity of the model enormously.

J. Delsalle: It is clear that we should also work with other models, not only with REMOVE, also ASTRA, TRANS-TOOLS. For a lot of policy scenario's we should see the value of each model.



M. Beuthe: Congestion of the railway system, how do you model that?

Griet: We do not model it, although it is technically possible.

Possible alternative approaches for the demand/forecasting module (D. Fiorello)

M. Beuthe: Is the generalised cost related to O/D?

D. Fiorello: there is no explicit origin-destination information in TREMOVE.

G. De Ceuster: We use an average km/cost, to avoid complexity.

M. Beuthe: Why don't you use the Eurostat data on origin/destination?

P.Christidis: Only national and international transport is specified, it is not elaborate enough.

M. Beuthe points out a simple freight transport model Bart Jourquin developed (Nodus model). It starts with a matrix of origin and destination, relatively detailed on the bases of a network for three networks; road, rail & waterway. Then they originally worked on an algorithm computing the flows between the different modes of transportation. An all or nothing allocation. However, sometimes, they had two transport solutions close to each other. They then allocated the flow in proportion to the relative cost. And on freight it seems to work very well.

D. Fiorello: The model still needs elasticity parameters. The difference is that they are output of the model; you don't include them in an arbitrary way at the start.

G. De Ceuster: would rather suggest to connect TREMOVE with ASTRA, instead of including TREMOVE modules in TRANSTOOLS.

P. Christidis: Why change the TREMOVE model? One can still run TRANSTOOLS first, and include the outputs as baseline data in TREMOVE.

Reply: In the suggestions of the peer review it was suggested to avoid the dependency on SCENES, though the peer review was 1,5 years ago, and a lot has changed since then...

P. Christidis: We want not only one strategic model but several models, e.g. also a network model; we want as many people cooperating in this field as possible.

A. Petit: Policy makers look at the result, and whether it can be understood, is useful, and covers the issues of importance. As an example wrt. COPERT application in the impact assessment for the car CO₂ policy. The emission module of Copert is not detailed enough for this. For diesel cars no further disaggregation is made for <2000 cc cars. I.e. one does not get different results for < 1500 cc and >1500 cc cars (or split at 1400cc), while for the manufacturers this is a crucial issue. TREMOVE however is able to do give this information. Other example is the importance of flexi-fuel vehicles.

We also need to understand the assumptions.

Model runs

The scenario simulations performed for DG ENV (B. Van Herbruggen)



W. Schade: Did you consider an autonomous improvement in vehicle emissions in the baseline? Or do you maintain the current emission levels ?

B. Van Herbruggen: The current (Euro 4) emission value levels are kept up to 2020 in the baseline. Also the 140g CO₂ limit is kept constant in the 2008/9 – 2020 period.

P. Christidis: the cost for new technologies, will the manufacturer forward the cost to the consumer?

A. Petit: EC chose for 200 mg NO_x, 5 mg PM limit values for diesel cars? Can you tell us why did they did choose this?

B. Van Herbruggen: This is a question for the Commission. All we did was providing model results and the report (both are public available)

W. Schade: uncertainty: In the list of 'uncertainties' one should include not only external cost, but also: elasticities, effects on consumption/income and production levels (as TREMOVE assumes constant household income and constant production levels).

P. Christidis: the extension to 2030 is of relevance, given that TREMOVE is a long term model, and its welfare estimates improve as further we go into the future.

TREMOVE scenario simulations performed under other contracts (Griet De Ceuster)

See slides.