Road infrastructure planning using spatial tools from a perspective of poverty reduction

Jacco Vosselman

Graduation Date:
18 December 2009

Graduation committee:
Martin van Maarseveen
Mark Zuidgeest
Keshkamat

Organisation:

Road infrastructure planning is often believed to contribute to poverty reduction and many development bank and NGO's invest time and money in these projects. However, few of those projects were subject of impact evaluations. Besides, feasibility studies are often based on financial criteria rather than economic, social or ecologic criteria (Van de Walle, 2009).

Keshkamat (Keshkamat, 2007) developed a method in which Spatial Multi Criteria Evaluation or SMCE can be used for route generation and selection. This has proven to be a successful method for the spatial planning of corridors that includes different stakeholder views and is capable of including economic, social and ecologic as well as technical criteria. The question therefore rises whether or not social criteria (especially poverty reduction as stated in the Millennium Development Goals) can be a useful addition to the SMCE method.

The research will be supported by a showcase of the Asian Highway Network. This international highway network will connect Asian countries. Focus will be on a stretch of road in Mongolia known as the Millennium Road or AH 32, which will run from the capital of Ulaanbaatar to Khovd in the western end of the country.

The main objective of the research is:

To analyse the potential of geospatial technologies and SMCE in the planning of highways as a means of contributing to MDG-1 (poverty reduction).

The literature review discusses three topics, road infrastructure planning, poverty and poverty reduction and SMCE. This showed that:

- The planning of road infrastructure derives from policy. Planning is often guided by a framework. The generation and selection of route alternatives is not guided by a framework nor is the process transparent.
- Poverty is a complex principle from which many definitions do exist. Poverty is both multidimensional and spatial. In literature, many links do exist between poverty reduction and road infrastructure planning. They can be summarized as that road infrastructure planning contributes to poverty reduction by creating better access to opportunities.
- The SMCE method is versatile. Research shows that it can be used with economic, ecologic technical and social criteria and it can be used for decision support for areas, corridors and networks. Furthermore, SMCE has been used for design and evaluation principles.

The conclusions that can be drawn from both theory and case research are that:

- Road infrastructure planning can contribute to poverty reduction by improving access to opportunities. One of the major opportunities is employment.
- It is possible to include poverty reduction criteria to the process of spatial multi criteria evaluation, by emphasizing on the location of poor people and their lack of access to opportunities.
- Planners should make use of SMCE to provide a holistic and transparent method for the planning of road infrastructure from a perspective of poverty reduction.

More research is needed on:

- The impact of geographical scale on the SMCE process. It is presumed that geographical scale plays a role in the SMCE process. Planning roads using SMCE on a local level is assumed to be different from planning on a national or international level. Since no considerations towards scale were made in this research, the impact should be topic of further research on road infrastructure planning using SMCE.
- The links between road infrastructure planning and poverty reduction. Current research is not supported by impact evaluations. This should be done to improve the links between road infrastructure planning and poverty reduction.
- The impact that the SMCE might have on the political process of road infrastructure planning. When decision support systems help on the planning of road infrastructure, the political planning power might reduce.

A study should be done on the possibilities and political willingness of road infrastructure planning using spatial tools.