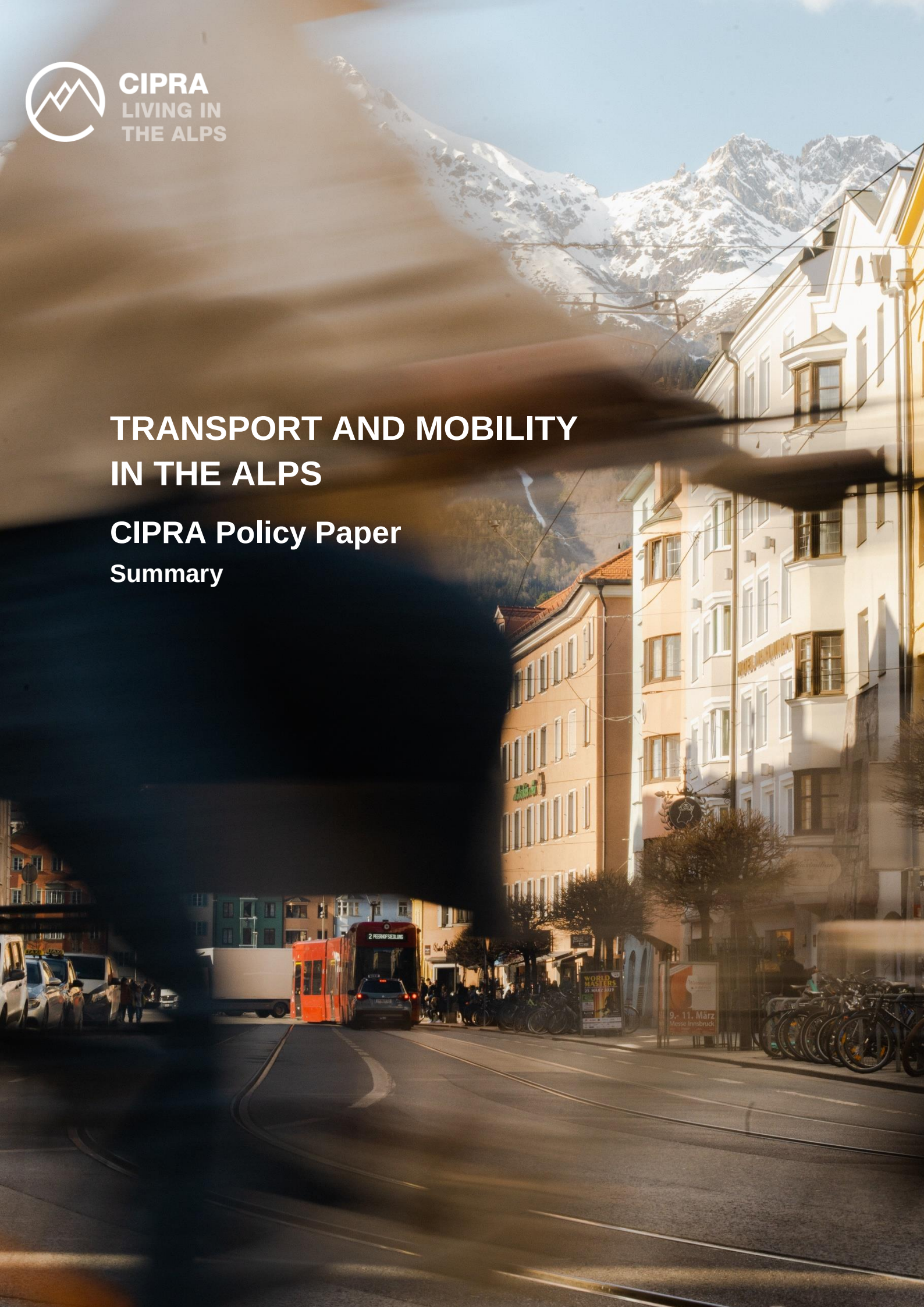
CIPRA
LIVING IN
THE ALPS

TRANSPORT AND MOBILITY IN THE ALPS

CIPRA Policy Paper

Summary



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Details, background information and sources can be found in the comprehensive version

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CIPRA, for a good life in the Alps

CIPRA, the International Commission for the Protection of the Alps, is a non-profit, non-governmental umbrella organisation with representatives in seven Alpine countries and a member network of over 100 associations. CIPRA works on a scientific basis with diverse communication, political, education and practical projects for sustainable development. It is committed to the preservation of the natural and cultural heritage, the strengthening of regional diversity and joint solutions to cross-border challenges in the Alpine region.

www.cipra.org

1. CIPRA POSITION ON ALPINE MOBILITY

Situation

Today, transport in the Alps is mostly associated with transit traffic against the backdrop of the Alpine landscape, traffic jams at tunnels during peak travel times and seemingly endless political discussions aimed at solving conflicts of interests in transport policies. It is forgotten that the Alpine transport corridors are primarily the main Alpine residential areas and it is therefore also vital to regain or maintain the quality of life for the people there. The unresolved issues of poor air quality, noise pollution and reduction of already scarce living space must therefore also be addressed. Added to this is the massive harm done to Alpine wildlife habitats, for example due to the barriers created by road and railway lines. What then are the strategies and solutions needed – irrespective of political ideologies – to make mobility and transport in the Alpine region in particular more sustainable and bearable for local populations and ecosystems?

The special geographical features of the Alps cause particular constraints as regards accessibility and transport infrastructure. For example, crossing the Alps poses a major obstacle for five[1] of the nine European transport corridors, but mobility in the Alpine regions also has to take into account specific mobility characteristics such as cross-border commuting, mobility needs in remote regions or the requirements of tourist mobility and transport safety.

As a consequence and as described in the comprehensive Climate Action Plan 2.0 (CAP), drafted and agreed by the Alpine Convention, transport is one of the sources of CO_2 in the Alps. Currently almost 30% of all greenhouse gases are due to passenger and freight transport emissions. The 8th Report on the State of the Alps on Air Quality in the Alps (2021) states that the concentrations of particulate matter (PM_{10} and $PM_{2.5}$) in the main Alpine valleys are below the EU limit values. But WHO health limit values are clearly exceeded for PM_{10} concentrations at some measuring stations and for the even more dangerous $PM_{2.5}$ concentrations at most measuring stations. They are also above the national limit values for Austria, Switzerland and Liechtenstein. The concentration of air pollutants in Alpine valleys is increased in winter by the climatic inversion layers. As with air pollutants, the Alpine topography also influences the propagation of noise emitted by vehicles: sound waves are reflected off the mountainsides and thus further amplified. More environmentally friendly driving systems and quieter tyres and road surfaces are merely symptomatic measures. In addition to the resulting damage to health and its follow-up costs, there are the considerable direct costs of traffic accidents.

1 Following the TEN-T concept the five are: Lyon – Chamonix/Mont Blanc – Torino (Mediterranean Part West); Strasbourg – Gotthard/Lötschberg – Genoa (Rhine – Alpine); Munich – Brenner – Verona (Scandinavian – Mediterranean); Vienna – Graz – Klagenfurt – Villach – Udine (Baltic – Adriatic); Budapest – Ljubliana – Trieste/Koper (Mediterranean Part East). In addition the following national or binational Alpine crossings are also relevant: AUSTRIA: Bludenz – Arlbergpass – Landeck, Liezen – Schoberpass – St. Michael i. Obersteiermark, Mittersill – Felbertauerntunnel – Matrei; AUSTRIA – GERMANY: Imst – Fernpass – Garmisch-Partenkirchen, Jenbach – Achenpass – Tegernsee, Zirl – Scharnitz – Mittenwald; AUSTRIA – ITALY: Landeck – Resia Pass – Mals/Malles, Lienz – Plöckenpass – Tolmezzo; ITALY – FRANCE: Cuneo – Colle di Tenda/Col de Tende – Ventimiglia, Cuneo – Colle della Maddalena/Col de Larche – Gap, Oulx – Colle del Monginevro/Col du Montgenèvre – Briançon; ITALY – SWITZERLAND: Aosta – Colle del Gran San Bernardo/Col du Grand Saint-Bernard – Martigny, Domodossola – Simplonpass – Brig/Brigue; SLOVENIA – AUSTRIA: Jesenice – Karawankentunnel – Villach; SLOVENIA: Jesenice – Ljubljana – Zagreb, Maribor – Trojanepass – Ljubljana, Nova Gorica – Postojna, Koroska Region – Velenje (3rd development axis); SWITZERLAND: Chur – San Bernardino Pass/Tunnel – Bellinzona, Chur – Oberalppass – Andermatt, Andermatt – Furkapass/Tunnel – Brig, Altdorf – Klausenpass – Linthal, Wassen – Sustenpass – Innertkirchen, Brienz – Brünigpass – Luzern

Further negative impacts are land consumption as, owing to the topographical conditions, the permanent settlement areas in the Alps are very limited and inevitably concentrated in the valleys. The spatial structures there are burdened by the consequential effects, such as urban sprawl, concentration of services and trade along the main transport axes, and the associated progressive disfigurement of the landscape. Furthermore, there are negative macroeconomic effects, since a steadily growing share of public sector budgets has to be spent on the maintenance, operation and reconstruction of the transport infrastructure.

Strategies to avoid unnecessary transport, expand road-to-rail traffic transfers (modal shift) and implement technical improvements to passenger and freight transport all need to respond to the specific challenges in the Alps. They are closely linked to cross-border mobility, the mobility needs of remote and urban regions, as well as specific demand patterns related to tourism and leisure traffic An in-depth analysis of the relationship between urban and rural areas in the Alpine region can be found in the 9th Report on the State of the Alps.[2]

Public mobility is related to human rights. Mobility is a prerequisite for inclusion, participation and both social and economic involvement, and is therefore the cornerstone of everyone's personal, social and professional development. Therefore, the participation of local people and civil society must be guaranteed at all times in order to incorporate their valuable experience and knowledge as well as to express their needs. This right is also vital in the Alpine region, with special consideration for remote valleys and disabled people. Particularly in remote or poorly developed regions, it is important to overcome mobility poverty[3] with the targeted provision of suitable and affordable public transport services in such a way that everyone enjoys barrier-free access.

OVERARCHING OBJECTIVES

CIPRA has the following overarching objectives for sustainable mobility in the Alpine region:

1- **Lowest possible negative impact of transport on environment and people**
2- **No new high-level cross-border road infrastructure[4]**
3- **Pending renewals of existing high-level transport infrastructure to be carried out in accordance with sustainable planning standards**
4- **Accessibility to services with a focus on safe active mobility, supported by sufficient public transport and mobility-as-a-service (MaaS).**
5- **Harmonisation of national rail standards and rules for passenger and freight transport to exploit existing capacities**
6- **Comprehensive involvement of people and civil society with regard to information, participation and access to justice[5]**

[2] 'Alpine Towns', 9th Report on the State of the Alps (Alpine Convention, 2021/2022): www.alpconv.org/en/home/news-publications/publications-multimedia/detail/rsa9-alpine-towns/

[3] Regarding mobility poverty see: https://mobycon.com/updates/the-elements-of-the-mobility-donut-finding-the-balance/

[4] As set out in Art. 11 of the Transport Protocol to the Alpine Convention, signed by the Alpine countries: www.alpconv.org/en/home/convention/protocols-declarations/

[5] In accordance with the principles of the Aarhus Convention: https://unece.org/environment-policy/public-participation/aarhus-convention/introduction

These objectives accord with the four main supranational frameworks and bodies that have major impact on strategies and politics concerning mobility and transport in the Alps, which CIPRA specifically takes into account in this document and in some cases exceeds:[6]

- Alpine Convention, a binding treaty under international law that takes precedence over EU secondary legislation
- European Strategy for the Alpine Region (EUSALP)
- Simplon Alliance Action Plan
- European Green Deal

Three Priority Steps

For the future of sustainable mobility in the Alps, there are three implementation steps that should be prioritised in the following order:

1 – Avoid – The most sustainable form of transport and mobility is that which can be avoided entirely. Therefore, sustainable site and land use planning that guarantees short distances to work as well as remote working, carpooling, and integrated production and commerce with short transport distances is needed.

2 – Shift – Necessary and meaningful traffic and transport that cannot, and – for social reasons – should not be avoided, must be shifted to more environmentally friendly modes of transport (such as bicycle, bus and rail, car sharing systems).

3 – Improve – All remaining traffic and infrastructure must be improved in order to reduce energy consumption, emissions and other relevant environmental impacts, and offer people adequate safety, comfort and convenience.

CONCERNS AND DEMANDS

The focus of concrete measures in the transport sector is currently almost exclusively on the decarbonisation of (car) engines. Although the efforts to reduce climate-altering greenhouse gases and other air pollutants are very welcome, they do not go far enough in order to permanently solve the negative effects of traffic in the Alpine region. For this reason, CIPRA demands several concrete actions on a transnational level as a framework for sustainable transport of passengers and goods within and across the Alps.

Transport planning and management in general

The promotion of alternative means of transport must take place in a graduated manner on the international and national levels, across borders as well as at local and regional levels. The meaningful involvement of people and civil society at all political levels – European, macroregional (Alpine), national, sub-national (or regional), local – must be guaranteed at all times to allow them to express their needs and influence planning so as to reduce all forms of environmental impact.

[6] See annex to the Comprehensive Version of this Policy Paper: www.cipra.org

European and Alpine level

- Trans-European rail network (harmonisation of regulations, expansion of night train service and routes)
- Cross-border rail and bus expansion master plan (Alpine Convention, EUSALP)
- Alpine-wide easy-to-handle timetable and ticketing systems on public transport for all types of customers
- Removal of unnecessary and contradictory subsidies that create false incentives
- Electrification or at least decarbonisation of all railway-lines in the Alpine arc and public transport in general
- Alpine-wide cycle path network for commuters and tourists, using existing infrastructure wherever possible
- Public transport and infrastructure designed to cover the needs of vulnerable groups
- Medium to long-distance flights, serving routes already connected by rail, should be discouraged or banned

Sub-national level

- Prioritisation of convenient public transport instead of private transport, both in day-to-day traffic management and in the expansion of transport routes
- Transport in built-up and urban areas: expansion of the transport network for non-motorised traffic (bikes, micro-scooters, pedestrians) at the expense of roads for private cars
- Revamping and expansion of networks for car-free holidays[7]
- Maintaining and enhancing regional employment and public remote communication and logistical infrastructure (such as fibre networks) even in remote areas so as to reduce and avoid the rural exodus and long journeys to work

Measures to curb the negative effects of personal motorised traffic

Road safety, climate and environmental protection

- General speed limit in the Alpine region of 30 km/h (municipal areas), 80 km/h (countryside) and 100 km/h (motorways)[8]
- Limited access for cars and motorbikes to cities, passes and valleys (for example on routes and locations heavily frequented by tourists, including special regimes for residents)
- Conversion of a percentage of road surfaces in cities and built-up areas – for example 1% each year – into safe pedestrian and cycle paths, meeting zones or unsealed green spaces

[7] Alpine Pearls as an example: www.alpine-pearls.com/en

[8] Set out by transport scientists from the Technical University of Vienna, BOKU University Vienna and the University of Innsbruck (2023): www.tempolimit-jetzt.at/ ; https://science.apa.at/power-search/6479067748246312852

- Construction of climate oases and residential streets[9] in cities and urban centres in cooperation with local residents

Sustainable management of scarce goods

- Limits on the number of parking spaces in valleys
- Parking space management with dynamic pricing
- Closure of remote valleys to private tourist transport in combination with shuttle buses or other public transport feeder services from external car parks
- Intelligent capacity management for transalpine freight traffic [10]

Decoupling construction measures and soil sealing

- Every new road construction triggers a dismantling obligation, for example to the same extent or one and a half times the area used for construction
- New construction and expansion of parking spaces only in conjunction with unsealing and in combination with other structures (e.g. underground parking under supermarkets, etc.)
- High quality standards in public transport to be a prerequisite for changes in zoning from undeveloped to developed areas
- Mandatory consideration of rail siding options when building new industrial estates

[9] You may only drive at walking speed on a residential street; children are allowed to play on the carriageway. In order to reduce speeds, carriageway elevations and pavement crossings are created. One example: www.wien.gv.at/verkehr/verkehrssicherheit/massnahmen/wohnstrassen.html (DE)

[10] www.magazin.ihk-muenchen.de/artikel/brenner-alpentransitboerse-epiney-rechtlich-machbar-sehr-effizient

2. PASSENGER TRAFFIC

2.1 REGIONAL COMMUTER TRAFFIC

Rush hour in Schaan/LI © Kaspar Schuler

Situation

Transport and mobility in the Alps are characterised by two spatial planning conditions: the main valleys with their built-up areas and suburban structures, and remote regions and valleys.

The main valleys are characterised by suburban areas that have emerged over time, along with industrial zones, farmland, shopping areas, road and energy infrastructure, residential areas, tourism and leisure facilities. They are the result of a lack of spatial planning or inadequate spatial planning practices, and cause land consumption and increased traffic. This leads to fragmented landscapes, loss of biodiversity, noise and air pollution and therefore reduced quality of life for residents and visitors to these places. The provision of mobility in remote areas poses financial and structural challenges for the authorities. Multiple traffic conflicts of use also occur in both valley floors and remote locations due to:

- transit traffic or destination traffic for transportation of goods to and from the Alps
- incoming tourism traffic with its fluctuating seasonal flows
- leisure traffic of residents, particularly during weekends
- commuter traffic of residents during weekdays and peak hours

All transport and mobility flows must be managed through the densely populated valleys and into the Alpine areas, which are not currently equipped for this.[11]

[11] An in-depth analysis of the relationship between urban and rural areas in the Alpine region can be found in the 9th Report on the State of the Alps ('Alpine Towns', Alpine Convention, 2021/2022): www.alpconv.org/de/startseite/news-publikationen/publikationen-multimedia/detail/rsa9-alpenstaedte/

Demands

for creating sustainable, user-friendly transport systems for all, by re-shaping spatial planning, prioritising sustainable and health-promoting mobility, and addressing the challenges of urban concentrations and remote regions. These solutions focus on inclusivity, behavioural shifts, and multi-use of infrastructure to enhance accessibility and reduce car dependency.

Adaptability and inclusiveness of spatial planning

- Implement and foster transnational, national and regional spatial planning mechanisms with all concerned to ensure inclusive and sustainable cross-community spatial planning/zoning.
- Implement multiple-use modes of existing infrastructure that prioritise health-supportive mobility such as cycling and walking, combined with public transport, by reassessing areas and infrastructure through a spatial approach involving all stakeholders concerned.

Accountability for sustainable mobility

- Implement the polluter-pays principle, holding major traffic generators (e.g. employers, goods producers, tourism industry) accountable for a shift towards sustainable mobility.
- Introduce traffic management, such as slot-based toll systems with dynamic pricing, to regulate transit traffic and tourism traffic, ensuring high efficiency of existing infrastructure while guaranteeing local accessibility and security of supply.

Accessibility to public transport

- Improve the attractiveness of (cross-border) public transport through timetable frequency, on-demand services, user-friendly ticketing and cost-effective systems tailored to local demands.
- Support individuals in behavioural changes towards public transport by means of attractive and safe infrastructure, tax incentives and special offers for vulnerable groups.

2.2 LONG-DISTANCE PASSENGER TRANSPORT

Situation

Transporting people over long distances by rail has many advantages compared to road transport: significantly lower energy consumption per person and weight, as well as massively lower pollutant emissions. Long-distance coaches also offer an inexpensive alternative that, although not yet decarbonised, still have a better energy and CO_2 balance than car transport. However, most people in the Alpine regions live in the main valleys and their built-up areas with a great need for land for housing, leisure, commerce, industry and regional infrastructure. The additional call for the expansion of any kind of transit traffic routes will conflict with the

Train at the Gotthard/CH © SBB CFF FFS/Dario Häusermann

concerns of the local population and the environment.[12] All these overlaps of use and demand require that the best possible solution be found, while recognising the limited available resources.
Carbon-powered air transport within the Alps is not an alternative: the related energy consumption and greenhouse gas emissions are much higher than those of rail transport.

The expansion of any kind of terrestrial transit routes leads to:

- additional, large-scale land consumption for motorways as well as for railway lines, and the dumping of huge quantities of excavated material, especially for tunnelling
- cutting through habitats for humans and animals, emissions of noise and particulate matter, all of which have a massive impact on the wellbeing of people and biodiversity.

Demands

For effective mitigation (avoid-shift-reduce) of long-distance passenger transport and its impacts, mobility planning must be carried out in conjunction with all modes of transport, prioritising sustainable mobility and taking external and societal costs into account.

Participation and caretaking

The involvement of people and civil society at all political levels is crucial to ensure that the vital transport structures of international importance are adapted to the needs of local residents while minimising the destruction of nature and landscape.

[12] See the 8th Report on the State of the Alps “Air Quality in the Alps”: www.alpconv.org/de/startseite/news-publikationen/publikationen-multimedia/detail/rsa-8-luftqualitaet-in-den-alpen/

Steering

Sustainable spatial planning, the orientation of the economy towards regional production & consumption cycles and the change in working habits through teleworking are essential in general.
To shift passenger traffic from motorised private transport to sustainable forms will mean that the latter have to be promoted through steering, educational and information measures. Rail standards, ticketing, timetables and rolling stock will have to be harmonised.
To ensure motorised traffic is bearable for people and the environment, strategic control measures such as night and weekend traffic bans and bans on travelling on mountain passes for certain vehicle categories (e.g. motorbikes) as well as slot regimes should be implemented according to the situation.

Optimisation before new build

The construction of new, high-capacity *trans-Alpine* roads is prohibited by the Alpine Convention, which stipulates this in Article 11 of the Transport Protocol. The construction of new, high-capacity roads for *intra-Alpine* traffic is to be avoided. The increase in capacity is to be achieved primarily by making better use of existing road and rail capacity and combining this, for example the transporting of cars by rail on Alpine transit routes.
When planning major new traffic routes, consideration should be given to building underground or in the mountains. Excavated material from tunnelling should be disposed of or reused according to ecological criteria. Redundant roads are to be dismantled or given a new purpose.
When a new railway connection is built, a real shift from road to rail must place through accompanying measures such as road tolls or train incentives. This is particularly important when the purely geographical and technical advantages of a base-tunnel connection and its economic advantages do not bring about such a transfer.

Flight restrictions

There is no point in building new regional airports or expanding existing ones within the Alpine perimeter. There should be a ban on intra-Alpine flights and private business jets for existing regional airports in the Alpine region. Environmentally harmful subsidies for air transport must be eliminated. Medium to long-distance flights that serve routes already connected by rail are to be discouraged or banned.[13]

2.3 TOURIST AND LEISURE TRAFFIC

Situation

Tourism and leisure activities are an important factor for economic development and cultural exchanges in the Alps. The region attracts more than 120 million tourists per year, with around 550 million overnight stays.[14] In addition there are around 60 million day trips per year[15] and

[13] See the French legislation: *Décret n° 2023-385 of 22 May 2023, les liaisons sur lesquelles l'exploitation de services aériens réguliers de passagers est susceptible d'être interdite* : www.legifrance.gouv.fr/jorf/id/JORFTEXT000047571222

[14] https://de.statista.com/statistik/daten/studie/1154503/umfrage/anzahl-der-uebernachtungen-im-alpenraum/

[15] www.alpconv.org/fileadmin/user_upload/Publications/RSA/RSA4_EN.pdf

40% of the Alpine municipalities have significant tourism activity.[16] However, tourism poses significant challenges to the fragile ecosystems of the Alps, their cultural heritage and the quality of life of inhabitants and visitors. Carrying capacities are often lacking, exceeded or not taken seriously. In general, tourism activities in the Alps are concentrated in specific regions.

Bike-train in the Val di Sole/IT © Luca Brentari

At present most visitors come to the Alpine regions by car. A recent study by the University of Bozen found that about 80% of Italian and German tourists visiting South Tyrol come by car, followed by arrivals by train at only 7-8%.[17] About 75% of CO_2-emissions from tourism are due to arrivals and departures in cars and/or planes.

In addition, leisure is an integral part of European lifestyles, as available leisure time and disposable incomes have never been higher.

Consequences

- Traffic congestion and jeopardised security of supply for residents (goods, emergencies, services), reducing the quality of life for both residents and tourists.
- Excessive consumption of land for road infrastructure where land is already scarce and in conflict with industrial zones, farmland, shopping areas, energy infrastructure, residential areas, tourism and leisure facilities.
- Biodiversity loss due to overuse of nature and road infrastructure projects that cause irreversible damage in a region that is already witnessing habitat degradation and is heavily affected by climate change.

There is an urgent need to reconcile the popularity of the Alps with that of protecting their natural and cultural heritage and preserving them as a habitat while at the same time facing the additional challenges of the climate crisis.

[16] www.alpconv.org/en/home/topics/tourism/

[17] Increasing rail travel to 25% – utilising the opportunities of the Brenner Base Tunnel for South Tyrol's tourism. Competence Centre for Tourism and Mobility, Free University of Bozen-Bolzano, Thomas Bausch (2023): www.webservices.scientificnet.org/rest/entries/api/v1/blobs/205405

Demands

In order to effectively mitigate the negative impacts of tourism and leisure activities on both tourists and locals, the guiding principle has to be "'avoid, shift, reduce". Everyone should be able to travel without a car, using attractive public or/and alternative transport systems.

Tourist destinations – showcases of quality of life where spatial proximity and active mobility work hand in hand

- Multi-sectoral cooperation between tourism, spatial and transport planning will bring synergies that contribute to improving the quality of life. Alpine municipalities have been pioneers of sustainable mobility in Europe, which is a great basis for achieving more. Only through the integration of spatial and transport planning can we create opportunities for implementing the principle of "avoid, shift, reduce". We urgently need to improve the infrastructure for walking and cycling in Alpine villages and cities. The built environment must take into account spatial proximity and thus also locate tourism traffic generators (hotels, attractions, services) densely and within the urban area.

Nature to the cities

- Satisfy leisure needs, in and near the place of residence, by improving the quality of stay through green and blue infrastructure, preserving and restoring nature and strengthening recreational facilities. This will reduce the need to travel to tourist areas, especially from metropolitan regions and to rural mountain areas.

Incentivise sustainable travel choices while penalising non-sustainable choices

- Introduce financial incentives for tourists and residents arriving at a destination by means of sustainable transport, such as discounted accommodation or reduced-price event tickets. Funding is made possible by replacing non-climate friendly tourism subsidies with these incentives. Simultaneously introduce taxes or fees for car-based arrivals in the Alps.
- Public authorities should enforce effective push and pull measures to reduce CO_2 emissions from flights to the destination. In tandem enforce sustainable means of transport from airports to the final destination via public transport/electric vehicles.

Restrict road infrastructure projects

- Moratorium on building new infrastructure under the guise of major events like the Olympic Games or World Championships or other peak loads.

Enhance public transport accessibility and affordability

- Foster user-friendly, affordable and sustainable transport systems along the tourism service chain for all population groups (e.g. disabled people), introducing dense networks, tight schedules and on-demand services. Create integrated ticketing systems that include all modes of transport, including across national borders.

- Active mobility and electrification.

Avoid marketing

- Avoid marketing by destination management organisations for car-based travel to destinations. Instead, destination management organisations should focus on promoting environmentally friendly travel options, such as public transport or cycling.
- Avoid marketing that portrays the Alps as a playground for motorised mobility, as this disrupts fragile ecosystems and runs counter to efforts to promote sustainable tourism. Instead, focus on showcasing the Alps as a destination for sustainable, active and eco-friendly experiences that respect the region's unique environmental and cultural heritage.

Sustainable management of events

- Effective sustainable logistics for large-scale events must address both the supply issue and the visitor experience so as to minimise the environmental impact while ensuring seamless operation. This includes prioritising the use of eco-friendly transportation for supplies, and free and accessible visitor mobility services for low-impact modes of travel.

3. FREIGHT TRANSPORT

Hundreds of trucks daily cross the town centre of Demonte in the Stura Valley. © Giulia Jannelli

Situation

The Alps, situated at the heart of Europe, play a pivotal role in global and European freight transport. Five out of the nine major European transport corridors traverse this region, enabling goods to flow from ocean harbours to the continent's core and periphery. However, growing economic activity has significantly increased international freight traffic, predominantly on roads. This road dependency has led to external costs such as pollution and noise being overlooked, with the focus primarily on meeting tight delivery deadlines.

Rail freight, a more energy-efficient and environmentally friendly alternative, faces numerous challenges. Pricing policies favouring road transport, coupled with fragmented train standards and regulations, create technical and bureaucratic hurdles. Nationally oriented railway networks further complicate cross-border cooperation among the eight Alpine countries. Consequently, the vast majority of the ever-rising quantity of freight traffic has been on roads. Heavy-duty vehicle traffic has transformed many Alpine valleys into noisy, polluted corridors, severely impacting residents' well-being and threatening fragile ecosystems with air pollution and habitat fragmentation.

Additional inefficiencies in road transport exacerbate the issue. Nearly half of all trucks on Alpine routes travel empty, wasting fuel and increasing emissions.[18] Detour traffic, driven by inconsistent toll systems and cheaper fuel options, adds to environmental and safety risks. Poorly maintained trucks heighten safety concerns. Meanwhile, climate change poses new threats to the resilience of Alpine transport infrastructure, with severe weather events and rockfalls causing frequent disruptions.

Addressing these challenges requires urgent action to create a safer and more sustainable Alpine freight transport system. Rail transport must be prioritised, as it uses less than 30% of the energy required by diesel trucks and significantly reduces CO_2 emissions. Efforts should focus on harmonising standards, eliminating inefficiencies, and ensuring a resilient infrastructure to mitigate climate change impacts. Combined transport solutions that integrate rail and road systems are essential for optimising efficiency and minimising the environmental footprint of freight transport.

By adopting comprehensive reforms, the Alpine region can balance connectivity with environmental preservation and community well-being.

[18] www.vcoe.at/presse/presseaussendungen/detail/vcoe-anzahl-lkw-leerfahrten-in-oesterreich-stark-gestiegen-jeden-3-kilometer-fahren-lkw-leer

Demands

- **Prioritise rail over road by halting new road infrastructure projects and enhancing rail freight capacities.**
- **Implement fair toll systems that internalise environmental and societal costs across all Alpine transit routes.**
- **Strengthen pan-European rail freight by removing national barriers and ensuring sustainable investments in infrastructure.**
- **Mandate zero CO_2 emissions by 2050 and compliance with EU and WHO standards for all Alpine freight traffic corridors.**
- **Enhance road safety with strict lorry controls and bans on oversized vehicles in Alpine regions.**

To achieve these demands, CIPRA calls for comprehensive investment in rail terminals, such as along the Lyon-Torino corridor, and alignment with the EU Taxonomy for sustainable development. Harmonised toll systems – including Alpine-wide capacity management – are essential to prevent detour traffic and promote rail. Furthermore, prioritising modern, low-noise rolling stock and addressing empty journeys can significantly reduce both emissions and noise pollution.

Climate resilience is crucial for Alpine infrastructure. Measures to mitigate the impact of severe weather and ensure uninterrupted freight transport are urgently needed. Road safety improvements must include technical controls and restrictions on oversized vehicles and hazardous goods transport. By implementing these strategies, Alpine regions can balance connectivity with environmental preservation and community well-being.