INFRASTRUCTURE AND REGIONAL DEVELOPMENT

Summary in English

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SIKA has been commissioned by the Government, together with NUTEK, to clarify the correlation between regional development and infrastructure. We have decided to include the entire transport system, i.e. both traffic facilities and the traffic that uses these in the concept infrastructure. With the aid of the new forecast and analysis systems RAPS and SAMPERS, we have tried to shed light on the effects of different approaches to infrastructural development on the location of housing and employment. We have moreover devoted special attention to the importance of and conditions for regional expansion. A few case studies have been made to clarify how major infrastructural projects affect the development of travelling and accessibility.

Regional development is both about economic growth and the geographical distribution of welfare. In this commission, we have decided to place the emphasis on methods that clarify effects on economic growth, as expressed in the effect of infrastructural measures on, for instance, population, employment, production values, and levels of income.

It is important to point out that there is a mutual interaction between growth and welfare. Growth is necessary to maintain social and economic welfare. At the same time, good social and economic welfare improves the prerequisites for positive economic development in the region. Development that is environmentally sustainable in the long term is also included as a basic prerequisite in our picture of regional development.

New model to calculate localisation effects of entire investment programmes

Studies have been available for a long time that show that improved transport can contribute to regional development. A main result from American studies is that new infrastructure has a clear effect on growth although these effects seem to be declining. In the United States the effects of new infrastructure decreased during the 1980s and 1990s compared with earlier decades.

However, there is still no clear scientific evidence for the exact nature of the correlations between measures in the transport system and regional development. One difficulty is to measure and assess the regional development. Furthermore, the effects of investment depend to a great extent on the level of the infrastructure it is based on. If roads and railways are already well-developed in a particular region, further investments probably have a smaller marginal utility than the equivalent investments in another region where the standard is lower. New infrastructure does not *per se* create regional development, although it can affect the conditions for the processes that create growth and development.

The agencies in the transport sector have quite recently developed forecast models to describe how travelling times to work, access to service, etc. are affected by infrastructural measures. Within the framework of the assignment now carried out, we have supplemented this model system with a new component that describes how changes in accessibility affect regional development. Thereby, we now have access to a tool to analyse how measures in the transport system affect the location of population and employment.

We have also used the new forecast and analysis system to analyse the location effects of the investment alternatives that are clarified in the strategic analysis submitted to the Government in autumn 1999. We can then note that entire investment programmes of the kind studied then according to the analysis now carried out seem to have rather small aggregate effects on location of population and workplaces. The changes in population and employment in particular municipalities are less than one per cent, despite the investment programmes being extensive.

Regional expansion is expected to continue

In the current debate which is expressed inter alia in the final report of the Regional Policy Commission (SOU 2000:87), the importance of increased mobility is underlined, in particular the expansion of local markets to create so-called regional expansion. The basis for this discussion is that improved communications lead to increases both in the access of local workforce to workplaces and businesses' local access to labour. The idea is that measures in the transport system are to be included in a dynamic process which leads to expanded and better functioning local labour regions (LM regions).

Regional expansion can be important because the labour market usually works better in regions with a larger population. Diversified local labour market regions make it easier for instance for the labour force to find new work when unemployed, at the same time as businesses can more easily recruit competent staff. In other respects as well, regions with a bigger population work better than small regions. In these respects, regional expansion can make a positive contribution to the economy.

At the same time, it is important to point out that regional expansion is only one of several ways for a region to improve its performance. Naturally, the region's ability to make use of existing resources plays an important part. The intensity of contacts in an existing LM region also affects its performance. If accessibility within the region is low due to transport system in the region being poorly developed or operating close to its maximum capacity, this risk having negative effects on the development of the region. On the other hand, the transport system is generally well-developed in Sweden and capacity problems rarely occur outside the big city areas.

There are strong driving forces in current economic development towards continued regional expansion. Economic specialisation which has been a prerequisite for growth will probably continue at the same time as Sweden, like

many other developed countries, is in a rapid phase of transformation from industrial society to information and knowledge-based society. This places increased demands on a flexible, efficient labour market where labour can be transferred from declining industries to more expansive sectors. This argues in favour of continued regional expansion.

If household incomes continue to increase, individuals will have more resources for travel, which will make possible longer journeys between home and work. Continued private car use will probably play a large role. Among other things, the number of cars will continue to increase apace with less differences in access to cars between women and men. These factors facilitate continued regional expansion. We can also see that an expansion of regional train transport that makes possible efficient commuting can per se contribute to continued regional expansion, although the effects are limited to the corridors served by train services and the general effects for regional expansion are thereby limited.

Measures in the transport system that lead to improved conditions for commuting accordingly do not automatically lead to regional expansion. The model calculations we have made confirm that opportunities for shorter travelling times do not automatically lead to regional expansion. Factor such as industrial structure, traditions and levels of unemployment also affect the behaviour of individuals and firms in the short and medium-term as regards the choice of work and location of workplaces.

An explicit endeavour towards regional expansion and increased mobility is often based, however, on imbalances as regards access to work. In this perspective, longer journeys to work can appear to be a lesser evil than being forced to move when unemployed. The issues of whether longer journeys to work are more cost-effective or otherwise more favourable for promoting the individual's welfare than other measures, for instance, in labour market or education policy requires further analysis.

Increased use of cars affects regional expansion more than investments in roads

Are there then opportunities to facilitate commuting to work and thus contribute to regional expansion with the aid of measures in the transport system? It is not considered possible to reduce total travelling times by car in the road system more than marginally compared with at present. Despite the fact that the further savings in travelling time are limited for road traffic, the road system will continue to be very important for how the functions of different regions develop, as we have indicated above. A continued positive economic development will increase car travel generally and, in particular for certain groups; for instance, it is expected that the trend will continue where women both own and drive a car in a way increasingly similar to men. At the same time, the correlation between measures in the road network and continued regional expansion will relate more to coping with an expected increase in road traffic than shortening travelling times.

The assessment that there are limited possibilities for radically shortening travelling times with road improvements is confirmed by a study of the prerequisites for regional expansion in northern Norrland. This study shows that the potential for shortening travelling times by road improvements is relatively limited in the northern part of Sweden. The method of analysis adopted should be able to applied elsewhere, however. However, the result of the study from northern Norrland cannot be transferred directly to other regions where, for instance, there may be a denser network of towns/communities.

We have examined a number of road connections that the National Road Administration consider to be important from the point of view of regional policy and which should be analysed in more detail in a socio-economic perspective like the railway projects discussed.

Regional train services increase travel between towns

Fast regional trains cut travelling times and increase commuting. Experiences from the Svealand line and Kustpilen (Coast Arrow) in Blekinge/Skåne as well as our forecasts for some proposed projects show that the investment in regional rail transport with reduced travelling times and a high level of comfort can increase travel, in particular work journeys between places served by the line. The changes in commuting in the cases studied do not result, however, in a change in the boundaries of LM regions within the forecast period, i.e. before 2010.

The new regional trains often replace slower journeys by bus. Furthermore, new and on average longer journeys take place. As a rule, however, only a small portion of the new train travellers previously travelled by car. The start of services on the Svealand line is an exception here, as a high proportion of the new travellers say that they previously travelled by car. Total travel in a region is, however, marginally affected by the new connections between places by train; car travel dominates overall also as regards work journeys.

The effects of investments in regional rail services is particularly clear if travelling time for the whole journey, i.e. including connecting journeys to and from the station, is reduced to times that are attractive for those travelling to work. As a basis for an assessment of the travelling times involved, it may be mentioned that 95 per cent of all journeys to work now take a shorter time than an hour.

Co-ordination of measures can increase the effect

The effects that measures in the transport system can have for regional development affects to a great extent the specific regional conditions and the extent to which measures are co-ordinated with other measures. Therefore, measures aiming at stimulating growth in a particular region should be analysed against the background of the regional business sector’s needs and structure.

The size of the regional effects are also affected by the extent to which different measures in the transport system can be co-ordinated and linked to other regional development initiatives. The effect of measures can also be reinforced if they are

better integrated with community planning as a whole, for instance, with regard to location of built-up areas, workplaces and higher education.

If large resources are to be invested in fast regional train services, the outcome in the number of travellers is affected by the quality of the connecting road network and traffic, access to car parking, etc. The location of the station in relation to the town centre is also related to the development of travelling. Other examples may be the interaction between investments in higher education and the expansion of the transport system.

Goal conflicts should be highlighted

The majority of the measures that markedly improve the road and rail systems very probably lead to increased transport performance. This means, for instance, that measures that aim at continued regional expansion risk coming into conflict with other transport policy objectives such as a good environment and road/rail safety. These goal conflicts should be highlighted and discussed.

Sweden has a sparser population structure than most other EU and OECD countries, at the same time as, inter alia, the requirements for economic specialisation are increasing. Measures that aim at improving accessibility should therefore be designed to enable them to be combined with requirements for long-term sustainability that are made on the transport system. Continued investment in environmentally friendly technology should be able to reduce the environmental impact to a certain extent. Analyses should also be made on an economic base of how necessary initiatives to achieve the environmental objectives should be distributed among different sectors of society.

Within the transport sector, there may be measures that both increase the efficiency of the transport system and reduce the negative impact on the environment. An investment in public transport and better accessibility in the urban areas maybe one such example. Accordingly, emissions from the transport sector can be kept down despite an increase in road traffic in for instance sparsely populated regions, where opportunities for public transport solutions may be limited.

A reasonable conclusion is that solutions are included in the long-term approach to the development of the transport system that are efficient both from an economic and an environmental point of view, which should entail both increased public transport and road improvements.

Inter-regional travel is also important for regional development

The importance of the transport system for regional development is not only about opportunities for commuting to work or everyday access to education and service of various kinds. It is important to notice transport needs even when long distances are involved and where the passenger level is too low to make commercial services viable.

As regards the correlation of the transport system to regional development, changes in the labour market should also be taken into consideration, due, among other things, to IT development which can lead to distance working and fewer but often longer journeys to the workplace. Increased commuting or more occasional long journeys to a workplace make special requirements on access to interregional journeys by, for instance, air or fast train.

The regional policy commission has recently published material on the importance attached to air travel by the business community for national and international contacts and has in this connection in particular stressed the importance of the range of services offered being stable over time. Representatives of the business community underline that this is more important than the level of prices.

It should be further underlined that fast train services can be important for connections between regions where distances may be too long for daily commuting but where such links can be used regularly during certain periods. This may for instance be the case when a facility requires an input of work during a particular period from people outside the region in question or where people with special expertise temporarily work at different places in the business sector, regional higher education institutions, agencies, etc.

Many questions remain to be answered

We are very aware that the empirical studies and model calculations which we present in this report do not show the whole truth about the effects of measures in the transport system. We cannot then here and now give any final answer on the whole situation in the complicated correlation between infrastructure and regional development. It may therefore be motivated to continue to follow up planned and implemented investments and other transport policy measures as regards their expected or actual effects on development in different regions. Furthermore, it is important that theories on the correlation between infrastructure and regional development can be further developed, preferably in the direction of it being possible to test the hypotheses empirically.

On a general level, it also appears evident that the combination of a sparse population structure and an increasingly specialised economy make high, increasing demands on the Swedish transport system. Sweden has a sparser population structure than almost all other EU and OECD countries. At the same time, the economy is becoming more and more specialised. Developments in IT and the transport sector have together with the globalisation of the economy made it possible to an increasing extent to divide work processes up that were previously integrated.

In a period of ongoing specialisation of the economy, the mode of functioning of the individual regions plays an increasingly important role for the development and competitiveness of the national economy. With the manifest advantages that size and variation have for the mode of functioning of the regions, it natural that the interaction between communications policy and business policy becomes

increasingly important. In this way, it is increasingly important that there are planning and decision systems that enable a balance to be struck between infrastructure and other development initiatives, and to coordinate these initiatives to make use of potential synergies.

The regional and growth policy efforts together entail that the transport system has to be maintained at a comparatively high standard in an international comparison in a number of respects. The sparse road network must be able to cope with heavy all-year round traffic, for, for instance, the forest industry, and to allow comfortable car travel for the population of these regions. The rail and road network in big cities shall have the capacity for efficient passenger and goods traffic. For more long-distance transport, requirements are made for a stable range of services despite passenger numbers being too low to permit services to be commercially viable. The challenge is to create and maintain a transport system which meets these requirements and where the measures that need to be taken contribute to the achievement of the overall transport policy objectives of an economically efficient and long-term provision of transport.

THE SWEDISH INSTITUTE FOR TRANSPORT AND COMMUNICATIONS ANALYSIS

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- To carry out studies for the Government
- To develop forecasts and planning methods
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Swedish Institute for Transport and Communications Analysis
P.O. Box 17 213, SE-104 62 Stockholm, Sweden
Visit: Maria Skolgata 83
Phone: +48 8 506 206 00 Fax:+46 8 506 206 10
sika@sika-institute.se
www.sika-institute.se