REGION DE BRUXELLES-CAPITALE
BRUSSELS HOOFDSTEDELIJK GEWEST

EMTA
European Metropolitan Transport Authorities

Brussels Mobility Plan
Assessment of GHG emissions

1. Introduction

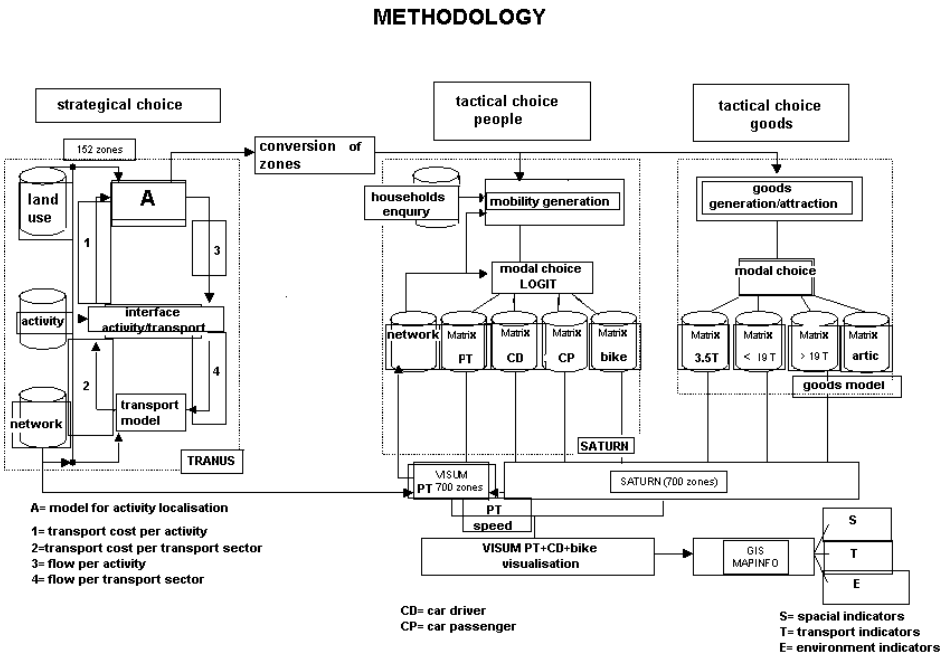
The Brussels Mobility Plan aims to reduce traffic (expressed in car-kilometres) by 20% from 1999 in order to reduce GHG emissions in accordance with Kyoto protocol. A study was conducted from 2002 to 2005 to achieve this main goal.

2. Methodology

We used 3 models, interconnected through behavioural models (discrete choice models using both revealed and stated preferences), to assess the effects of different policies.

These models are:
- connection between land use planning and transport (developed in ESTEEM and PROPOLIS European projects for a Brussels case study)
- PT use
- Dynamic traffic, including parking facilities

Assignments are made by the 3 models as follow:
- as result of the creation of an infrastructure, inhabitants and enterprises move
- the pattern of mobility changes: use of PT and road is different
- a new equilibrium occurs in traffic and modal share, but you need many iterations to reach these equilibrium.



source: STRATEC –Brussels Mobility Plan

Example:

- *a highway is over-congested, it means that some motorists go through another +/- parallel way*
- *you seek a way to reduce congestion on the motorway: the example here is a sustainable one, not assuming extension of capacity for the highway*
- *you assess a new railway line that makes the trips shorter by PT than by car;*
- *the parallel highway is then less congested: motorists that made diverted travel fill now the highway, making room for others on the parallel way*
- *but at the same time people move from a congested area to a station of the new line; they use PT instead of car, resulting in freeing streets in town*
- *but also enterprises move to the town centre because of its better accessibility through the railway: the central location has a better modal share for PT than the elder one: so there is decrease of traffic too*
- *the decrease of traffic results in less congestion and thus higher speed; it means also that people using PT can maybe go faster with a car than with PT*
- *by the next run of the traffic and PT models you have the opposite effect, filling streets with cars and less people on board of PT. We assume at this stage that there no changes in land use, otherwise there is no end in modelling.*
- *after many iterations, you approach a stability.*
- *you can then compare it with other solutions or "add many plates of the card to make your menu".*

The traffic model (SATURN) gives outputs such as CO^2, NOx, PM emissions, oil consumption… which allow to compare many different push and pull measures.

3. Results

We made the assessment of scenarios with push and pull measures, compared with 2001:

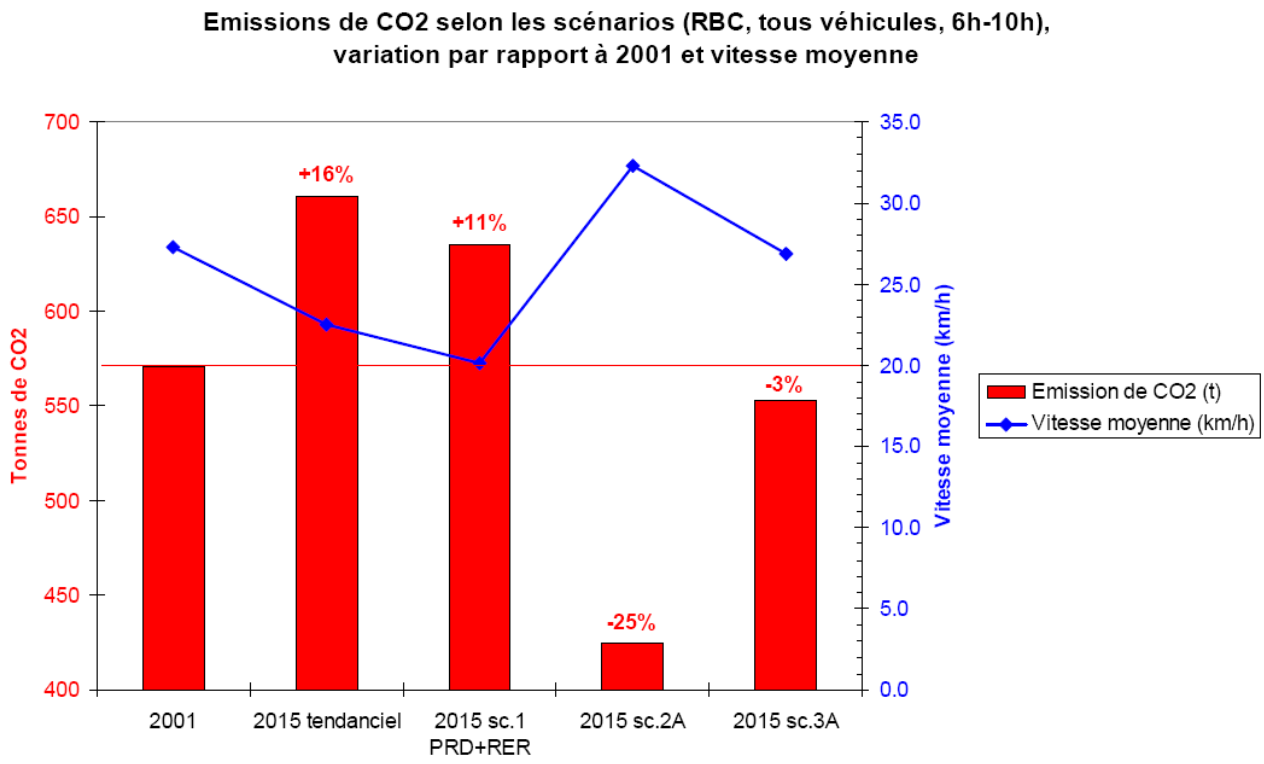
- *"2015 tendanciel"* means the normal trend in mobility, without any push or pull measures

- *"2015 sc. 1 PRD + RER"* contains mainly push measures as free travel on PT , a new Regional Express Network, PT quality, promoting bicycle and as pull measure, parking management in the centre of the Region and traffic restrictions in some residential areas.

- *"2015 sc 2A"* contains the full range of pull measures, including parking management over the whole region ($162km^2$), pay as you ride system, and a fee for parking cars in office's parkings to be paid by the driver. The push measures are almost the same as in sc1

- *"2015 sc 3A"* is the same as 2A but without pay as you ride system and the fee for parking.

The following graph shows the results both for CO^2 emissions (red, left scale) and velocity of cars on the network (blue, right scale).



CO2 emissions according to scenarios. RBC, all vehicles 6h-10h. Variations over 2001 and average speed.

A reduction of CO^2 emissions is only possible with introducing hard pull measures.

The only problem is that it causes a huge increase in the use of PT, what involves investments to increase capacity of PT all over the metropolitan area. As finances are not available in accordance with the needs, the aim to reduce traffic by 20% is to postpone after 2015.