Mobilities and long term location choices in Belgium

**DURATION OF THE PROJECT**
Phase 1: 01/01/2007 – 31/01/2009
Phase 2: 01/02/2009 – 31/01/2011

**BUDGET**
564,774 €

**KEYWORDS**
Mobility, demography, location, accessibility, migration

**CONTEXT**

Mobility and transport evolve with time and the passing generations. Interactions between daily mobility and household migration (the choice of house implying a change in municipality) are numerous. The evolution of the transport system have deeply modified the barrier of distance and opened the choices in term of choice of residence very widely. The tensions between daily and residential mobility have therefore increased, notwithstanding the recent rise in energy costs. This in turn generates unsustainable effects on society and environment. The proposed research project aims at analyzing retroactions between demographics and the evolutions of mobilities at different time-scales. In particular, location choice for household, daily accessibility and internal migrations appear to have strong interactions.

**PROJECT DESCRIPTION**

**Objectives**

The project’s objective is to investigate the cycle linking long-term society evolution, residential choice, transportation demand and resulting accessibility evolution. On the societal trends side, particular attention will be paid to the population aging effects, to the evolution of the family cell structure and inter-generational relationships, but other variables such as land-use and standards of living trends will also be considered for potential inclusion in the models. The project objectives include simulations of scenarios for the future in Belgium. On the transportation side, emphasis will be put on the evolution of transportation demand and resulting traffic conditions.

**Methodology**

The research challenges are real but suitable methodologies could be developed to deal with such challenges.

A first challenge results from the unfortunate observation that demographic and mobility approaches have historically been considered at very different levels of spatial aggregation. The first has favoured a more aggregate view. This has resulted from the general unavailability of migration data at a fine spatial level. On the other hand, accessibility and, more generally, traffic assignment problems have traditionally emphasized a very disaggregate approach.

A common ground must therefore be found for the two approaches to interact fruitfully. The project partners believe that an appropriate disaggregation level could be that of the 589 Belgian municipalities.

In practice, this will require the demographers to give particular attention to internal migration aspects, as they are obviously much more frequent at a finer spatial level than birth and death occurrences.

The mobility analysis will be, on its side, faced with the difficult question of forecasting transportation demand based on population evolution.

A second challenge is the proper modelization of the factors influencing migratory decisions and population characteristics. The most commonly ignored variables are the key events in the life cycle.

Further population characteristics are known to influence transportation demand such as education levels, socio-professional status or driving license ownership. The evaluation of these parameters must also be considered in the course of our project.

Finally, the integration of demographic and transportation models in an interacting loop is highly desirable, but practically nontrivial.

The developed methodology for this MOBLOC project will also take into account the parallel efforts undertaken for the MOBILLUX project.

The first phase of the project will be essentially devoted to the developments of the evolution models. In the second phase, a first part will be devoted to the developments of a residential localization model [long term mobility] and of an accessibility model [short term mobility]. This is a necessary first step for then modeling and analyzing the interactions.
### RESULTS

At the end of this first phase, an intermediate report will focus on the developed evolution models. The achieved methodologies will be described and the first forecastings for the Belgian population evolution will be presented.

At the end of phase 2, over the developed models and their methodologies, the final results will also include:

- population forecasts at municipalities level;
- a municipality based origin destination matrix for work/school and other purposes, with some indication of the modal split for each destination (for each period in the model);
- accessibility measures for each municipality and each period;
- effects of accessibility and migration interactions;
- analyses of scenarios chosen to clarify the roles of to the population aging effects, of the evolution of the family cell structure and of the inter-generational relationships.

### PARTNERS - ACTIVITIES

The FUNDP Transportation Research Group (GRT) explicitly focuses on the behaviour analysis of travel and mobility of individuals, using aggregate and disaggregate models. The main active developments are a synthetic population description for Belgium and a comprehensive activity-based demand model.

The GéDAP’s overall objective is to develop basic and applied research on demographic population dynamics, both from the temporal and spatial points of view. The main issues developed are dealing with internal and international migrations, household evolutions, and small-areas demography, especially at the commune level.

The GEODE (department from CEPS) topics of research are spatial orientated, namely 1) households and housing issues, 2) public infrastructures and living environment, and, finally, 3) public strategies on spatial planning and development.