



THE ANALYSIS OF INFRASTRUCTURE NEEDS—A REVIEW OF SOME METHODS USED

The analysis of infrastructure needs is an important step in developing policies. The manner in which needs are defined and the nature of the needs have a direct impact not only on what will be built, but on the investments that will be made.

The difficulty of measuring needs

The literature review that was conducted brought out the fact that the analysis of infrastructure needs is not an exact science, and that the quantification of infrastructure needs is a complex task. The literature review also brought out the confusion around terminology. In the English-language literature, the terms “deficit,” “needs” and “requirement” are used interchangeably, whereas only “deficit” and “needs” are used in the French-language literature.

The authors cite a number of reasons why defining needs is complex. First, there is a lack of reliable information on the status, location, capacity, performance, condition and operating costs of existing infrastructure. There is also confusion about the standards to be applied and a lack of consensus on the existing stock and future needs. Lastly, there is a lack of agreement on the costs associated with specific needs.

Some authors go still further in their criticism. H. Sanders (1993) criticizes the very notion of an infrastructure crisis, for which, in his opinion, there is no solid basis because of a lack of data. He believes that the crisis is nothing but a myth, with the roots of the problem being more political than financial or economic.

Various methods

Although the task is complex, there are various methods for assessing infrastructure needs and highlighting the principles and standards on which needs analyses are based.

E. M. Gramlich (1994) identifies two methods for assessing needs: engineering needs assessment and study of the results of political votes.

Engineering needs assessment is a technical method based on engineering studies of the conditions and needs for development and investment. The author criticizes this method because it does not include economic reasoning in its calculations. Soberman (1996) comes to the same conclusion, adding that the method measures infrastructure deterioration rather than the nature of the deficit itself:

Engineering needs studies attempt to meet technical engineering and quality of service standards but provide no assessment based on economic performance. (Soberman, p. 26)

Study of the *results of political votes* is a method used particularly in the United States, where states and local governments are required to use referenda to obtain approval of all new construction projects. Governments use the referenda results as an indicator for identifying and measuring the lack of infrastructure. Thus, if people vote in favour of the project, it is because something is lacking and a need therefore exists. Although this method is more democratic, it is not very scientific, because a number of factors can influence constituents to vote for or against a project.

Gramlich does not believe that studies on infrastructure needs provide conclusive results. He even challenges the questions asked, finding that they are not relevant. According to Gramlich, the question is not whether there is a need or deficit with regard to infrastructure, but whether there are policies that should be changed. The author proposes a new approach to dealing with infrastructure issues:

A far more sensible approach is to set up institutional structures that permit state and local governments, the holders of most all infrastructure capital, to find their own optimal stock.... States could be forced to bid for costly, large-scale high technology projects. States could also be permitted or encouraged to impose user fees to finance their own capital and maintenance. And federal matching grants could be restructured and used much less intensively. (Gramlich, 1996 p. 1194)

On a more concrete level, the State of Victoria in Australia and the City of Edmonton have used the *gap analysis* method to assess their infrastructure needs.

The State of Victoria in Australia has produced a report presenting the State's vision as well as infrastructure needs for the year 2020. The method used in the report consists of four steps: identifying the forces that have an impact on future needs; determining the condition of the existing infrastructure stock; identifying future infrastructure needs; and analysing the gaps between the existing stock and future needs.

While the Victoria example focussed on the gap between the existing stock and future needs, the City of Edmonton interpreted gap analysis differently in its infrastructure strategy. The study focussed instead on the gap between projected costs for infrastructure projects and the funds available to finance them.

The State of New Jersey used another, simple method for needs assessment: an equation that determines needs by multiplying demand by standards. Demand is based on existing conditions and growth projections for the year 2010, and the standards are those established by organizations with responsibility for infrastructure.

There is no doubt that, despite the complexity of the task, it is possible to use methods that provide rigorous analyses of infrastructure needs. The examples that seem most promising to us focus on defining a development vision, as was the case with Australia and New Jersey, as well as analysing trends and future demand. Although the results of the analyses are subject to interpretation, it is nonetheless essential for the development of medium- and long-term policies that a rigorous methodology be used to identify infrastructure needs.

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All of the documents cited are available from the Research Directorate.