Goods Traffic and the Economy

Relations and Indicators

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Frank Bruns

EDITOR'S NOTE

Translated from German by: Mercury Translations Ltd, London, U.K. (Melanie Kunze)

- 1 Transport through and within the Alps is continuously increasing. In the Alpine transit corridors, the negative effects of transport on humans and the environment are felt particularly. From the point of view of the affected Alpine regions, a sustainable development solution for this problem is required as soon as possible.
- 2 With the MONITRAF project, the representatives of the Alpine regions concerned pursue the goal of jointly monitoring the impact of road transport within the Alps and taking measures to reduce the negative effects (noise, air pollution, etc.). What remains to be seen is whether and to what extent such measures may influence other economic and societal goals in a positive or negative manner. The studies conducted within the project analysed the relations between «freight transport and the Economy/Society» and identified respective indicators that need to be further investigated within the framework of MONITRAF (Bruns F., Delb V., 2005).
- 3 The following thesis serves to demonstrate the importance of the relationship between freight transport and the economy.
- 4 With regard to economic compatibility, a lorry toll in the Aosta Valley could be higher than in Tyrol.
- 5 In this context, the central issue is that the impact of transport on the economy and the society will differ depending on the relevant region. How can we derive sophisticated statements in this regard? One part of the intended monitoring focuses on showing to what extent the local economy and society depend on transport. Furthermore, theses – such as the one stated above – need to be verified by the developers of measures. Therefore a system of indicators capable of illustrating the similarities and varieties

between the regions as well as the effects of different measures need to be designed. The fundamentals of this indicator system will be explained below, together with recommendations for the respective users.

Definition of the System

What «perpetrators» of the impacts need to be studied?

- 6 This survey was commissioned with the main focus on studying road freight transport.
- 7 To apply a system of indicators, it is necessary to study the transport of persons and freight by road as well as by rail as a whole. One of the reasons being that the traffic jams during the holiday season, which affect the environment but are very significant for tourism at the same time, are caused by persons. Furthermore, transport by rail similarly gives rise to discussions about noise and particle emission: It is only tolerated if it passes through the mountains of the Alpine corridors but not outside of these. Even so, it is still heavily disputed, as proven by the discussions about the Fréjus high-speed tunnel or the Semmering railway tunnel. When developing measures, such aspects need to be taken into account from early on.

What areas need to be studied with regard to the impacts?

- 8 In this context, the impacts on the economy and the society need to be studied. Other contributions will focus on the impact on the environment. However, not all impacts have been covered by that.

What periods of time need to be studied with regard to the impacts?

- 9 Impacts may be studied in a multitude of ways:
 - On the one hand, different regions may be compared, the point in question being what importance transport has or had for the economy/society in the respective regions.
 - On the other hand, it may be of interest to find out what future impact the suggested measures may have.
- 10 The elaborated system of goals and indicators covers both areas: a comparison of regions for the past and the impact of the measures on the future.

In what region do the impacts need to be studied?

- 11 Both impact levels need to be studied within different regions:
 - To compare regions, the Alpine corridors themselves will be studied within the project MONITRAF.
 - To evaluate the measures, more than merely the MONITRAF regions need to be taken into account. All those regions that will be affected by changes due to the measures need to be studied. This is particularly important within the framework of a holistic approach and in order to obtain a general acceptance of the measures inside as well as outside the MONITRAF regions.

Sustainable Development and Challenges for MONITRAF

- 12 The question of how the economy and the society are affected needs to be answered against the backdrop of societal goals. In principle, the development of a system of goals and indicators is anything but new. It is part and parcel of each planning process, whether implicitly or explicitly. Each planning process, such as the one for MONITRAF, is expected to generate answers about what should be achieved by the implementation of suggested planning measures. The envisaged achievement is generally referred to as «goal, main concept» or (in its entirety and defining structure) as a «system of goals» identifying the expectations of decision-makers and planners with regard to the outcome of the implemented planning process. The success of the relevant plan is measured by such goals or main concepts. After the implementation of measures, the efficiency of the plan may be evaluated according to a catalogue of goals (Chaumet, Cerwenka, Bruns *et al.*, 1993.). In this respect, a multitude of different associations may arise by looking at the Alpine corridors:
- One person sees the transport routes and associates them with the «right to free movement» and the realisation of the European single market.
 - Another person sees an «efficient generation of traffic with low operating costs in a modern infrastructure».
 - Yet another person sees to what extent the landscape is dominated by transport routes.
 - And yet another person only needs to think of a transport route and already hears the traffic noise.
- 13 This goes to show that objectives are mostly connected to individual perceptions, concerns, and interests. Basically, the development of a system of goals is a normative and thus a political process. In order to avoid that a system of goals is only governed by one set of interests, it is preferable to involve a multitude of conflicting interested parties in the determination of objectives and/or to amalgamate the various objectives of such parties into one system of goals.
- 14 There is no scientific reason behind the incorporation of certain goals into a system of goals. However, the process of determining goals may be supported scientifically by calling for unambiguous, selective, clearly-defined, and complete goals or pointing out the relation between certain goals, for instance.
- 15 The challenge for the Alpine region with regard to the legitimisation of goals is that there is no system of goals that is uniformly formulated and harmonised on the European plane.
- 16 Nevertheless, it is not necessary to discuss goals and indicators for years. We can simply make use of the participatory debate about the sustainability of different systems of goals and indicators that has been going on for fifteen years. With «Indicators of Sustainability for Traffic», a system of goals and indicators, such an approach has already been created within the framework of the National Research Programme 41 «Traffic and the Environment» (Ernst Basler + Partner AG, 1998). A system of goals and indicators was created by means of a participatory process including authorities and interested parties. Some of the indicators (*cf.* figure 1) are, for instance, noise and CO₂ emission within the environmental sector, prices and traffic

safety within the economic sector, or individuality and participation within the societal sector.

Figure 1. Indicators of traffic sustainability

Ernst Basler + Partner AG, 1998

- 17 Switzerland as well as the EU, the OECD, and the UN have further developed such systems of goals and indicators and apply them as well: In Switzerland, for instance, all traffic measures of the federal government need to be evaluated by means of such a system of goals (Federal Department of the Environment, Transport, Energy and Communications, Federal Office for Spatial Development, 2001).
- 18 With regard to the scope formulated in the introduction, adjustments with regard to the present systems of goals and indicators need to be made:
 - The initial thesis showed that the relations between specific indicators need to be taken into account.
 - Indicators should be measurable, available, and comparable between regions.
 - In the area of societal indicators, new findings were made only recently, which need to be included at this point. (Delb V., Raymann L., Beltrani G. *et al.*, 2005).

Relations between Transport and the Economy

- 19 To explain the relations between regional economy and regional traffic, the «TRIPOD» approach may be used (*cf.* figure 2) (Federal Office for Spatial Development, 2003). This model was implemented by order of the Federal Office for Spatial Development.

Figure 2. Model approach to explain the relation between traffic and the economy

- 20 TRIPOD takes traffic as the basis and then mainly focuses on measures such as the introduction of the city train in Zurich, for instance (Federal Office for Spatial Development, 2004). To compare different regions, traffic as a whole needs to be monitored. Furthermore, interesting impacts such as the regional per-capita income or employment, for instance, will be listed. Now, what is the connection between the two indicators? In order to find out, other support factors need to be taken into account:
- The regional characteristic – referred to as potential – shows to what extent a region depends on freight transport, which is indicated by the structure of industries, for instance. Where many individuals generate their income from the agricultural and the industrial sector, a relation between income and freight transport tends to exist: Primary and end products need to be transported.
 - Needless to say, general developments, such as the general economic growth, also need to be taken into account with regard to the analysis.
 - The extent to which transport influences income also depends on the behaviour of private and public players. May industries settle in demarcated, alternative areas? How restrictive is the application of regulations?
- 21 With regard to the two regions of the Aosta Valley and Tyrol, the TRIPOD approach is presented in a simplified illustration, i.e. as a thesis. The most interesting issue for the Alpine corridors in this context is what percentage of the transport within the region is transit. The monitoring concentrates on what kind of transport is connected with the region since such transport, whether originating in, destined to, or moving within the region, is directly related to the local economy. The following facts can be said about the regions (cf. figure 3):
- The Aosta Valley and Tyrol have a somewhat equally high percentage of transit.
 - In absolute terms, Tyrol has a considerable amount of freight transport into and out of the region.

Figure 3. Amount of goods traffic by road in 1995/1996

Source : EUROSTAT, 2005

- 22 How does the economy of the regions present itself in terms of space? To illustrate this, the regional per-capita income for the above-mentioned two regions is presented on the basis of purchasing-power parity (*cf.* figure 4). It is obvious that the income in Tyrol has increased more than in the Aosta Valley, whereas in absolute terms the per-capita income in the Aosta Valley is higher than in Tyrol. Thus, the absolute income is somewhat equal.
- 23 What is the relation between regional income and freight transport on the roads from the point of view of the regions? In order to interpret the respective data, other support factors are needed. As an example, Figure 5 illustrates the employment per industry in the Aosta Valley and in Tyrol.

Figure 4. Development of per-capita income

EUROSTAT, 2005

Figure 5. Employees per industry

EUROSTAT, 2005

- 24 For one thing, it becomes clear that both regions have a high percentage of employees in the service sector. Services are related to the transport of persons. At this point, it is necessary to point out once again the recommendation made above: The transport of persons and goods should be studied as a whole.

- 25 What also becomes clear is that compared to the Aosta Valley, Tyrol has a considerable number of employees in the industrial and the agricultural sector. From this, we can conclude the following thesis:
- 26 By comparison, the income trend in the Aosta Valley depends only marginally on freight transport by road: Only a slight percentage of transport originates in or is destined to the Aosta Valley. The reason for this is that employment in the industry generating freight transport is rather small. The income trend is mainly related to the service sector and the transport of persons.
- 27 Tyrol presents a different picture: Here, income depends on the agricultural and the industrial sector to a greater extent, and these sectors generate, among others, freight transport (by road).
- 28 Thus, the same measure to reduce freight transport by roads will have different economic consequences in these two regions. Income figures in Tyrol will probably be rather affected than income figures in the Aosta Valley. Thus, as we assumed above, the MONITRAF partners need to decide on the different forms such measures may take.

Goals and Indicators

- 29 The system of goals and indicators developed is applicable as according to the information provided by EUROSTAT, the respective data are available. At the most, only some individual data need to be added from regional statistics and/or the Federal Office for Statistics and Traffic Data. What is more, interviews with local stakeholders need to be conducted. The developed system of goals and indicators differentiates:
- the goal levels including main and subordinate goals (e.g. high economic power with the goal of increasing income),
 - the indicator (e.g. household income), and
 - the measuring factors for monitoring and evaluating. The measuring factors for monitoring and evaluating need to be differentiated. Data for monitoring need to be based on standard factors such as the size of the population or the area: Whereas a comparison of regional incomes in absolute terms does not lead to convincing results if the regions differ in size, a comparison of per-capita incomes certainly does. What matters particularly with regard to the evaluation is how the respective measure changes figures in absolute terms, not the accidental fluctuation of per-capita income due to an increase or decrease in population figures in a certain forecast area. For the economic field,
 - 8 traffic indicators
 - 7 economic indicators
 - 8 potential indicators
 - 5 indicators for players are recommended. Some societal indicators will be added, which may be neglected by the MONITRAF partners depending on their relevance for the respective region.

Application Recommendations

- 30 In order to applicate the developed system of goals and indicators, the following steps are necessary:

- Compilation and analysis of data for monitoring: This serves to discover similarities and varieties between the regions and demonstrate how the local economy and society depend on transport. Next to economic and transport indicators, characteristics and/or potentials of the regions as well the behaviour of the authorities (players) need to be identified. With the help of the system of goals and indicators, these steps can be undertaken.
 - Development of measures: The findings serve as the basis for the development of measures that are economically and socially compatible within individual regions, e.g. by differentiating such measures.
 - Evaluation of measures: The measures developed need to be reviewed in terms of every possible aspect of sustainability. For an evaluation, all impacts need to be taken into account, i.e. the system of goals and indicators also comprises those indicators generally used to evaluate measures in the traffic sector. What needs to be reviewed in this context is to what extent data on changes related to specific measures are available (e.g. by means of transport models).
- 31 It is a sophisticated task to explain economic and societal developments on the basis of freight transport by road. The compilation of indicators provides a first opportunity to take on this task and address the issue of a sustainable development of measures.

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ABSTRACTS

Transport through and within the Alps is continuously increasing. In the Alpine transit corridors the negative effects of transport on humans and the environment are felt particularly. From the focus point of the affected Alpine regions, a sustainable development solution for this problem is required as soon as possible. Any suggestions in order to solve this problem should be discussed in view of all the facts: Thus, the relationship between “freight transport and the Economy/Society” also need to be taken into account. In this context, the central issue is that the impact of transport on the economy and society will differ depending on the economic potential and the reaction of players in the relevant region. Within the project MONITRAF the respective relationships has been investigated and indicators identified (BRUNS F., DELB V., 2005).

Le transport intra-alpin et transalpin est en constante augmentation. Dans les corridors de transit alpins, les répercussions négatives de cette circulation sur l'homme et l'environnement se ressentent particulièrement. Pour les régions alpines affectées, des solutions en terme de développement durable devront être trouvées au plus vite. Toutes suggestions pour résoudre ce problème, devront être discutées à la lumière de nombreux facteurs. Ainsi, les relations entre « le transport des marchandises et l'économie/la société » doivent être prises en compte. Le problème central est que l'impact du transport sur l'économie et la société, diffère selon les ressources économiques et la réactivité des acteurs des régions concernées. Le projet MONITRAF examine les impacts réciproques et identifie les indicateurs (Bruns, Delb, 2005).

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Mots-clés: système d'objectifs, évaluation, économie régionale, indicateurs sociaux

Keywords: systems of goals, evaluation, regional economy, societal indicators

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