

# Transit traffic in the Alps and the Andes. One phenomenon, different perceptions

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### Introduction

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The term “transit traffic” is used in various senses when describing traffic flows across mountain ranges. Applied in line with customs-regulatory concepts, the term denotes only traffic that crosses a mountain region without originating or ending in that area (ARE 2001: 8). However, the term is often used in a general sense for cross-border traffic, in this case crossing the borders of a mountain range, and in this sense also includes import and export traffic of the respective mountain region. Distinct from that is the internal traffic within a mountain region. Depending on the economic activity and population density of the region, this can amount to a hefty proportion of the total traffic.

In Europe, various initiatives (Transitforum Austria-Tirol in Austria, Alpen-Initiative in Switzerland, ITE – European Traffic Initiative) endeavour to demonstrate the negative aspects of cross-alpine traffic using publications and spectacular actions, with the aim of influencing political decisions. Within the Alpine Space, the term “transit traffic” is thus associated with negative effects such as noise and air pollution and not used in the context of economic opportunities for individual regions. In the Andes, the situation is completely different. In the political discourse there, improving the road infrastructure is regarded as one of the key factors of regional development. Especially the peripheral regions of the various states see the expansion or new construction of roads suitable for heavy goods vehicles as the key to regional development. In the year 2000, this view manifested itself in the foundation of IIRSA (Iniciativa para la Integración de la Infraestructura Regional Suramericana), an initiative with the aim of enabling sustainable regional development across all twelve South-American countries by expanding the transport, energy and telecommunications infrastructure.

The background for this contrasting assessment can be found in the great differences between the two mountain regions in terms of natural landscape, infrastructure, traffic volume, in the technical condition of the vehicles, but also in the urban and economic net-

works as well as in the political systems and structures (Borsdorf 2004: 300).

Traffic flows across the Alps have been relatively well studied and analysed in the context of the lively political debates they have triggered (ARE 2001, Vogt, Meurer & Müller 2003, MONITRAF 2005) while similar research on the Andes is almost totally missing. In the scarce literature on the topic, Borsdorf (2004) contrasts the transport structure in the Alps with that in the Andes, Torricelli (2003) compares cross-border mobility in the two mountain regions.

This paper aims to present the differences in the transport systems in the Andes and the Alps and to compare the key problems of transit traffic in both mountain regions.

Given the vast expanse of the investigated areas, this can only take the form of a compilatory approach. Existing data sources, especially statistics and annuals, which are regularly updated, are used to sketch the current situation. The differences in the data available for individual countries mean that sometimes only partial areas can be described.

### Mountain-crossing traffic in the Alps and the Andes

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Traffic across the Andes differs fundamentally from that across the Alps for several reasons: Borsdorf (2003, 2004) provides a comprehensive overview of the differences in natural terrain and their impact on traffic. These include the differences in length, surface area and orientation in the compass (N-S for the Andes, W-E for the Alps), the differences in the topographical features relevant for traffic, the degree to which the mountains act as climate divide, the different locations of economically favoured (i. e. traffic-generating) regions (valleys in the Alps, elevation levels in the Andes). Figure 1 shows the elevation profile of the road across the Paso de Jama as an example of a cross-Andean trunk road and that of the Gotthard crossing (road tunnel) in Switzerland as an example of a trunk road across the Alps. Between the

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westernmost town in Argentina (San Salvador de Jujuy) and the first settlement on the Chilean side (San Pedro de Atacama) there is a stretch of more than 500 km across the Paso de Jama at altitudes between 3000 m and 4900 m devoid of any infrastructure.

The two mountain regions differ greatly in terms of the quality and extent of their road networks. In the major crossings of the Alps, goods traffic is channelled into four- and six-lane motorways and often through tunnels below the actual passes. In the Andes, heavy goods traffic rolls along two-lane roads, which are often not asphalted and run across great distances at high altitudes. The major trunk roads in the Alps (Fig. 2) are kept open in winter, while Andean crossings often become impassable for longer periods in bad weather and are closed for many months in the southern parts of the cordillera with their heavy snowfall. The bad condition of the Andean roads is in itself an obstruction to traffic due to the longer transport times and the higher cost of maintenance for the vehicles.

Another decisive difference, affecting goods traffic in particular, is the membership of individual states in

various economic associations. In the Alps, all countries with traffic across the Alps except Switzerland are members of the European Union, which means that a large part of that traffic is internal in economic terms. In the Andes, the national states are not joined in one but several economic associations (Mercosur: Argentina, Brazil, Paraguay, Uruguay, Venezuela; Andean Community: Columbia, Ecuador, Peru, Bolivia). In addition, there are states with only associate member status in one or more associations and therefore subject to different customs regulations (e.g. Chile).

Another key factor for the significance of international transport links in the Andes is the political and economic stability of the countries in question. The economic crisis of 2001/2002 in Argentina and the subsequent quick economic improvement was reflected clearly in the trade with its neighbouring countries, just as the many recent changes in the political situation in Bolivia have been. The lack of stability in the international relations between individual states must be seen as a considerable obstacle for any process of regional economic integration.

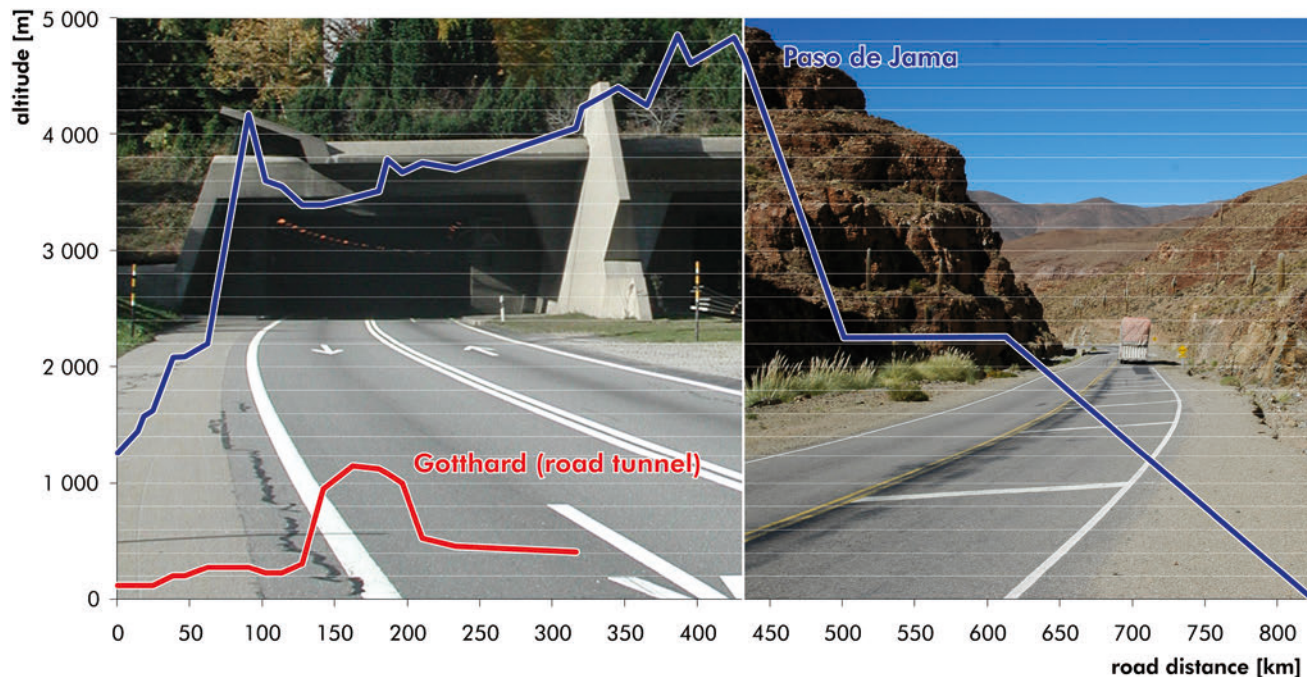


Fig. 1: Elevation profile of typical pass roads in the Alps and Andes: Gotthard and Paso de Jama.

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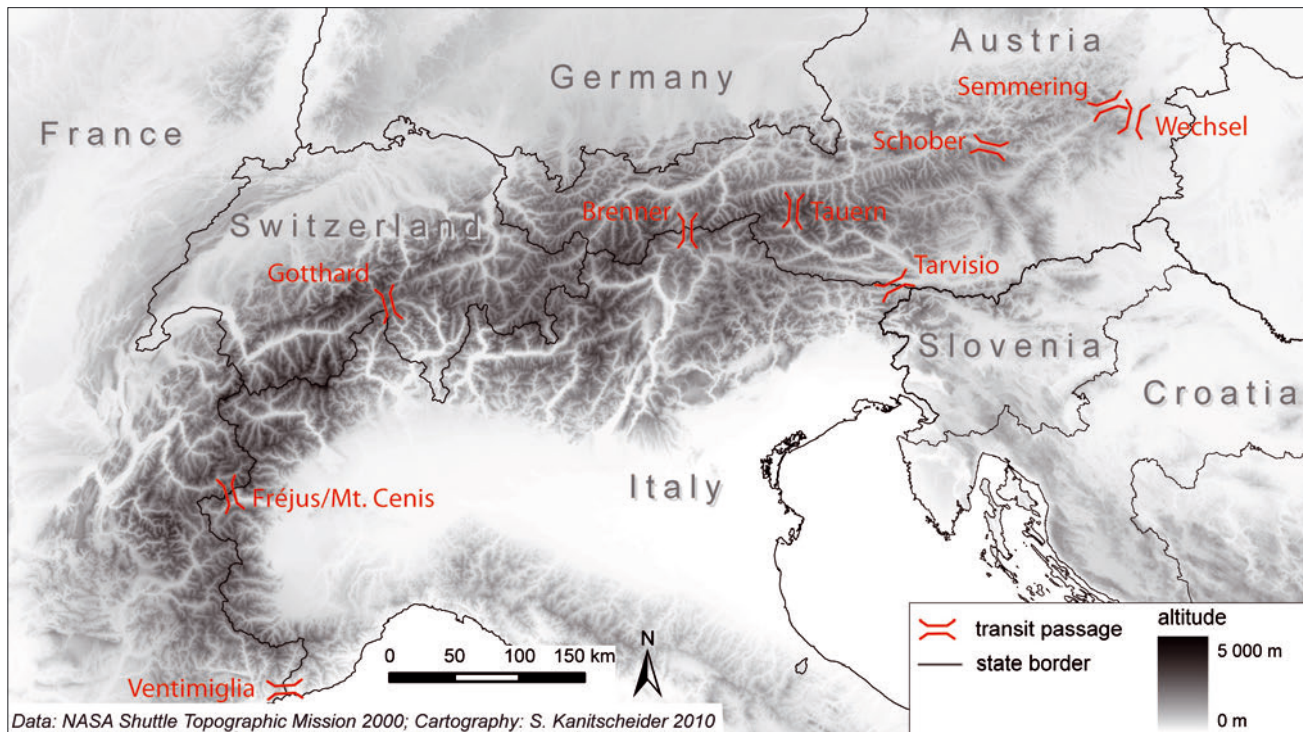


Fig. 2: Location of the main road transit passages in the Alps (selected by transported goods, cf. Fig. 4a).

While great efforts are made in the Alps, most of all in Switzerland, to shift goods traffic from road to rail, in the Andes, rail traffic traditionally plays a negligible role. The few established railway lines were not designed for an international exchange of goods but to transport agricultural and mining products from the hinterland to the ports (Thomson 1997: 8). Since the 1990s, many railway lines have been closed down or are only used occasionally for goods transports. In the context of neo-liberal economic policies, many South-American countries privatized or abandoned many rail links because they seemed unprofitable and forced the expansion of the more flexible road network.

However, the countries of the Andes are by no means a homogenous region in terms of their transport situation. Rather, there are great differences between the Northern and Southern Andes that date back to the political history of South America. The Spanish conquerors established the new towns of their colonial empires deliberately in the exact same places as those of impor-

tant power centres in the pre-colonial empires. To this day, the major urban agglomerations of Hispanic South America north of the Tropic of Capricorn are, with few exceptions, situated in the Andes. The key transport routes therefore run within the mountain region between the cities and from there to the ports along the coast.

South of the Tropic of Capricorn and in the Luso-American regions, where there had been no significant settlements before the advent of the Europeans, the situation is completely different. Here, the cities had to be established along the coast in order to create the easiest transport link with the mother country. The basic structure of the colonial city systems have prevailed to this day. Spain and Portugal have been superseded as main trading partners by Asia-Pacific and the US, particularly for the states along the Pacific coast. In 2008, Chile traded about 55% of its export volume with countries of the Pacific Rim (ProChile 2009). Hence, the transport system on the southern cone of the continent developed predominantly in a N-S direction, i. e. parallel



to the Andes cordillera, in an effort to link the peripheral regions of those states with the capitals and ports. Until the mid-20<sup>th</sup> century, links between the national transport networks, which of necessity had to cross the mountains, existed only in a few places (Schweitzer 2002: 93f.). Since the 1980s, cross-border traffic has gained in importance in the wake of efforts to integrate the regions and of the increase in global trading links (Fig. 3). Figure 4a illustrates the increase in goods traffic across the Andes via the main passes between Argentina and Chile and underlines the vital role of the Cristo Redentor pass, which takes about 75% of the goods traffic over land between Brazil, Argentina and Chile (IIRSA 2001). The comparison with the figures for the alpine crossings (Fig. 4b) throws up sharply the different dimensions of goods traffic in the two mountain regions.

Transit traffic in the strict sense of the word, i.e. through the mountain region without originating or ending therein, is negligible in the tropical Andes. In this part of the Andes, most of the passenger and goods transport takes place between the (Pacific) ports and the population centres in the highlands. South of the Tropic of Capricorn, the Andes cordillera is only sparsely populated, passenger and goods transport occurs mainly as an exchange between centres on either side of the Andes and thus as transit traffic.

In recent years, a special situation has emerged for the east-Andean economic zone: with the increased economic standing of the Asian states, it may become economically viable for the regions of the eastern foothills of the Andes to link up with the trading zone of the Pacific Rim as this would shorten the distance to be overcome. However, a study of such a pass across the Andes between northern Argentina and northern Chile (Paso de Jama) has shown that even traffic originating further afield would use the crossing if the trading regulations promised economic benefits (Kanitscheider 2008). The case of the Chilean free-trade zone makes it clear that the cost of transport plays a diminishing role in decision-making processes. Even given the considerable distances that have to be overcome for goods transport, these costs make up only a relatively small

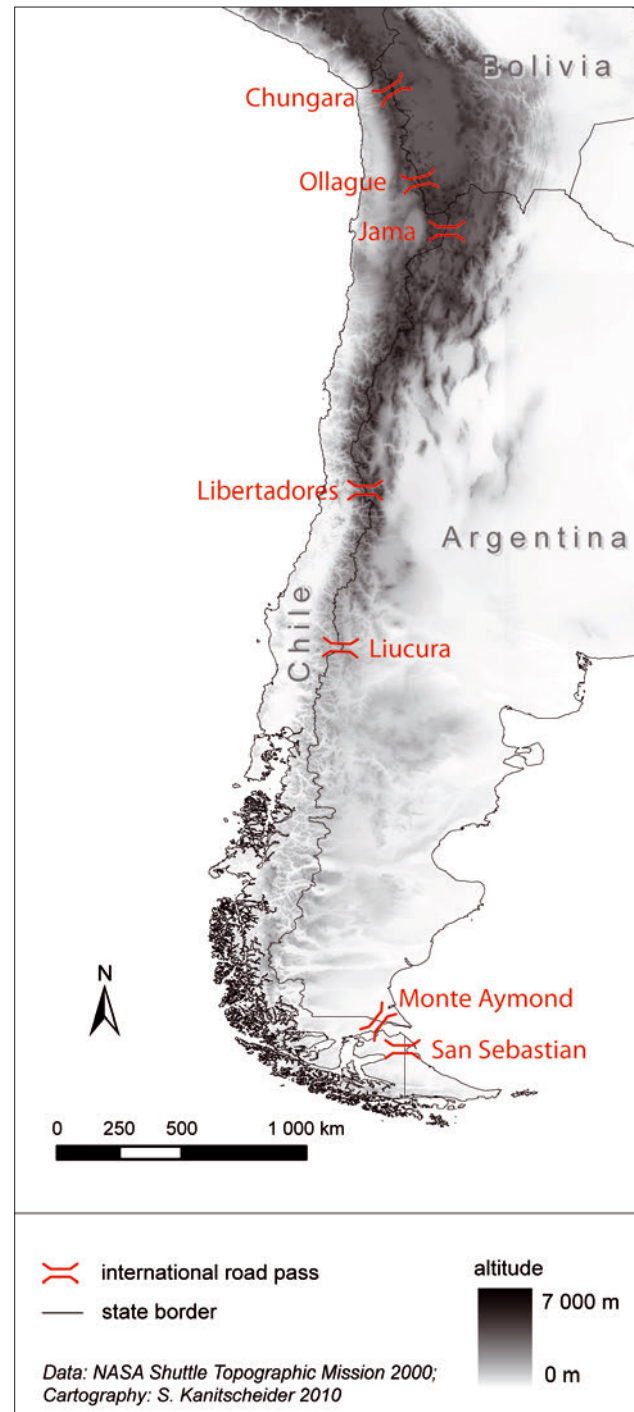


Fig. 3: Location of the main road transit passages in the Central and Southern Andes.

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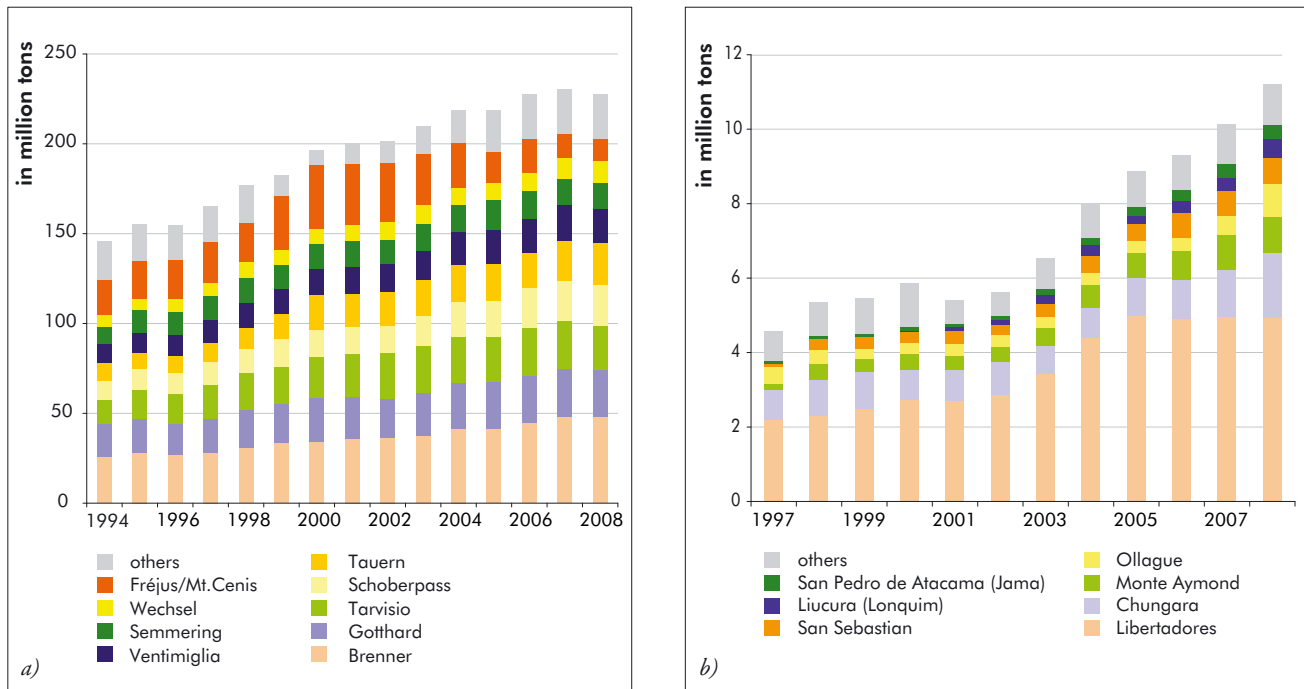


Fig. 4: a) Goods transported via the main Chilean-Argentinian pass roads 1997–2008 (Data: Aduana de Chile 2009); b) goods transported via the main alpine crossings 1994–2008 (Data: Zurich Process 2009).

portion of the total cost of a product. The much longer and overall more expensive terrestrial transport across the Andean pass roads is compensated by the benefits of the free trade port.

Debates about transit traffic in the Alps centre on the disadvantages for the regions in connection with the construction and use of the transport infrastructure. In contrast, the same debates in the Andean region centre on the problems for the traffic (that promises development). Dominant themes such as air pollution, noise, demand for land and dissection of the landscapes are handled in European countries with concepts for reducing traffic (e.g. the Alps transit exchange, toll regimes of the individual countries) and for shifting transport from road to rail (not least with so-called base tunnels); concrete measures for the population living along the major trunk roads often take the form of speed limits, sectoral and temporal traffic bans or the construction of noise barriers. The problems listed in the Andes include the lack of links between trunk roads or the bad physical condition of the roads. If finance is available,

these problems are addressed by an expansion of the road network. The comprehensive restrictions to transit traffic derived from customs regulations form an additional obstacle for cross-border traffic. As a rule, in the Andes goods traffic is only considered a strain if it leads to overloading the local road infrastructure in the immediate vicinity of towns. Rarely will you find any mention of the infrastructural upgrade of peripheral regions posing a threat to the living space of indigenous populations.

## Conclusion

Since achieving political independence, the countries of South America have been vacillating between nationalism and pan-Americanism. Numerous initiatives have been and still are working with differing emphases towards the overall objective of supranational cooperation and regional integration (Amilhat-Szary 2003: 47f.). At the end of the 1980s, the later Chilean president

Ricardo Lagos started up a debate about the *corredores bioceánicos* (corridors connecting the oceans), which should strengthen trans-Andean economic links (in contrast to the well established N-S axis of the Pan-American Highway) and set up Chile with its Pacific ports as provider of global trade services to the member states of MERCOSUR (Petit 2003: 72f.).

Traffic flows on some of the proclaimed transport axes have indeed been growing considerably in recent years, especially in the southern cone, where for political reasons mountain-crossing traffic had been negligible before.

While in the Alps the problems surrounding transit traffic have long become a controversial topic for the various interest groups, in the Andes the expansion of the transport infrastructure and the increase in goods and passenger traffic is almost unanimously seen as a positive factor for development. As a rule, the only restriction to the project concepts is that they be sustainable, demanded as an essential characteristic. Even so, individual case studies show that the economic gain for a peripheral region along an upgraded trunk road is questionable in relation to the financial investments needed and the ecological problems caused.

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