Decarbonisation of Alpine freight transport

Assessing the implementation of the energy transition in transalpine logistics

Policies for the decarbonisation of transalpine freight transport

Transport Working Group of the Alpine Convention

Mandate 2023-2024

ALPENKONVENTION
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1. Mandate of the XVII Alpine Conference

Based on the mandate of the Transport Working Group for the period 2023-2024 until the XVIII Alpine Conference, the Working Group was entrusted to elaborate policy recommendations based on its previous work in promoting more sustainable transport means to support decarbonisation while acknowledging the changing social and economic needs of the Alpine area.

With new opportunities are offered by new transport technologies, there is a growing need to analyse and forecast future challenges in this field as well as to conceive and promote appropriate responses into an approach based on technological plurality. At the same time, there is an urgent need to promote solutions that accelerate the decarbonisation of transport, in order to achieve the CO2 emission targets set by the Contracting Parties of the Alpine Convention.

Objective No. 3 of the Mandate calls for the Working Group to "*Assess the implementation of the energy transition in transalpine logistics, measures and regulations*".

I. The challenge of decarbonising transalpine freight transport

The Alps are at the crossroads of European transport systems and are a highly sensitive area. The geomorphological layout of the Alps explains its many ecosystems, and at the same time, induces specific vulnerabilities.

Temperatures are increasing almost twice as quickly in the Alps as in the rest of the northern hemisphere. Mountain and valley landscapes make available space a limited resource and pollutant loads concentrate in valleys due to certain weather conditions, such as temperature inversion. This results in the need to promote specific policies that fit the characteristics of the Alps, taking into account economic and social functions of trade and logistics activities involving the Alps.

The Alpine Convention is addressing climate change mitigation and adaptation as an integrated, transversal topic. There are solutions to tackle climate change that can contribute to a sustainable future and high quality of life in the Alps.

II. Targets for climate-neutral transport

The Alpine Climate Target System[1] aims to contribute to achieve the decarbonisation targets (and pollution reduction) set by the Contracting Parties of the Alpine Convention.

[1] Alpine Climate Target System, Permanent Secretariat of the Alpine Convention (2019), https://www.alpconv.org/en/home/news-publications/publications-multimedia/detail/climate-neutral-and-climate-resilient-alps-2050/

Particularly, a legislative EU benchmark is the Renewable Energy Directive (RED III), increasing the EU target for renewables in transport from 14% to 29% by 2030 in energy terms, compared to the previous RED II, and adopted a parallel target of a reduction in the carbon intensity of transport fuels of 14.5%.

The European Green Deal includes clear reduction targets for greenhouse gas emissions in the road transport sector for the years 2030, 2035, 2040 and 2050, even if is scheduled a possible revision of sectorial Regulations deriving from the Green Deal Programme within the next 3 years.

These targets will frame the policies for a future sustainable transalpine transport system.

2. International frameworks

III. EU Renewable Energy Directive – RED III[2]

In 2023, the EU increased its 2030 target for renewables in transport from 14% to at least 29% renewable energy in the final consumption of all energy used in transport or a minimum of 14.5% reduction in greenhouse gases (GHG) compared to emissions that have been created by fossil fuel use instead.

Additionally, a combined target of 5.5% for advanced biofuels and renewable fuels of non-biologic origin (RFNBOs) with a minimum share of 1% for RFNBOs was set.

As in RED II, RED III allows multipliers for certain fuels and use cases, when they comply with the energy targets.

This incentivises these options and puts them on a level playing field with others. Member States need to ensure that fuel suppliers meet the objectives for the transport sector. However, they have a degree of flexibility in national implementation and can, for example, set higher targets for fuel suppliers.

A few key points of RED III for the transport sector are the following:

1. It will be required to increase all vectors and fuels able to decarbonise the transport system, taking into account well-to-tank CO2 emissions.
2. Electricity in road transport will play a key role in achieving the overall EU transport target for 2030. Member states shall establish an e-ticketing system allowing fuel suppliers to account credits which are created by using renewable electricity for charging electric vehicles.
   The production of advanced biofuels and RFNBOs must be significantly increased by 2030 to fulfil the 5,5% combined sub target.

IV. The Green Deal Industrial Plan

[2] Directive (EU) 2023/2413 on the promotion of energy from renewable sources, http://data.europa.eu/eli/dir/2023/2413/oj

The Green Deal Industrial Plan[3] contains four keywords: openness, innovation, inclusiveness, sustainability.

The Green Deal Industrial Plan was developed to improve the competitiveness of Europe's net-zero industry and support the fast transition to climate neutrality.

The plan aims to provide a more supportive environment for the scaling up of the EU's manufacturing capacity for net-zero technologies and products required to meet the EU's ambitious climate targets.

The plan builds on previous initiatives and relies on the strengths of the EU Single Market, upgrading the European Green Deal and the REPowerEU Program.

It is based on four pillars:

1. a predictable and simplified regulatory environment
2. speeding up access to finance
3. enhancing skills
4. open trade for resilient supply chains

The second pillar of the plan is the strategic pillar for the technological transition in the field of transport.

It will speed up investment and financing for clean technology production in Europe. Public financing, in conjunction with further progress on the European Capital Markets Union, can unlock the vast amounts of private financing required for the green transition.

Under competition policy, the European Commission aims to guarantee a level playing field within the Single Market while making it easier for Member States to grant necessary aid to fast-track the green transition.

V. The Net-Zero Emission Industry Act

The Net-Zero Emission Industry Act[4] defines the strategic net-zero technologies implementing the Green Deal Industrial Plan.

[3] A Green Deal Industrial Plan for the Net-Zero Age, COM/2023/62 final

[4] Proposal for a Regulation on establishing a framework of measures for strengthening Europe's net-zero technology products manufacturing ecosystem (Net Zero Industry Act), COM/2023/161 final

The Net-Zero Industry Act identifies goals for net-zero industrial capacity and provides a regulatory framework suited for its quick deployment, ensuring simplified and fast-tracked permitting, promoting European strategic projects, and developing standards to support the scale-up of technologies across the Single Market.

Below is a list of enabling technologies implementing the strategies of Net-Zero Industry Act.

Solar photovoltaic and solar thermal technologies
Onshore wind and offshore renewable technologies
Battery/storage technologies
Heat pumps and geothermal energy technologies
H2 - Electrolysers and fuel cells
Sustainable Biogas/Biomethane technologies
Carbon Capture and storage (CCS) technologies

VI. Fit for 55 – CO2 Target Emission HDV Regulation

A further step of the planning picture for the Green New Deal has been defined by the Fit for 55 Package, a broad legislative package to align existing EU policy with the CO2 emissions reduction goal of 55% by 2030 (all sectors).

The “Fit for 55” Package” sets a framework within which national policies and measures for a sustainable mobility will be developed.

For the transport sector, the Fit for 55 Package includes the following key policies:

- Alternative Fuels Infrastructure Regulation (AFIR)[5]
- Tailpipe CO2 emission standards for cars/vans and heavy-duty vehicles[6]

The regulation establishes sub-groups of heavy-duty vehicles (HDV) based on the Vehicle Energy Consumption Calculation Tool (VECTO). For each sub-group there are CO2 emission reduction targets that can be summarised as follows:

[5] Regulation (EU) 2023/1804 on the deployment of alternative fuels infrastructure, PE/25/2023/INIT

[6] Regulation (EU) 2024/1610 on strengthening the CO2 emission performance standards for new heavy-duty vehicles and integrating reporting obligations, PE/29/2024/REV/1

Category	Baseline reference	CO2 emission targets			
		2025 - 2029	2030 - 2034	2035 - 2039	From 2040
Heavy lorries and tractors	2019	15%	43%	64%	90%
Rigid lorries and tractors with special axle configuration	2021	0%	43%	64%	90%
Vocational vehicles	2025	0%	0%	64%	90%
Coaches and regional busses	2025	0%	43%	64%	90%
Urban busses	2025	0%	90%	100%	100%
Drawbar trailers	2025	0%	7.5%	7.5%	7.5%
Semi-trailers	2025	0%	10%	10%	10%

Every European manufacturer who registers more than 100 vehicles per reporting period in the regulated categories receives a specific tailpipe emissions reduction target for the different reporting periods. The specific emissions reduction target is the sum over the vehicle sub-groups that are included in the given reporting period.

The setup of a passenger-number weighting factor ensures that emission reductions in sub-groups with higher payloads and higher mileages are weighted more. A HDV that emits less than 3gCO2/(t.km) or 1gCO2/(p.km)[7], such as vehicles with batteries, fuel cells, or hydrogen combustion engines or e-trailers are considered zero-emission heavy-duty vehicles. OEMs and member states are obliged to carry out strict monitoring of newly registered heavy-duty vehicles and report this to the European Commission.

The regulation further includes an objective for urban buses of 90 % of sales of zero emission vehicles in 2030 and 100% by 2035.

By 31 December 2025 the Commission will have to elaborate a report with a comprehensive analysis of the need to further incentivise the uptake of advanced biofuels and biogas and renewable fuels of non-biological origin in the HDV sector and an appropriate framework of measures to achieve this uptake, including financial incentives, in line with the ongoing Green Deal Industrial Plan and the Net-Zero Emission Industry Act (art. 1-18).

By 2027, a revision of the regulation (art. 1-18 p,1) is scheduled, by a new proposition of the European Commission, based on 15 factors. The more relevant factors are the following:

[7] tailpipe emissions (tank-to-wheel)

- trends of registrations of electric (EV) and fuel-cell-electric (FCEV) HDV and relevant infrastructure
- impacts on employment and the total cost of ownership of companies
- assessment by the Commission of the role of a carbon correction factor in the transition towards zero emission mobility in the HDV sector

VII. Simplon Alliance - Towards net-zero emissions in the transport sector in the Alps

The Simplon Alliance, launched in Brig (Switzerland) on October 2022, is an action plan signed by the environment and transport ministries of the Alpine countries.

The fact that "*transport is one of the largest emitters of greenhouse gases in the Alpine region, accounting for almost 30% of all greenhouse gas emissions*", as it states in its introduction, shows that problems are manifold.

The document signed in Brig pursues the goal of "*making mobility in the Alpine region climate-neutral and climate-resilient by 2050*".

Its main points are the following:

- Eurovignette meets Swiss HVF1 - launch of a dialogue about road tolls for HDV, by taking into account the measures of the revised Eurovignette Directive
- Differentiation of toll systems. strengthening the model character of the Alpine transit corridors by differentiating toll systems for heavy goods vehicles based on CO2 emissions
- Common approach towards promoting combined transport and related infrastructure (base tunnels, terminals, ITS, digitalisation)
- Incentives for vehicles and infrastructure for zero-emission and carbon neutral fuels drive systems, in order to decarbonise the road freight transport
- Coordinated approach towards capacity management in the Alpine transit corridors, in particular to make full use of the new railway base tunnels

VIII. The Alpine Convention – Transport Protocol

The Transport Protocol, elaborated in 1991, is the binding basis for sustainable transport in the Alps. Its preamble states that the Contracting Parties are "*aware that transport is not without an environmental impact and that the environmental damage it causes produces increasing negative effects on and risks to the ecology, health and safety, which need to be tackled through a common approach".*

Article 1 of the Transport Protocol breaks down the following objectives:

- Reduce the effects of and risks posed by intra-Alpine and trans-Alpine traffic to a level which is not harmful to people, flora and fauna and their environments and habitats
- Shift traffic to the railways, especially freight traffic, by means of suitable infrastructures and market-based incentives

- Increase the effectiveness and efficiency of transport systems
- Promote environmentally friendly and resource-conserving modes of transport at economically viable costs
- Ensure fair competitive conditions among the individual modes of transport

As a specific measure**,** Article 7 promotes a general transport policy strategy according to which the Contracting Parties shall, in the interest of sustainability, promote a rational and safe transport management in a harmonised cross-border transport network.

Such a cross-border transport network has to:

- ensure coordination between different carriers, modes and types of transport and encourages intermodality
- optimise the use of existing transport systems and infrastructures in the Alps, including the use of electronic data transmission and charges external and infrastructure costs to polluters in line with the damage caused
- encourage, by means of structural and regional planning measures, the transfer of the carriage of passengers and goods to more environmentally friendly means of transport and to intermodal transport systems
- recognise and utilises the opportunities for reducing traffic volume

IX. Alpine Climate Action Plan 2.0 of the Alpine Convention

In the Climate Action Plan 2.0, adopted by the XVI Alpine Conference in December 2020, there are four transport specific pathways, which include several implementation steps in a time frame from 2020 to 2035, with focus on rail transport:

Pathway 1: Strategies for decarbonisation of Alpine freight transport	
Preliminary step	Lobbying for Toll Plus (2020)
Step 1	Support innovative technologies rail/CT (2021-2022)
Step 2a	Kick-start regional strategies for regulating further use of ICE vehicles (2022-2025)
Step 2b	Support for implementing a Toll Plus system (2022-2025)
Step 3	Alpine Crossing Exchange (2035)

Pathway 2: Developing the Alps into a model-region for reduced working mobility	
Step 1	Follow-up of activities of cross-border project and transfer to pilot regions (2022-2025)
Step 2a:	Set-up of network of regional mobility coordinators (2025)
Step 2b	Pilot projects for location-flexible work solutions (2025-2030)
Step 3	Recommendations for Alpine companies on decentralised work & living solutions (2030)

Pathway 3: Developing an alpine-wide approach towards integration and decarbonisation of public transport	
Step 1a	Extension of Youth Alpine Interrail tickets (2021-2027)
Step 1b	Completion and addition of Alpine-wide information & ticketing system (2025)
Step 2a	Integration of information & ticketing system into local and regional mobility plans (2027)
Step 2b	Support of new mobility tickets - further development of Alpine Interrail (2027)
Step 3	Coordination of Alpine funding schemes for low-carbon public transport fleet (2030)

Pathway 4: Developing the Alps into a model region for shared mobility	
Step 1	Set-up of an Alpine-wide information system to link Apps for shared mobility solutions (2021-2022)
Step 2a	Develop a label and award for shared mobility solutions in the Alps (2022-2025)
Step 2b	Support to pilot projects (2025-2030)
Step 3	Coordination of funding programs for set-up of shared mobility stations (2030)

3. National frameworks

I. National Energy and Climate Plans (NECPs)

The National Energy and Climate Plans (NECPs) were introduced by the Regulation on the governance of the energy union and climate action[8], agreed as part of the Clean energy for all Europeans package which was adopted in 2019.

The national plans outline how the EU countries intend to address the 5 dimensions of the energy union:

- decarbonisation
- energy efficiency
- energy security
- internal energy market
- research, innovation and competitiveness

Each country must submit a progress report every 2 years, according to the structure, format, technical details and process set out in the Implementing Regulation. The Commission will, as part of the state of the energy union report, monitor the EU's progress as a whole towards achieving these targets.

[8] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action, PE/55/2018/REV/1

By 30 June 2023, Member States were due to submit their draft updated NECPs in line with article 14 of the Governance Regulation.

Details on all NECPs of EU Member States can be found on the website of the European Commission[9].

II. Alpine national policies for a transition of transport and logistics

In this report, the main policies on freight transport decarbonisation of Contracting Parties are presented briefly.

GERMANY

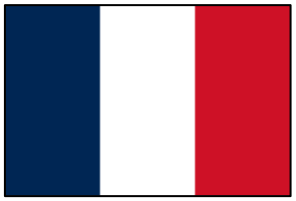
Key measures in the transport sector include the revision and updating of the EU CO2 emission standards for new cars and vans, the increase and extension of the GHG quota and, at national level, the BEHG (Emission Trading System in the sectors heating and transport), and the CO2 differentiation of HGV tolls.

The German policy for decarbonisation of freight transport and logistics is synthetised from the following pillars:

- Modernise the rail network (*investment needs of around EUR 45 billion next 20 years)*, funds partially from the HGV toll. Rail freight to reach a market-share of 25% by 2030
- Increase and extension of the BEHG (*German Fuel Emissions Trading Act*)
- Around 1/3 of mileage for freight transport be electric or based on electricity-based fuels by 2030
- Increase the share of vehicles with “alternative and environmentally friendly” propulsion technologies in 40% by 2025 and 100% by 2030. This includes BEV, FCEV, PHEV and vehicles which can be shown to be running 100% on BioLNG/Biomethane
- Incentives for investment from the sector in transshipment facilities, digitalisation, automation and vehicle technology in freight transport
- Master Plan Charging infrastructure II which includes ten measures on electric commercial vehicles, including the rollout of fast charging infrastructure for heavy goods vehicles

[9] https://ec.europa.eu/info/energy-climate-change-environment/implementation-eu-countries/energy-and-climate-governance- and-reporting/national-energy-and-climate-plans_en

FRANCE



The roadmap “decarbonisation of the value chain of heavy-duty vehicles (HDV), art.301 of Climate Resilience Act” sets a target of 50% of registration of zero-emission heavy duty vehicles by 2030.

The “COI - Committee of Orientation of Infrastructures” has drawn up proposals on transport investment priorities It considered necessary to substantially amplify investments in rail freight in order to meet the national 2030 decarbonisation targets. In road freight transport, the COI works on the deployment needs of charging stations for HDV.

The National Strategy for the development of rail freight (SNDFF) foresees the following milestones:

- Doubling of rail modal share from 9% (2020) to 18% (2030)
- 73 measures restoring viability of rail freight operator’s services and business model, improving rail quality of services, investing in infrastructures to enable the growth of rail freight and increasing the coordination with ports and waterways

“Ecological Planning” (a cross-cutting method adopted by France at highest political level) defines the following approach regarding the freight transport and logistics sector:

- Determine prospects for the evolution of the demand for freight transport in tons/km, then in vehicles/km by economic sector, taking into account to the impact of decarbonisation and the reindustrialisation of the economy
- Linking the evolution of demand with the evolution of the supply of the logistics system (= infrastructure sizing)

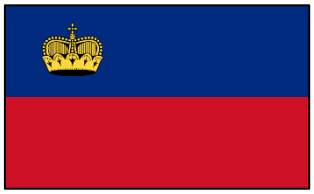
ITALY

As regards the deployment of renewable energy in the transport sector, the Italian policies for the transition of freight transport and logistics follow the targets of RED III, promoting the use of multiple energy carriers, by aiming to release for consumption a quantity of renewable fuels of non-biological origin (HVO) and to make a contribution from the use of advanced biofuels.

The following pillars are strategic:

- 30,7% of mileage from Renewable Energy in 2030, according the RED III targets
- development of electrification for new cars/vans/buses in urban mobility: 4,3 million of BEV / 2,2 million of HEV
- Development of Carbon Neutral Fuels for new trucks / existing vehicles: 10% by Bio-LNG/Biomethane / 10% by Biofuels / 2% by H2/RFNBO
- Incentives to Technological Innovation – EUR 1 billion (« Ecobonus »)
- until EUR 25.000 per year for investments in C/LNG, HEV, BEV and Biofuels haulage trucks
- Financial Bonus to foster the road-ship and road-rail intermodality (“ferrobonus / marebonus”)
- Hydrogen Valleys - 7 new H2 stations for trucks (also) in Alpine Regions
- Bio-Fuels incentives - Measures to boost Bio-fuels (in particular, Bio-CNG and HVO) production and distribution for transport
- Increasing regional LTZ to limit Euro 5 trucks transit
- Highway toll benefits for last generation trucks

LIECHTENSTEIN



The Liechtenstein policy on the transition of freight transport and logistics is based on:

Heavy-duty vehicle levy (LSVA)

- Heavy-duty freight vehicles >3.5 t domestic and abroad must pay a duty, based on the Euro emission standards and Ton/Km (fee cap = EUR 325). The levy system is similar to the Swiss system, as Liechtenstein is part of the customs union with Switzerland.

Temporary ban on freight transport (Verkehrsrecht Liechtenstein)

- Night travel ban on HDV - All day between 22:00 and 5:00.

Tax exemption for Biofuels

- Fuels with a favourable life cycle assessment - such as bio-LNG, Bio-NG, Bioethanol and Biodiesel - have been exempted from mineral oil tax

AUSTRIA

The policies on the transition of transport and logistics are presented in the 2030 “Masterplan Freight Transport”, which is based on the principles of the “Mobility Masterplan 2030[10]”: Avoid, shit and improve.

This plan includes the following milestones:

- Shift towards energy-efficient modes of transport, primarily rail, waterways
- Improvement primarily focuses on road freight transport by promoting a transition to zero-emission propulsion technologies
- 2030 timeframe with the goal of achieving climate neutrality by 2040
- Multistage Monitoring Process (including annual stakeholder events)

Defining measures for all 4 modes of transport (rail, road, air, inland waterways, aviation) – 32 measures were developed, for example:

- Rail: Continuation and expansion of existing fundings for Austrian rail freight, including operations, terminals, equipment, and other projects like the introduction of a modal shift coach or a rail-siding index
- Road: Fleet conversion to zero-emission commercial vehicles and construction of the necessary charging and refuelling infrastructure
- Inland waterways: Advancement of ship technologies and digitalisation

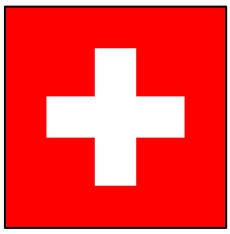
In addition, Austria implemented certain measures in terms of road pricing for heavy vehicles:

Since 2017 in addition to infrastructure charges also external cost charges for traffic-based air and noise pollution are levied on the Austrian motor- and expressway network. Since 2024 also external charges for traffic-based CO2-emissions are levied

Brenner Corridor: There is a mark-up for cross financing the Brenner Base Tunnel (rail), but due to restrictions in Eurovignette directive until 2024 no charges for external costs could be levied there. Since 2024: application of both mark-up and external cost charges (air and noise pollution and CO2-emissions) also on the Brenner corridor.

[10] https://www.bmk.gv.at/dam/jcr:eaf9808b-b7f9-43d0-9faf-df28c202ce31/BMK_Mobilitaetsmasterplan2030_EN_UA.pdf

SWITZERLAND



The Suisse policy on the transition of freight transport and logistics is based on the following pillars:

STEP - Strategisches Entwicklungsprogramm Bahninfrastruktur

- Extend the railway network after 2030

Heavy-duty vehicle levy (LSVA)

- Heavy-duty freight vehicles >3.5 t domestic and abroad must pay a duty, based on the Euro emission standards and Ton/Km (fee cap = EUR 325)

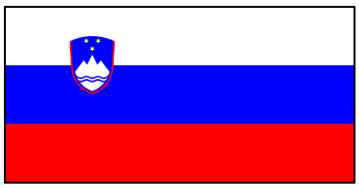
Temporary ban on freight transport (*Verkehrsrecht Schweiz*)

- Night travel ban on HDV - All day between 22:00 and 5:00.

Tax exemption for Biofuels

- Fuels with a favourable life cycle assessment - such as bio-LNG, Bio-NG, Bioethanol and Biodiesel - have been exempted from mineral oil tax

SLOVENIA



The key general objectives for the 2030 identified in the NEPN are:

- reducing the total greenhouse gas emissions by 36%,
- at least a 35% improvement in energy efficiency, which is higher than the target adopted at EU level (32.5%),
- at least a 27% share of renewable energy sources; due to the relevant domestic circumstances, Slovenia had to agree to a lower target than that of the EU (32%), but will strive to increase this ambition in the next NEPN update (2023/24),
- 3% of GDP to be spent on R&D, of which 1% of GDP will be public funds.

The implementation of the NEPN leads to the reduction of the dependency on fossil fuels and supports, among other things, sustainable solutions in transport, in buildings and in industry.

The basic directions of NEPN are the need to increase freight transport by rail in both segments (freight and passengers) and to accelerate the introduction of alternative fuels.

The above-mentioned orientations are reflected in the activities, which are grouped into the following thematic areas in the working proposal for measures:

Integral measures in the sector of freight transport and logistics:

- Measures to reduce the number/duration of journeys: the most important segment of activities is related to spatial planning, including activities to improve the digitisation
- Measures to make freight transport more efficient
- Measures reducing vehicle emissions: alternative fuels will make an important contribution to reducing emissions and their deployment will require a number of activities, as most of them will require infrastructure and vehicle replacement.

The Act on Infrastructure for Alternative Fuels and Promotion of Transition to Alternative Fuels in Transport, implemented in 2023, establishes the legal framework for the development, expansion, and deployment of infrastructure for alternative fuels in transport (Electricity, H2, CNG, LNG, LPG) with the primary goal of building a dense network of fast and ultra-fast electric charging stations for cars and HDV.

4. Key messages for the transition of transport and logistics in the alps

Taking into account the strategies and objectives at European and national level, the following are key messages addressing the implementation of policies and measures to decarbonise freight transport and logistics in the Alps.

I. FREIGHT TRANSPORT and LOGISTICS SYSTEM

- Due to its inherent advantages such as mass transport capacity, environmental sustainability, safety, and energy efficiency, intermodal freight transport is a key component of a sustainable Alpine freight transport system. Infrastructure and service quality should be upgraded to efficiently implement intermodal transport.
- Freight transport will rely on renewable energy:
    - on rail, further electrification of tracks is key in addition to raising the renewable share of electricity supply
    - on road, it is necessary to replace LDV and HDV fleets with vehicles powered by carbon neutral energy. The principles of technological diversity and energy efficiency are particularly important in this context to ensure environmental and socio-economic sustainability.
    - Improving local value chains and trade within Europe will lead to a reduction in overall transport needs and a regionalisation of the transport system.
- Advocate for improved and better coordinated road charging systems within the frame of the Eurovignette Directive for transalpine freight transport.

II. TECHNOLOGICAL SOLUTIONS

- Crossing the Alps implies the adoption of technologies compatible with long haul distances, high ranges, high weight intensities, high level performance to overcome the slopes safely. Last but not least, the competitiveness and positive TCO of transalpine logistics represents an essential pillar for transport operators
- Battery electric and H2 fuel cells vehicles are crucial technologies for the transition to decarbonise HDV fleets and reach zero emissions, given the decarbonisation targets of electricity generation in the EU. Combustion engines powered by renewable fuels can also contribute to the decarbonisation of road transport taking into account their availability and well-to-wheel CO2 emissions.
- According to the revised Regulation on Alternative Fuels Infrastructure (AFIR), the necessary infrastructure for carbon neutral alternative fuels and net-zero emission operation of all types of vehicles needs to be developed while protecting the environment
- Higher levels of cooperative, connected and automated mobility need to be deployed in order to integrate transport modes fostering modal shift and to manage the freight transport system more effectively, above all in the intermodal system. The potential and possibilities in the field of traffic management should be better exploited through the use of digital tools.
- Regular analyses of the adequacy of existing standards with the observed decarbonisation of the sector should be conducted. As required by the regulation on CO2 targets for HDVs[11], it is important to assess the role of a carbon correction factor, (Art. 1.18) that recognises a strategic role for all energy carriers that decarbonise the transport system

5. Conclusions and recommendations

The European programmes for the energy transition and decarbonisation and the specific planning dedicated to the Alpine Space contains strategic guidelines to define concrete measures for the governance of the energy and technological transition of freight transport and logistics in the Alpine region.

In order to make transport in the Alps sustainable and climate neutral, a clearly defined transport policy for the Alpine region should be defined, in the framework of a future revision of regulations concerning the CO2 emission targets in the automotive sector.

In fact, Alpine transit is significantly shaped by European transport policy and the related legal acts of the European Union. Joint efforts are needed to ensure that the specific requirements

[11] Regulation (EU) 2024/1610 on strengthening the CO2 emission performance standards for new heavy-duty vehicles and integrating reporting obligations, PE/29/2024/REV/1

of the Alpine region, its environmental vulnerability and its strategic role for the trans-European trades and competitiveness in the European context are sufficiently taken into account.

To this end, the Working Group recommends developing a joint Alpine-wide strategy to implement the transition of freight transport and logistics, in the framework of the requirements of the Transport Protocol and Climate Action Plan 2.0.

Recommendations:

1. **Promote an approach to achieve the decarbonisation of freight transport and logistics based on the principle of technological plurality, in order to use every opportunity to achieve the European net-zero emission targets, while making sure to favour the most efficient and affordable technology for each use**
2. **Accelerate the production of electric energy by renewable sources in order to foster a concrete contribution for the decarbonisation targets by the electrification of road and rail transport**
3. **Position intermodal freight transport at the core component of a sustainable Alpine freight transport system, improving the rail network and the quality of services**
4. **Promote battery electric and H2 fuel cell vehicles, which are crucial technologies for the transition to decarbonise HDV fleets and reach zero emissions, given the decarbonisation targets of electricity generation in the EU**
5. **Promote combustion engines powered by renewable fuels for HDVs as contributing to the decarbonisation of road transport taking into account their availability and well-to-wheel CO2 emissions**
6. **Advocate for improved and better coordinated road charging systems within the frame of the Eurovignette Directive for transalpine freight transport**
7. **Foster the implementation of the Alternative Fuels Infrastructure Regulation (AFIR) and its objectives, in particular through cross-border cooperation in the development of the necessary charging infrastructure**
8. **Deploy cooperative, connected and automated transport services throughout the Alpine Region towards a fully integrated multimodal transport system**
9. **Incentivise the fleet renewal with last generation vehicles in order to achieve climate neutrality in road transport as soon as possible, with priority given to BEV and FCEV**
10. **At EU level: a regulatory upgrading on timing and promoting technologies and fuels will be essential, taking into account to the sectorial real market needs and trends, in line with EU rules and acts on Renewable Energy**