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iMONITRAF!

Regional transport in the frame of a Toll Plus System

In-depth analysis to further develop the iMONITRAF! proposal

Version 1.0

4th December 2017

Proof of change

Version	Date	Status/Change/Comment	Name
0.1	24 May 2017	Initialisation, Draft ToC	Oe
0.2	1 June 2017	Input Chapters 1-3	CvD
0.3	9 June 2017	Update Chapters 1-3, Annex A	CvD
0.4	22 Sept 2017	Traffic Figures; 12t idea	JJö
0.5	26 Sept 2017	Chapter 4	CvD
0.6	28 Sept 2017	First Draft for Final	Oe
0.7	19 Okt 2017	Adaptations re. EUSALP Conf.	Oe
0.8	30 Okt 2017	Incorporation of Comments	Oe
0.9	28 Nov 2017	Draft Final / Exec. Summary	Oe
1.0	4 Dez 2017	Final comments; Finalisation	Oe

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Executive Summary

The Alpine regions of the iMONITRAF! network have identified the need for a more targeted and harmonised pricing system in the sensitive mountain regions and propose the implementation of a **Toll Plus System** as additional and differentiated pricing measure. This Toll Plus System shall support the common modal shift strategy and the financing of relevant infrastructures.

In essence, **Toll Plus is a mark-up on existing tolls** on the motorways that cross the Alps, even though details concerning the liable vehicles and liable roads are not determined yet. With careful design such a mark-up be implemented on sensitive corridors in accordance with European regulations, especially with the Eurovignette Directive.

Previous work on Toll Plus has identified that **local businesses in the Alpine region might be negatively affected** by the increased motorway tolls of a Toll Plus System. The scope of this work is to investigate **options for special regulations that alleviate the economic burden of a Toll Plus System for regional transport** and hence contributes to a next step of the Toll Plus design.

In the present work we have looked across Europe for examples of regulations that might serve as a template or an inspiration for defining exemption rules for regional transport. We have collected exemption rules that are in force in national heavy vehicle tolling systems, driving bans, tunnel regulations, urban mobility pricing and low emission zones. Unfortunately, **none of the various existing exemptions for local traffic can serve as a good template for Toll Plus.**

The reason for this are the European principles of equal treatment and of free trade. In different policy domains these principles lead to rather different impact. For environmental policy measures, like emission regulations or restricted traffic zones, exemptions for local residents for hardship cases can be justified. In contrast, for regulations concerning commercially sensitive areas like transport, and specifically for tolling of heavy vehicles, European legislation is very stringent. Especially the **Eurovignette Directive**, which is a specific legislation for tolling of heavy vehicles, **is very restrictive** concerning exemptions for local transport in order to avoid any market distortions that might favour local business over free international trade. This is best seen in Article 7(4) of the proposed revision of this Directive (COM(2017) 275 final, dated May 2017), which says *"Tolls and user charges shall not discriminate, directly or indirectly, on the grounds of the nationality of the road user, the Member State or the third country of establishment of the transport operator or of registration of the vehicle, or the origin or destination of the transport operation."* Regarding tolls for heavy vehicles, such as Toll Plus, this in essence rules out any exemption regulation targeted at regional transport based on geographic characteristics of the transport.

Not all is lost, though. We have analysed data on Alpine crossing heavy vehicle traffic and realized that **regional traffic is overrepresented in the smaller vehicle categories** and underrepresented in the larger vehicle categories (vehicles with 4 and more axles). This is no surprise since international transit of goods is predominantly performed with the 40t-sized vehicles. Regional transport less often has the need to use such large vehicles and more often relies on two- and three-axles vehicles.

Based on this insight, **we recommend to implement a Toll Plus** mark-up on the existing toll tariffs **only for the heavier vehicles categories**, i.e. for vehicles with 4 and more axles (or with more than e.g. 18t for the weight-based Swiss LSVA system). This measure will already lessen the economic burden for regional businesses, especially sensitive ones operating with comparatively small transport volumes.

We also **recommend to complement this measure with specific exemptions for the transport of certain goods**, such as milk and raw wood, or for vehicles in combined transport. These vehicles are by necessity in the 4+ axles category and would be subject to Toll Plus, and also have no other viable transport options. In fact, their routes and mode of transport are fully determined by their type of load. Another complementing measure might be to exempt transports for **local supply**, acknowledging the fact that no viable transport alternatives exist. Such exemptions might be granted for certain vehicles on a combination of route- and goods-based characteristics, which with thorough enactment could be implemented in a non-discriminatory and cost effective way.

We have also looked into the implementation effort for the different conceivable measures to alleviate the burden for regional businesses. For geographic or origin/destination exemption rules, not only European legislation is a barrier, but also the implementation and running administration costs are prohibitive. The existing tolling systems in the Alpine countries cannot handle in an automatic way any exemptions based on some definition of the origin or destination of a transport or on the specific route taken. In contrast, **the proposed application of Toll Plus only for the larger vehicle categories comes at no extra costs**, since this means a simple adaptation of the already implemented tolling tariffs for the different vehicle categories. Also exemptions based on the nature of the transported goods cause only low implementation costs since in fact the exemptions may be granted for a specific vehicle type (bulk milk or raw timber transporter) or at a specific location (combined transport terminal). Such exemptions can be implemented by rather simple administrative processes.

We recommend pursuing this basic concept of combining the measure of applying the Toll Plus mark-up only for the larger heavy vehicle categories with the measure of exempting the transport of certain goods.

In order to further develop a Toll Plus System with specific measure for regional transport, further work is required regarding **data-based evidence** to be able to judge the efficacy of the presented approach. Based on the data available for this small study it has not been possible to understand the nature of the still sizeable share of obviously regional transports on the Alpine corridors that employ vehicles with more than four axles. In order to judge economic impact and under which conditions it would be justified to make exemptions also in this "big vehicle" class, such data would be required. Since European legislation is under revision, it is also advisable to thoroughly investigate whether the proposed measures are in line with the upcoming new regulations.

1 Background and objectives

1.1 The assignment of iMONITRAF!

The Alpine regions of the iMONITRAF! network have identified the need for a more **targeted and harmonised pricing system in the sensitive mountain regions** and propose the implementation of a Toll Plus System as additional and differentiated pricing measure. This Toll Plus System shall support the common modal shift strategy and the financing of relevant infrastructures.

Over the last four years, several activities of iMONITRAF! have thus focused on developing a regional proposal for a **Toll Plus System**. Among them, an in-depth analysis derived an optimized scenario for Toll Plus from a regional viewpoint, which includes some major claims on how Toll Plus needs to be designed to support the regional transport strategy¹. One of them describes the need for specific regulations for regional transport to avoid negative economic impacts for the Alpine regions.

The scope of the current in-depth analysis is to **contribute to a next step of the Toll Plus design, addressing options for special regulations for regional transport**.

The report is structured along the scope of work and the agreed methodology of the study: The remainder of this Chapter **recalls the essentials** of the Toll Plus proposal, namely the more recent progress, the associated political stakeholder strategy development in the “Suivi de Zurich” process and the core design elements of Toll Plus. The second Chapter presents the results from a literature study, where we tried to find **examples of comparable arrangements** for local exemptions that might serve as templates or inspiration sources. These findings are complemented in Chapter 3 with a review of the **legal requirements**, mostly stemming from EU legislation. Based on these foundations, Chapter 4 analyses in a systematic way on which characteristics of a vehicle, its load or route rules for exempting local vehicles might be set up. The fifth Chapter then looks into **practical implementation aspects**, both in terms of regulatory feasibility and technical/administrative effort. The report concludes with two Chapters on a proposed pragmatic way forward and some concluding recommendations.

1.2 The Toll Plus System

1.2.1 Recent timeline

The Alpine regions are particularly sensitive to the negative impacts of freight and passenger transport. To tackle the common challenges, the **regions along the four main transit corridors have joined forces in the iMONITRAF! network** to develop common solutions. The common strategy of the Alpine regions is a major milestone of iMONITRAF! and proposes – as a midterm instrument – the implementation of a **Toll Plus System to support a common modal shift policy**².

¹ Maibach et al. (2015) Specifying the regional proposal on Toll Plus – An in-depth analysis of the iMONITRAF! network on design elements, impacts and legal issues of a Toll Plus System

² iMONITRAF! (2012) Common transport strategy

During the Transport Forum in Innsbruck in June 2014, political representatives gave a mandate to further explore a Toll Plus System. An **in-depth analysis** was commissioned by the iMONITRAF! network and conducted in 2015³. Several scenarios for a Toll Plus System for heavy good vehicles were analyzed, including the following **core elements**⁴:

1. Defining toll levels and implementation
2. Flexibility of toll rates to support convergence of pricing systems
3. Toll differentiation beyond current EURO-norms
4. Provisions for regional transport
5. Flexible revenue use with a share for the Alpine regions

Building on the iMONITRAF! work, the partner regions reconfirm in November 2016 their commitment to the implementation of an ambitious and exemplary transport policy for the Alpine region by signing a **political resolution**⁵. The partner regions agree that the implementation of a Toll Plus System for heavy goods vehicles is an important next step for a common modal-shift policy.

1.2.2 "Suivi de Zurich" process

Parallel to the iMONITRAF! network several other political stakeholders have developed objectives and strategies for improving the sustainability of transportation in the Alpine region. One of these stakeholders is the "Suivi de Zurich" process, named after the "Declaration of Zurich" in November 2001. The Zurich Process is the **formal platform of cooperation of the Ministers of Transport of the Alpine countries**⁶. Its main goal is to assist the transport ministers in finding solutions for safety and traffic problems in the Alpine region so as to facilitate the shift from road to rail and to improve road safety, especially in tunnels in the Alpine region. Relevant **research studies** commissioned by the Zurich Process include⁷:

- ALBATRAS (2011): Alignment of the heavy traffic management instruments Alpine Crossing Exchange (ACE), Alpine Emissions Trading System (AETS) and TOLL+ on a comparable scientific, technical and operational level, taking into account the introduction of different thresholds in order to analyse transport flow impacts on Alpine routes
- EFFINALP (2012): Analysis of economic effects of establishing traffic management instruments in Alpine corridors
- LEGALP (2012): Legal consistency of ACE, AETS and Toll+ in Alpine corridors with (1) European Union law, (2) Agreement between the European Community and the Swiss Confederation on the Carriage of Goods and Passengers by Rail and Road, (3) other EU-Agreements and international multilateral and bilateral treaties and agreements on trade and transport, (4) national Law of Austria, Italy, Germany, Slovenia, France and Switzerland and possible adjustments in case of discrepancies

³ Maibach et al. (2015) Specifying the regional proposal on Toll Plus – An in-depth analysis of the iMONITRAF! network on design elements, impacts and legal issues of a Toll Plus System

⁴ See also: iMONITRAF! (2016) Fact sheet Toll Plus – proposal from the iMONITRAF! regions

⁵ Resolution der Alpenregionen zur Konkretisierung der gemeinsamen Verkehrsstrategie (2016), signed by: die Zentralschweizer Umweltdirektionen, das Land Tirol, La Région Auvergne Rhône-Alpes, die Autonome Provinz Bozen Südtirol, la Repubblica e Cantone Ticino, la Provincia Autonoma di Trento

⁶ Ministers of Transport of Germany, Austria, France, Switzerland and Italy – and since 2006 also Slovenia

⁷ <http://www.zurich-process.org/en/key-bodiesresults/the-present-structure/3-working-groups/heavy-vehicle-transport-management-instruments/>

One of the current priorities of the Zurich Process is the **further development of a Toll Plus System** which should recognize further external costs categories depending on the concrete outcomes of the revision of the Eurovignette Directive, in order to tackle the increasing negative effects of noise, CO₂ emission and capacity constraints. The activities of the Zurich process are important for the development of a common strategy and an exchange with the iMONITRAF! network has been established.

1.2.3 Design elements of the Toll Plus System

The toll itself

The “Plus” of the toll level shall be defined on the basis of additional costs in mountain areas (infrastructure cost, external cost). Considering the different approaches of current pricing systems, the implementation of these additional costs can be achieved either through the application of specific **external cost factors** (Art. 7c of the Eurovignette Directive) or a standardized **mark-up** (Art. 7f). For both elements, the iMONITRAF! network considers an extension of the Eurovignette Directive necessary.

The impact assessment⁸ indicates that additional toll rates of about 20-25 €/km would be appropriate to internalize external costs (including appropriate mountain factors) and to significantly reduce environmental impacts and the emission of the greenhouse gas CO₂. These toll levels could be implemented in a step-wise approach, considering regional characteristics and avoiding disproportionate economic impacts.

Geographic region

The geographic region of the Toll Plus System is the Alps. The Alps as determined by the perimeter of the Alpine Convention include 8 countries: Austria (28.7% of the overall Alpine perimeter), Italy (27.2%), France (21.4%), Switzerland (13.2%), Germany (5.8%), Slovenia (3.6%), Liechtenstein (0.08%) and Monaco (0.001%) (see Figure 1)⁹.



Figure 1: Perimeter of the Alps according to the Alpine Convention

⁸ Maibach et al. (2015) Specifying the regional proposal on Toll Plus – An in-depth analysis of the iMONITRAF! network on design elements, impacts and legal issues of a Toll Plus System

⁹ Alpine Convention (2016) The Alps: eight countries, one territory

The main transit axes for heavy vehicle traffic through the Alps are (see Figure 2)¹⁰:

- E80 Nice-Ventimiglia (FR-IT)
- E70 Fréjus (FR-IT)
- E25 Montblanc (FR-IT)
- E27 Gd Saint Bernard (FR-CH-IT)
- E62 Simplon (CH-IT)
- E35 Gotthard (DE/FR-CH-IT)
- E34 S Bernadino (AT/DE-CH-IT)
- E45 Brenner (DE-AT-IT)
- E55/E61 Tauern (DE-AT-SI)
- E57 Pyhrn (DE-AT-SI)
- E66 South Corridor (AT-IT)



Figure 2: Main transit axes through the Alps

¹⁰ <http://www.acrossthealps.eu/>

The regions along the four main transit corridors have joined forces in the iMONITRAF! network¹¹. These corridors are: Fréjus, Mont-Blanc, Gotthard and Brenner (see Figure 3, corridors A to D¹²).

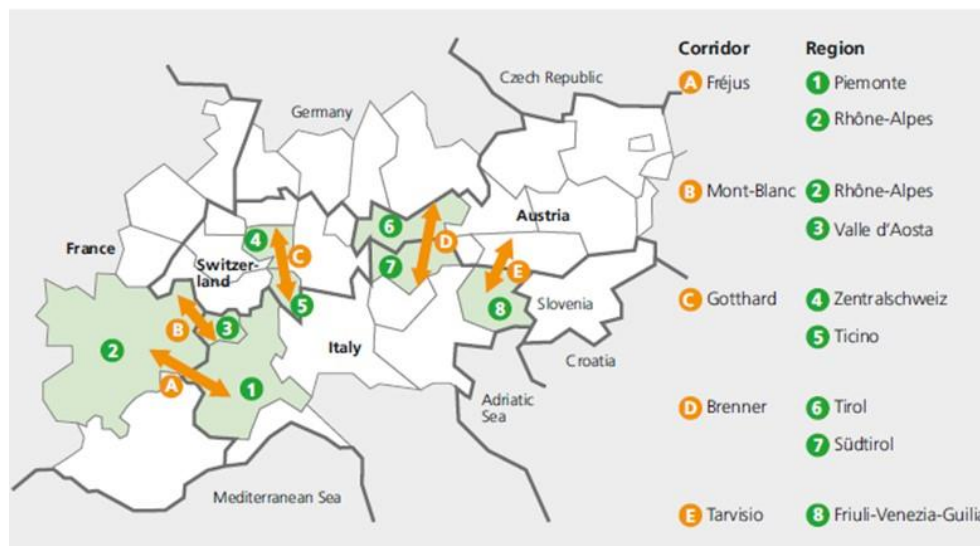


Figure 3: Four main transit corridors of the iMONITRAF! network (corridors A to D)

Liabile network

The liable network, i.e. the network on which the Toll Plus System should apply, is not defined yet. Since the system foresees an additional charge on the already existing pricing systems, the liable networks of these systems might be taken as a starting point. A further definition of the liable network might be based on the decision to include only specific transit corridors of the trans-European road network (see Figure 2 and 3). Maibach et al. (2015) recommend as a basis the exemplary distances used in their scenarios (around 300 km); in a second step the Toll Plus System might be extended to cover a broader road network¹³.

Liabile vehicles

Also the liable vehicles, i.e. the vehicles subject to the Toll Plus System, are not defined yet.

¹¹ iMONITRAF! (2016) Fact sheet Toll Plus – proposal from the iMONITRAF! regions

¹² iMONITRAF! (2012) Alpine Transit Traffic – Policy Scenarios 2020

¹³ Maibach et al. (2015) Specifying the regional proposal on Toll Plus – An in-depth analysis of the iMONITRAF! network on design elements, impacts and legal issues of a Toll Plus System

Moreover, it is useful to distinguish between several **types of transport** through the Alpine region, e.g.¹⁴ (see Figure 4):

- **trans-Alpine transport:** transport whose destination and origin is outside the Alpine region
- **intra-Alpine transport:** transport whose destination and origin lies within the Alpine region, including transport having origin or destination in the Alpine region:
 - internal transport (destination and origin within the Alpine region)
 - import transport (origin outside and destination inside the Alpine region)
 - export transport (origin inside and destination outside the Alpine region)



Figure 4: Types of transport in the Alpine region¹⁵

Within the Zurich Process, the tradition of harmonised data collection has found a formal framework, including all Alpine countries, with **CAFT: Cross Alpine Freight Transport**¹⁶. CAFT is a data collection of Alpine crossing freight transport covering both relevant modes, road and rail.

“Alpine crossing transport” according to CAFT is defined as any kind of transport that crosses a geographical line laid over the main ridge of the Alps. This line is defined by **three different arcs** (see Figure 5):

- Alpine Arc C covers the entire Alpine Arc from the Mediterranean sea (at Nice/Ventimiglia) up to the Danube and the Pannonian lowlands (Wechsel is regarded as the most eastern Alpine crossing).
- Alpine Arc B is following the main ridge of the Alps from Ventimiglia to Brenner, but is then turning south following the Italian-Austrian border to Tarvisio.
- Alpine Arc A is a subset of Arc B and Arc C, comprising the Swiss Alpine crossings plus the relevant neighbouring ones.

¹⁴ Alpine Convention Transport Protocol, Article 2

¹⁵ Alpine Convention (2007) Report on the State of the Alps, Alpine Signals – Special edition 1, Transport and Mobility in the Alps

¹⁶ <http://www.zurich-process.org/statistics/>

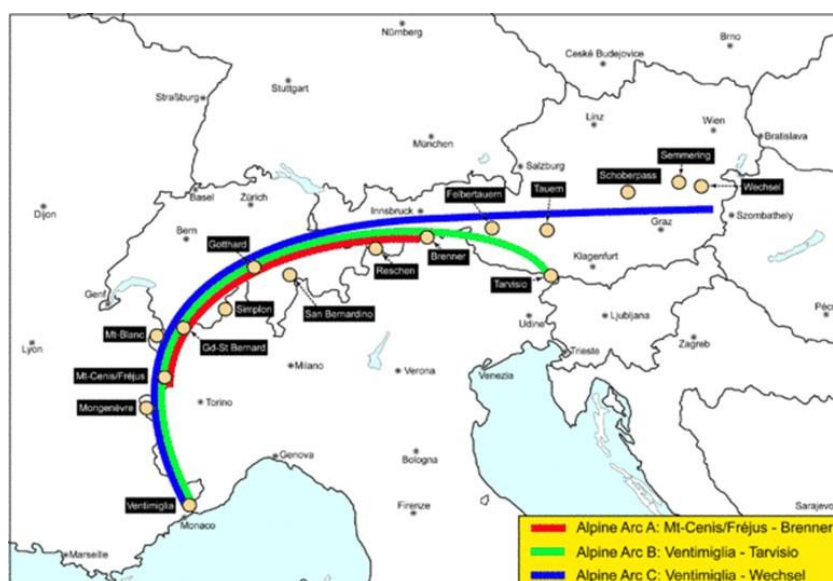


Figure 5: Alpine crossing transport according to CAFT

Alpine crossing transport according to that definition is not the same as transport within an Alpine region, e.g. the Alpine region defined by the Alpine Convention: it includes trips having their origin and/or destination outside the region. Vice versa, it excludes trips within the region not crossing the main ridge of the Alps.

Note that traffic across national boundaries may fall under different categories depending on the point of view¹⁷. Depending on its origin and destination in regard to the respective country borders, it may be categorized as import, export or transit traffic. For instance, traffic from the German Alpine region to the Italian Alps, passing through Austria is transit traffic from a national point of view in Austria, trans-Alpine traffic as it crosses the Brenner pass, import traffic from the Italian perspective and internal traffic in regard to the Alpine Convention region.

¹⁷ Alpine Convention (2007) Report on the State of the Alps, Alpine Signals – Special edition 1, Transport and Mobility in the Alps

2 Examples for regulations on regional transport

From the viewpoint of the Alpine regions, Toll Plus needs to include specific regulations for regional transport to avoid negative economic impacts for the Alpine regions. This chapter presents the main findings from a literature study into existing regulations and relevant studies that might be **inspiring for the Toll Plus design**. The (non-exhaustive) **examples** can be found in Annex A and are related to:

- National HGV tolling systems
- Driving bans for HGV
- Tunnels regulations
- Urban Mobility Pricing
- Special toll for light vehicles (Sondermaut) in Austria
- Limited traffic zones (Zona a Traffico Limitato, ZTL) in Italy
- Low emission zones/environmental zones (Umweltzonen) in Germany
- Other steering elements

In general **only few regulations with relief for regional transport** could be found in existing schemes. The following sections describe the main type of regulations found for HGVs, light vehicles and ZTL/Umweltzonen in Italy/Germany with specific emphasis on relief measures with a regional character.

2.1 Heavy goods vehicles

Exemptions from tolls or driving bans are **generally “vehicle-based”** and concern, for example, emergency vehicles, military vehicles, agricultural vehicles, vehicles used by non-profit or charitable organizations and vehicles for circus and funfair equipment. Such exemptions are usually **stated by law**.

Case study: Switzerland

The Swiss Heavy Vehicle Charge (LSVA) also includes some **“goods-based” exceptions**. Special regulations apply for the following vehicles and transports:

- Unaccompanied combined traffic
- Timber transports
- Bulk milk transport
- Transports of productive livestock

These exceptions may have a **regional effect, but are based on conceptual reasons**. One of the objectives of the LSVA is to increase efficiency of transport, for example through higher load factors and/or fewer empty runs. However, this cannot be translated to transports between woods and farms to the place of where the respective goods (wood, milk, livestock) are being further processed due to the fact that the vehicles will de facto be full or empty. Something similar applies to transports in combined traffic when HGVs transport containers to a goods station. Since no further efficiency improvement can be reached with these types of transport, special regulations apply. Please note that goods-based exceptions heavily rely on **offline (paper) administrative efforts**, in contrast to vehicle-based exceptions that are usually handled automatically. For example, remuneration of the abovementioned goods-based transports is based on an inspection of the freight papers.

More **goods-based exceptions** can be found with respect to **driving bans for HGVs**. For example, derogations to driving restrictions (e.g. night-time driving ban, weekend & public holiday driving ban) are generally authorized for journeys serving the transport of livestock, perishable products or foodstuffs, agricultural produce during the harvest period, newspapers and periodicals, linen to/from large hotels, products for urgent medical care, etc. In Austria, also journeys made exclusively as part of a **combined transport operation within a radius of 65 km** of predefined transloading stations are exempted from the national weekend and public holiday driving ban for HGVs.

Overall, an exceptional authorization shall be granted only if there is a **substantial public interest** in doing so. The applicant shall prove in both instances that the journey cannot be avoided by organizational measures or by choosing a different means of transport.

Case study: Austria

The exceptions within the framework of the **sector vehicle prohibition in the Tyrol** on the A 12 motorway¹⁸ are especially interesting in view of Toll Plus, because they are based on a predefined **core zone and expanded zone for origin and destination transport** (see Figure 6). The prohibition will not apply to journeys by vehicles which are loaded or unloaded in a defined core zone (origin and destination are located in the core zone) or to journeys by vehicles which are loaded and unloaded in an expanded zone (origin and destination in the expanded zone). These exceptions are provided in view of the fact that **no viable alternative exists for these transport types**. Specifically, moving these transport types to the railways is viable only if certain distances (in excess of **200 km**) are being covered.

Also the exceptions for origin and destination transport within the framework of the **vehicle prohibitions for polluting HGVs in Tyrol** on the A 12 motorway are based on the predefined core zone and expanded zone.

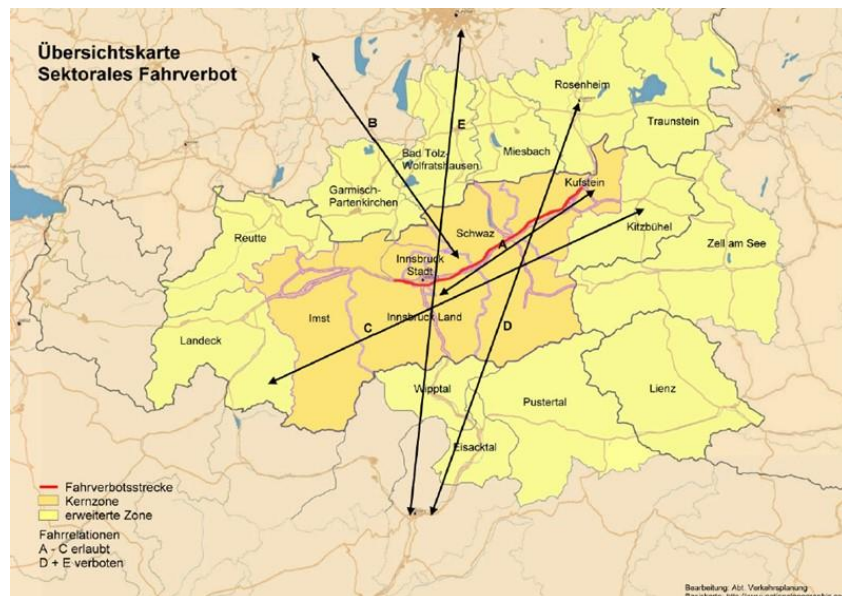


Figure 6: Sector vehicle prohibition in the Tyrol (AT): core zone and expanded zone to define exempted destination and origin transport

¹⁸ For a detailed description of the sector vehicle prohibition in the Tyrol see the Annex.

With regard to **HGV charges for e.g. tunnels** frequent users can opt for **subscriptions with discounts**, usually based on the number of passages in a certain time period. Such subscriptions are open to **any frequent user**, so regional companies as well as international transit companies may benefit from them.

Possible relief measures for regional transport within the framework of the transalpine traffic management instruments ACE (Alpine Crossing Exchange), AETS (Alpine Emission Trading System) and TOLL+ (surcharge on existing tolls covering external costs) are described in **the EFFINALP study** (2012) .

The most important **criteria for hardship cases** are the level of transalpine goods transported:

- supply and delivery market,
- the distance of these trips and the potential for modal shift,
- the ubiquity and competitiveness of the industry and their value added chain,
- the size of the enterprise and the importance of transport time.

Examples show that the cost increase for such hardship cases might be in the magnitude of up to 5%. This excess burden would be especially relevant for **regional transalpine transport within short distances and with no possibility for modal shift** (e.g. small road transport operators in Alpine regions, transport-intensive industries). Therefore, several relief measures for regional transport were discussed and compared. Especially **free allocation, exemptions and redistribution to the transport sector** seem to have a high potential to relieve the highly affected regional actors. However, the more differentiated the rules for exemption, the higher the possible administrative efforts.

2.2 Light vehicles

Exemptions or special provisions with a **regional character** are particularly found in urban mobility pricing schemes and special tolls/charges for light vehicles.

For example, people can apply for a **residents' discount of the London Congestion Charge** (90%) when they live within the so-called Congestion Charge residents' discount zone.

The **Stockholm Congestion Tax** includes a special rule to especially **grant relief to residents, commuters and regional transport**, the so-called "**Lidingö¹⁹ rule**": No congestion tax is charged for vehicles that pass two different control points within 30 minutes, one of which must be a control point at Gasverksvägen, Lidingövägen or Norra Hamnvägen (see also Figure 7).

¹⁹ Lidingö is a municipality bordering on the city of Stockholm whose only connection with the national road network is via the inner city.

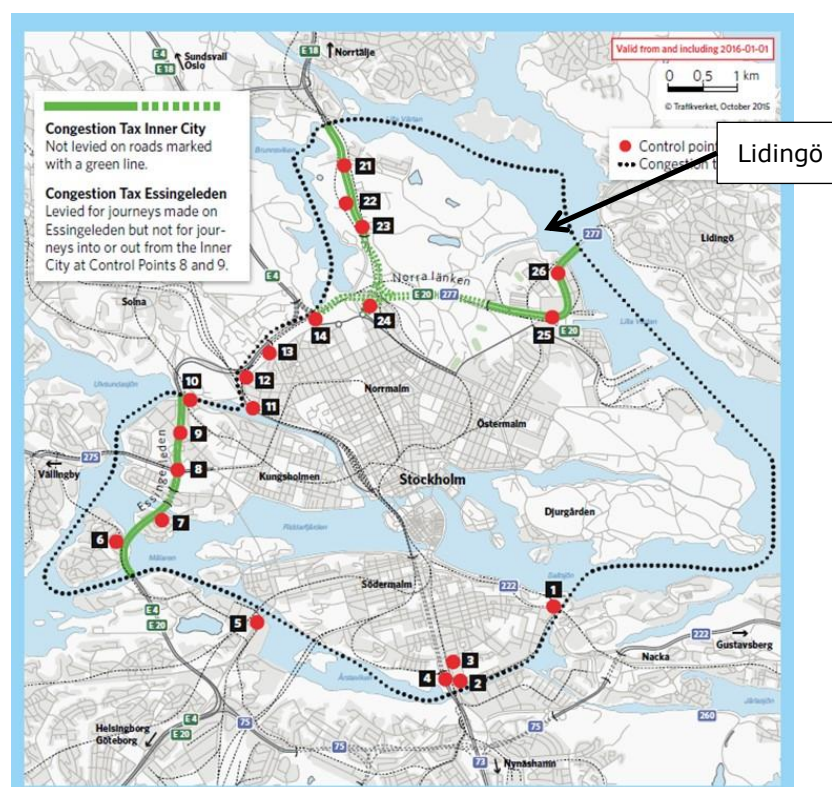


Figure 7: Stockholm Congestion Tax zone²⁰

In the **Gothenburg Congestion Tax** the **single charge rule** applies: A vehicle that passes several payment stations within 60 minutes is only taxed once. The amount that must be paid is the highest one.

With regard to the **Sondermaut** in Austria (special toll for light vehicles) **commuters** have the possibility to buy a **discounted annual card**. Furthermore, there is a **resident's card for the A 13**: Inhabitants of certain municipalities will receive resident's cards as long as they meet certain conditions, e.g. a valid confirmation of the applicant's main place of residence is provided and the vehicle is registered in the name of a private person only and is not used as a company vehicle.

2.3 Limited traffic zones and low emission zones

Many **Italian cities** have **limited traffic zones** (ZTL) to help protect historic city centers from excessive traffic. National exemptions for all ZTL, as stated by law, are public transport and vehicles for disabled people with a registered disabled person's badge. **Special exemptions** may be granted, if there is an **important need to enter the ZTL when it is in operation**. For example, in Bolzano there are specific exemptions for resident's vehicles, vehicles owned by shops or companies inside the ZTL, delivery goods, etc.

²⁰ <https://transportstyrelsen.se/globalassets/global/vag/trangselskatt/congestion-tax-a4.pdf>

A growing number of **German cities** have designated **low emission zones** (Umweltzonen) which purpose is to improve the air quality within these zones and thus protect public health. Only vehicles bearing a sticker for the low emission zone may enter the zone. Certain vehicles are exempted by national law. **Local exceptions** can be defined by the cities themselves. For example, in Munich exemptions can be granted for **residents or traders** in the environmental zone or for trips that are needed to supply the population with **essential goods or services** or when there is **no public transport alternative** (people in night shifts).

Sometimes exemptions may be granted in case retrofitting or replacement of the vehicle cannot be expected due to **financial reasons**.

With regard to the planned driving ban for diesel vehicles in **Stuttgart** from 2018 onwards, the city will be careful **not to overextend the derogation**, otherwise the target, a significant reduction in pollutants, will not be achieved.

3 Requirements for a regulation on regional transport

To define the requirements for a regulation on regional transport one needs to consider any requirements from the European and Swiss legal frameworks and the iMONITRAF! network, for example related to geographical extent or vehicle size. Both issues are discussed below.

3.1 Legal framework

The **LEGALP study** (2012) has shown that the overall concept of Toll Plus is in line with current EU and national legislations. However, many questions remained regarding an ambitious design of Toll Plus that goes beyond the (at that time) existing possibilities of the Eurovignette Directive, the Swiss legal framework and the bilateral agreement between Switzerland and the EU.

A first assessment of several legal questions was performed in the in-depth study of Toll Plus (Maibach et al., 2015). It was concluded that **a Toll Plus System is possible from a legal perspective**. The introduction of a Toll Plus System is compatible with primary legislation of the European Union and mainly legitimized by the aim of minimizing environmental nuisances. It was recommended to link the Toll Plus System to a further development and revision of the Eurovignette Directive. Toll Plus is also compatible with the land transport agreement between Switzerland and the European Union, as long the charging principles (e.g. charging of external costs) is considered. However, the possibilities to increase existing levels is limited to the maximum charge of 325 CHF per alpine crossing (300 km) and a mark-up on the existing charging regime of 15%. Nevertheless, several issues should be evaluated more in-depth in order to have a final view. For example, a **critical issue is the accordance to the principle of non-discrimination**, especially if regional and local transport exemptions are considered.

Below the **main EU policy and legislative documents** are described, which should be considered when defining the requirements for a regulation on regional transport.

3.2 EU treaties

The “four freedoms” of the European Union are the **freedom of movement of goods, people, services and capital** over borders. These key principles lie at the heart of the EU and underpin the single market. The freedoms are enshrined in EU treaties and aim to remove trade barriers and harmonize national rules at EU level.

Especially **equal treatment** is valued very highly. Any discrimination on grounds of nationality shall be prohibited (TFEU Part II Non-Discrimination and citizenship of the Union, Art. 18). Hence, special provisions for regional transport need to be formulated in a way that they are compatible with the **principle of non-discrimination**. See also Revision of the Eurovignette Directive below.

Also the **freedom of movement of goods** is deemed important with respect to Toll Plus (TFEU Part III Title II Free movement of goods (Art. 28 and further). Any action that hinders this will draw the attention of the European Commission. In a study for the European Commission by NEA (2010) the effects of (uncoordinated) driving restrictions on the operation of international freight transport by HGVs and thus the free flow of goods in the EU was analyzed. Among others, it was recommended to:

- actively discourage (regions within) countries from maintaining long lists of driving restrictions per section of road and calendar date
- stimulate the harmonization of parameters of certain restrictions (e.g. time window of weekend driving restrictions)
- assess the overall effects of a planned substantial adaptation of a driving restrictions regime, including the potential shift effects it may inflict on neighbouring countries

Also for Toll Plus it may be good to keep the whole targeted geographic region in mind and define **general, harmonized restrictions as opposed to a lot of local exemptions**.

3.3 Europe on the Move

With "Europe on the Move" the Commission takes action for clean, competitive and connected mobility²¹. It is a wide-ranging **set of initiatives** that will make traffic safer; encourage smart road charging; reduce CO₂ emissions, air pollution and congestion; cut red-tape for businesses; fight illicit employment and ensure proper conditions and rest times for workers.

Across the EU, charging should move towards distance-based road charging systems based on actual kilometers driven, to reflect better the **polluter-pays and user-pays principles** as set by the 2011 White Paper on transport. Hence, special provisions for regional transport should take account of the **principle of proportionality**. However, **reasons of environmental protection** may be justified for exemptions, for example if Toll Plus would lead to longer routes for regional transport, e.g. due to trips to a railway terminal in case of a shift of traffic from road to rail.

One important step supporting Europe on the Move is the revision of the Eurovignette Directive, see below.

3.4 Revision of the Eurovignette Directive

The EU has been working towards the development of a common framework for the charging of road freight transport for over many years. After 1999, the **primary policy instrument** of interest is **Directive 1999/96/EC**, the Eurovignette Directive, and its subsequent **amendments**. The legal bases for the Eurovignette Directive are Articles 71 and 93 of the EC Treaty (now Articles 91 and 113).

²¹ https://ec.europa.eu/transport/modes/road/news/2017-05-31-europe-on-the-move_en

With the amendments by Directives 2006/38/EC and 2011/76/EU vehicles with a permissible laden weight between 3.5 and 12 tonnes and measures aiming at addressing the issues of traffic-based air pollution and noise as well as congestion were included. The **objective of the current revision** of the Eurovignette Directive²² is to make progress in the application of the “polluter pays” and “user pays” principles, thereby promoting financially and environmentally sustainable and socially equitable road transport.

The proposed amendments would **simplify certain provisions** of the Directive, by removing the variation of tolls based on Euro emission class, whose benefits are now quickly diminishing, and by eliminating cumbersome notification requirements, in particular related to external cost charging. In addition, it is proposed to **include buses, passenger cars and vans** in the scope of the Directive, thereby ensuring more consistent pricing of infrastructure use across the road transport sector. It is also proposed that road charges reflect **CO₂ emissions**.

The proposed amendments most relevant for Toll Plus are described below.

Article 7(4)

Tolls and user charges shall not discriminate, directly or indirectly, on the grounds of the nationality of the road user, the Member State or the third country of establishment of the transport operator or of registration of the vehicle, or the origin or destination of the transport operation.

The “origin or destination ...” is an important limitation, which could make exceptions for regional and local transport very difficult. **Perhaps the D-A-CH countries should become active at EU level in order to change the proposal on this point.**

Also note that Article 7i (unchanged) stays relevant:

Article 7(8)

Until 31 December 2019, as regards heavy duty vehicles, a Member State may choose to apply tolls or user charges only to vehicles having a maximum permissible laden weight of not less than 12 tonnes if Member States choosing to apply tolls or user charges or both only to vehicles having a maximum permissible laden weight of not less than 12 tonnes shall inform the Commission of their decision and on the reasons thereof.

This amendment to remove the possibility to exempt HGVs below 12 tonnes from road charging is proposed to ensure fair treatment of hauliers. It could hamper a possible decision to apply Toll Plus only for HGVs above a certain size (see also below).

²² COM(2017) 275 final

Article 7f(1)c

... the application of the mark-up does not result in unfair treatment of commercial traffic compared to other road users.

Please note that this (unchanged) article stays relevant for Toll Plus.

Article 7i(2)b+c

Member States may provide for discounts or reductions to the infrastructure charge on condition that ...:

(b) such discounts or reductions reflect actual savings in administrative costs of the treatment of frequent users compared to occasional users;

(c) such discounts or reductions do not exceed 13% of the infrastructure charge paid by equivalent vehicles not eligible for the discount or reduction.

Since a mark-up is added to an infrastructure charge, it is reasonable to assume that the possibility to provide discounts or reductions (e.g. for regional transport) would also apply to a mark-up, such as Toll Plus (without prejudice to article 7(f)1c above).

Article 7k

It is proposed to limit the possibility to provide compensations to the case in which tolls are introduced (as opposed to user charges). This is to eliminate existing potential for discrimination of non-resident users. This could hamper a possible decision to compensate regional traffic in the Toll Plus System.

It is very important to note that **the Eurovignette Directive specifically applies to tolls for heavy vehicles** and is the prime legal instrument that the European Commission uses to ensure that no barriers to free trade are erected by the Member States and that the principle of equal treatment of all market participants is respected. The unimpeded movement of goods and services is one of the core European values that the Commission enforces stringently.

Hence, **any exemption rule for Toll Plus that would explicitly address geographical or origin-destination criteria would stand little chance in front of European laws.** Also note that the examples for exemptions for local residents given above for the congestions taxes cannot serve as templates, since they either apply to light vehicles, to residents or to hardship cases. Charging measures for light vehicles are also not (yet) subject to the Eurovignette Directive. Also exemptions to low emission zones and restricted-traffic areas are not touched by the Eurovignette Directive, since these cover different policies.

4 Shaping Toll Plus with a view on regional transport

4.1 Building blocks

As stated in the iMONITRAF! Factsheet (2016) it will be necessary to consider the **different characteristics of short- and long-distance transport** to ensure acceptance for modal-shift policies along the corridor²³.

As regional transport is believed to have other characteristics than long-distance transport, exemptions for regional transport might be based on these different characteristics. This chapter analyses the possibilities for regulations on regional transport related to:

- **Vehicle**-based characteristics (Chapter 4.2)
- **Geographical and transport** characteristics (Chapter 4.3)
- **Goods**-based characteristics (Chapter 4.4)

The following chapters describe possible ideas to treat regional transport by defining Toll Plus in a way that **regional transport is least affected**, e.g. by definition of liable vehicles (3.5t, 12t, 18t, etc.), definition of liable network or definition of exempted transported goods. Overall, any regulation on regional transport should not create any negative incentives regarding environmental performance.

4.2 Analysis of vehicle-based characteristics

One option for defining exemptions to alleviate the burden on regional business is to define liability to the Toll Plus mark-up via vehicle characteristics. The basic idea behind is that for regional traffic smaller vehicles will predominantly be employed whereas for long distance operations larger vehicles are more suitable and efficient. For discriminating by vehicle size, two criteria for classification are conceivable:

- Classification by weight (liability to Toll Plus starts at a certain weight limit)
- Classification by vehicle size, which in practice is best defined by the vehicle's number of axles (liability to Toll Plus starts at a certain number of axles of the vehicle or vehicle combination)

These two options are analysed with available traffic data and their efficacy is discussed.

4.2.1 Data analysis

As a data source we had access to the Swiss 'Crossalpine Freight Transport 2014 (CAFT 2014)' of the Swiss Federal Office for Transport and the Federal Statistical Office. Input data stem from the Swiss Heavy Vehicles Fee LSVA in 2014 and have been aggregated into relevant classes.

The CAFT-Data are exchanged in two different files:

²³ For example, in the EFFINALP study (2012) some regional actors pointed out that the regional economies might suffer strongly, due to augmented proportional transport price increases for short trips than for long-distance transports.

- The COMMODITY FILE contains information on good flows by all modes. The variable good weight represents the quantity (in tonnes) within the total year 2014 of the specific flow.
- The VEHICLE FILE contains information related to vehicles on road. Each record is based on a single interview. The variable expansion factor expands the record to yearly totals.

The COMMODITY FILE can be used to answer questions regarding the transported goods, while the VEHICLE FILE allows a differentiation according to vehicle type. Weight information on the vehicle net weight is available, but this alone does not constitute a useful measure for the intended classification. Regarding vehicle types, the data contain the axles configuration as an attribute. We have used the axles configuration to determine the weight of the empty vehicle and arrived at the (probable) maximum laden weight by also considering the net vehicle weight.

Based on the available attributes we were able to filter and aggregate according to transport direction, traffic relation and weight class. Being the most important Alpine crossing in Switzerland, we have analysed the data for the Gotthard axes.

Regarding the transport direction we have classified the data into transit, import/export and inland traffic. For inland traffic we have additionally created a sub-class for regional transport relations.

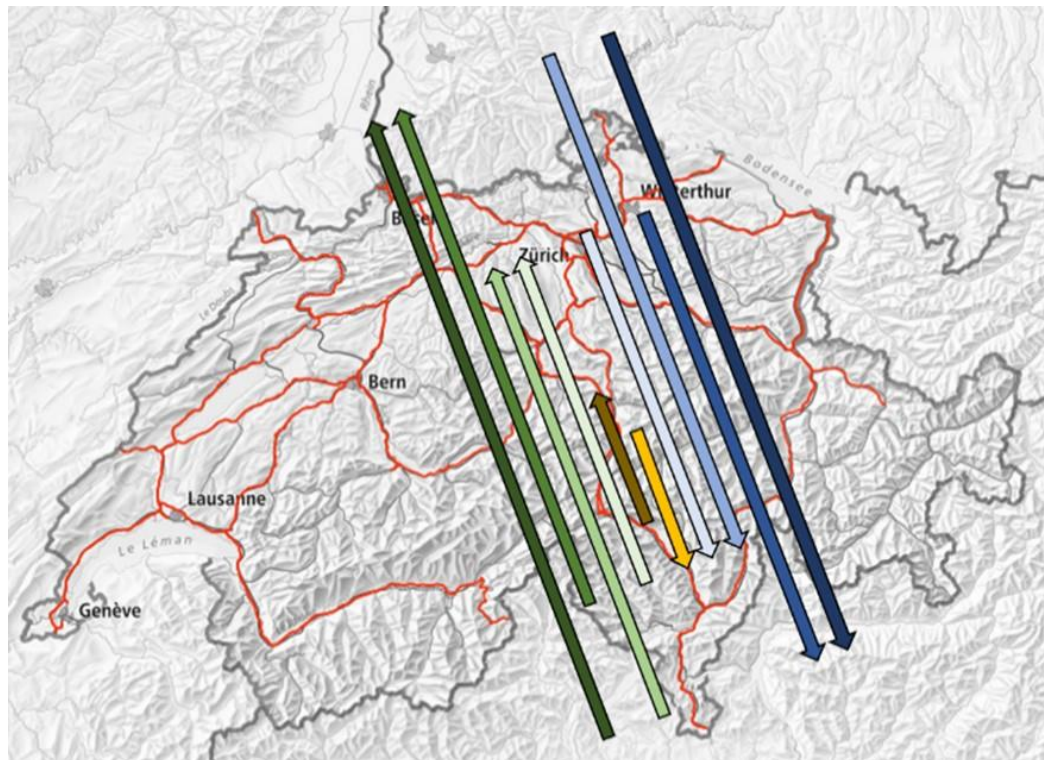


Figure 8: Classification of HGV traffic over the Gotthard according to transport direction and traffic relation
Legend: see Table 1

We have first used a weight limit of 12t as the classification criterion for liability to Toll Plus, with the motivation for this choice being that 12t is a typical classification border between small/big and might hence be a suitable discerning criterion for regionally motivated transport that presumably employs lower weights.

Tabulating weight limit, driving direction, and transport relation shall enable an assessment whether a 12t limit for Toll Plus might be a suitable discerning criterion between regional and other transport.

Table 1: Evaluation of HGV traffic according to transport direction, traffic relation and weight class with 12t limit

	HGV < 12 t	%HGV < 12 t	HGV 12-40 t	%HGV 12-40 t
N-S Transit	3 230	2%	172 459	98%
N-S Export	2 407	3%	72 811	97%
N-S Import	844	8%	10 129	92%
N-S Internal	11 800	17%	56 459	83%
N-S Regional	3 979	14%	24 359	86%
S-N Regional	3 257	13%	21 309	87%
S-N Internal	7 334	12%	54 984	88%
S-N Import	2 287	3%	81 645	97%
S-N Export	473	4%	10 277	96%
S-N Transit	3 448	2%	214 610	98%
Total	39 060	5%	719 041	95%

Table 1 shows that the proportion of vehicles below 12t that cross the Gotthard is rather low in total numbers, only 5% are in this class in total. Note especially that only 2% of the transiting vehicles are below 12t. For regional transport respectively for internal transport the proportion of these lighter vehicles is substantially higher, as was expected (between 12 and 17%). Yet for separation between regional transport and other (especially import/export/transit), the 12t limit is insufficient. The overwhelming proportion of regional traffic on the Gotthard axes is still in the 12-40t band. It has also to be noted that the 12t limit would not allow a differentiation between truly regional transport (i.e. within the region) and internal transport (i.e. within the country).

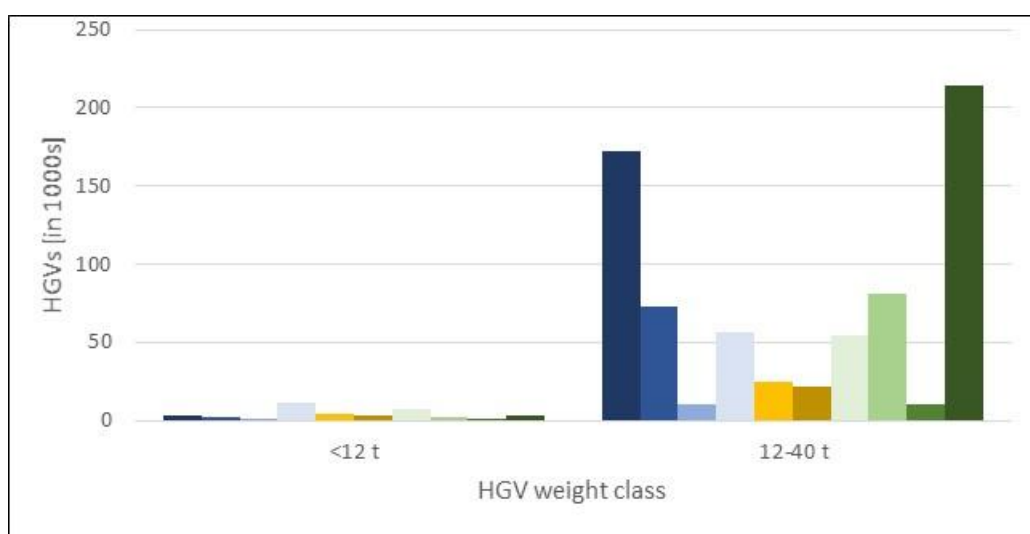


Figure 9: Graphic depiction of Table 1

As an alternative option we have investigated the suitability of using axles number as a classification criterion. Vehicles with 2-axles are predominately in the 12t class, but easier to handle for motorway tolling systems (AT, IT, FR, SLO).

The same assessment as above gives the following results:

Table 2: Evaluation of HGV traffic according to transport direction, traffic relation and axles class with 2-axles limit

	HGV 2 axles	%HGV 2 axles	HGV >2 axles	%HGV >2 axles
N-S Transit	2 230	1%	165 527	99%
N-S Export	1 004	2%	49 858	98%
N-S Import	583	6%	9 219	94%
N-S Internal	10 889	20%	44 532	80%
N-S Regional	3 266	15%	17 861	85%
S-N Regional	1 903	11%	14 672	89%
S-N Internal	5 458	11%	44 492	89%
S-N Import	2 287	3%	79 189	97%
S-N Export	384	4%	9 047	96%
S-N Transit	2 706	1%	207 400	99%
Total	30 711	5%	641 796	95%

The picture for a 2-axles limit is quite similar to the 12t limit, which is not surprising, since the two classes are almost congruent. Firstly it is a confirmation that a 2-axles limit in the countries AT, IT, FR, SLO with their axles-based motorway tolling would correspond well with a 12t-limit in the weight-based HGV fee scheme of the Swiss LSVA.

The 2-axles classification limit shows a better but still not satisfying discrimination between inland transport and especially transit traffic. Note that only 1% of the transit traffic is with 2-axles vehicles, whereas 20% of the internal traffic is in this category.

We have also investigated a 3-axles limit with the Gotthard data base, meaning that the Toll Plus mark-up would only apply for vehicles and vehicle combinations with 4 and more axles:

Table 3: Evaluation of HGV traffic with 3-axles limit

	HGV 2+3 axles	%HGV 2+3 axles	HGV >3 axles	%HGV >3 axles
N-S Transit	2 977	2%	164 780	98%
N-S Export	1 406	3%	49 456	97%
N-S Import	1 081	11%	8 721	89%
N-S Internal	12 979	23%	42 442	77%
N-S Regional	3 846	18%	17 281	82%
S-N Regional	2 603	16%	13 971	84%
S-N Internal	7 986	16%	41 965	84%
S-N Import	4 833	6%	76 643	94%
S-N Export	889	9%	8 542	91%
S-N Transit	5 088	2%	205 018	98%
Total	43 689	6%	628 818	94%

For a 3-axles limit the effect become slightly more pronounced. There is still nearly no transit traffic with 2 to 3 axles vehicles. On the other hand, 16-23% of the 2 to 3 axles vehicles on the Gotthard are doing regional or internal traffic.

As a comparison another exemplifying Alpine transit route was investigated. We have used aggregated tolling data of the Brenner route at the main tolling station "Schönberg". We could only evaluate per number of axles and direction, but not differentiate for transport relation.

- HGVs with 2 axles, direction Innsbruck (S-N) 81 863 7.7%
- HGVs with >2 axles, direction Innsbruck (S-N) 982 367 92.3%
- HGVs with 2 axles, direction Brenner (N-S) 89 438 8.4%
- HGVs with >2 axles, direction Brenner (N-S) 977 929 91.6%

The respective figures for the Gotthard route are (aggregation from Table 2):

- HGVs with 2 axles, direction S-N 12 738 3.5%
- HGVs >2 axles, direction S-N 354 800 96.5%
- HGVs with 2 axles, direction N-S 17 972 5.9%
- HGVs with >2 axles, direction N-S 286 997 94.1%

The two Alpine crossings obviously show a similar distribution in relation to the 2-axles limit. This does not guarantee, though, that this similarity would remain for the transport relationships (internal, regional, import, export, transit). Nevertheless it is quite safe to assume that also on the Brenner the proportion of 2-axles vehicles will be significantly higher for regional and internal transport.

4.2.2 Interpretation

Our analysis has shown that a classification according to a 12t class limit is nearly equivalent to a classification with a 2-axles limit, and hence similar rules regarding the applicability of the Toll Plus mark-up could be established both in countries with axles-based tolling (AT, IT, FR, SLO) and in countries with weight-based tariff schemes (CH). (This would also be mostly correct for the equivalence of a 3-axles limit and an 18t limit.)

The analysis has also shown that there exists a connection between regional respective inland traffic and vehicle size (in terms of number of axles or weight) and that this achieves a certain level of discrimination. Yet this criterion alone is not sufficient to achieve a fully satisfying separation between regional traffic and other. Further it was shown that a separation of inland traffic and regional traffic cannot be achieved with a size-discrimination criterion. Hence a size-based exemption for Toll Plus, i.e. introducing Toll Plus only for vehicles exceeding 12t or equivalently with more than 2 axles, **would not only exempt regional traffic to an extent but also inland traffic to a similar amount.**

Thanks to the comparatively low proportion of smaller HGVs on the Alpine corridors, introduction of a Toll Plus mark-up only for larger vehicles would not mean an overly significant loss of revenue.

4.3 Analysis of geographical and transport characteristics

Another idea for special provisions for regional transport considers the **distance driven by regional transport**. For example, the 2011 White Paper "Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system" (COM(2011) 144 final) uses a **criterion of 300 km** to distinguish between long-distance road haulage operations (>300 km) and short- and medium-distance transport operations (up to 300 km). One of the goals in the White Paper is to shift 30% of road freight over 300 km to other modes such as rail or waterborne transport by 2030.

In the **ALBATRAS study** (2011) local and short-distance traffic are defined by their Alpine crossing distance: for local traffic the maximum travelling distance is 40 km on both sides of an Alpine crossing; for **short-distance traffic** this is **150 km** including the tunnel length or the length of the mountain route (see Figure 10).

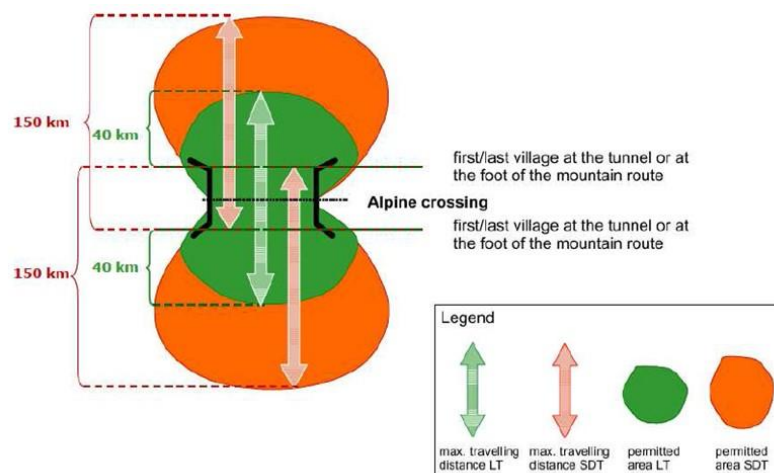


Figure 10: Maximum travelling distance for local traffic (LT) and short-distance traffic (SDT) (ALBATRAS, 2011)

This **criterion of 150 km** was taken over in the study on regional effects of **Alpine Crossing Exchange** as basis for a possible exception of local and short-distance traffic ²⁴. Figure 11 shows the **spatial boundaries** to distinguish between local and short-distance traffic on the main mountain routes in Switzerland.

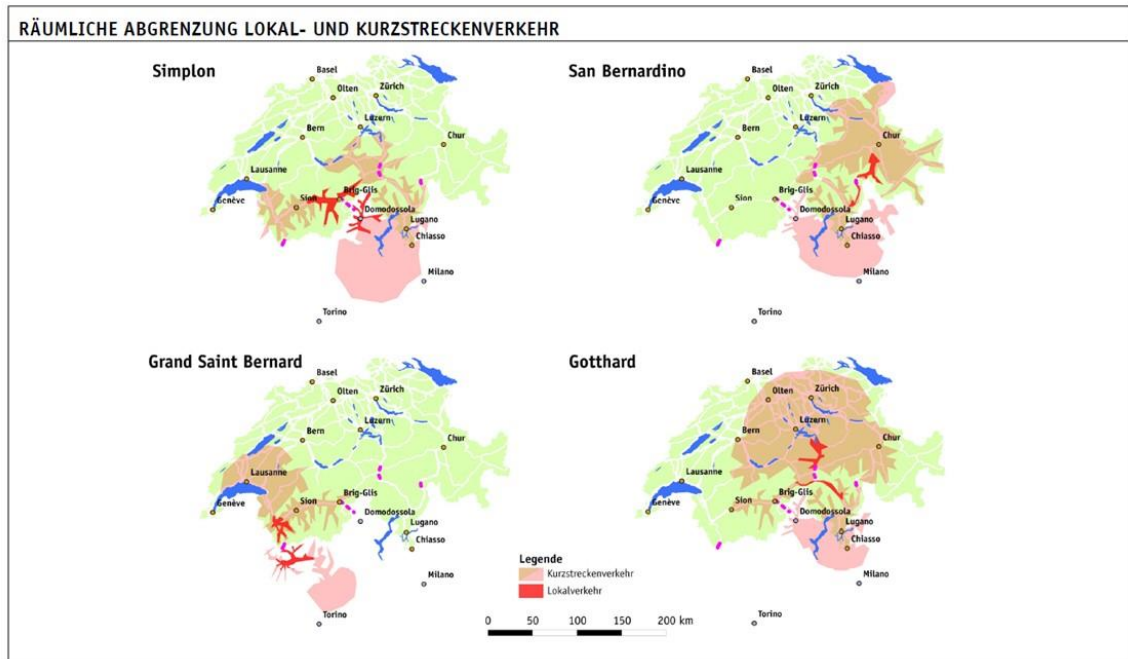


Figure 11: Spatial boundaries between local and short-distance traffic in Switzerland

Instead of defining a certain perimeter, the sectoral driving ban and the vehicle prohibitions for polluting HGVs in the **Tyrol on the A12 motorway** include exceptions for origin and destination transport based on a predefined **core zone and expanded zone**.

However, regardless of defining a certain perimeter or certain core zones, one of the main problems of defining a regulation on regional traffic based on distance is that the **implementation has major drawbacks**. First of all, it is deemed very difficult to define areas (e.g. based on a certain perimeter) in the whole Alpine region within which regional transport is being exempted from paying the Toll Plus. Next, it is deemed impossible to properly check compliance of regional transport. For example, how would one know which vehicles are supposed to be "regional traffic" and that these "regional" vehicles only drive within this area and do not cross any area borders to drive much longer distances? This would foresee a technically very sophisticated solution, which does not seem to be in balance with the overall Toll Plus System.

²⁴ https://www.bav.admin.ch/.../regionale_auswirkungenderalpentransitboerse.pdf

Special provisions for regional transport might also be based on the idea that exceptions are granted for traffic that has **no viable rail alternative**. Here especially **local supply** might benefit from an exemption rule. Local supply is practically forced to follow fixed routes given by the delivery points and has no viable alternatives. Supply of local communities that cannot be served economically without using roads subject to Toll Plus could be exempt from the mark-up in order not to put local customers at a price disadvantage for their daily goods. Rules for such exemptions are not easy to define and will require criteria that are both based on the routes taken and on the type of goods transported. Since such exemptions apply equally to all vehicles, independent of nationality, implementing them appears to be legally feasible given they are thoughtfully enacted.

Also the exceptions related to the **A12 motorway in the Tyrol** are provided in view of the fact that **no viable alternative** exists for these transport types. Specifically, moving these transport types to the railways is viable only if certain distances (in excess of **200 km**) are being covered. In general it can be stated that **regional transports rarely have a modal shift potential**.

However, the **policy acceptance and implementation aspects** of exceptions on only one part of a motorway in only one country within the framework of European air pollution policy (A12, Tyrol, AT) cannot be compared to possible exceptions in the whole Alpine region within the framework of a toll mark-up (Toll Plus, several countries). This constitutes in our view a **major barrier** to fruitfully follow up on this approach.

4.4 Analysis of goods-based characteristics

As a last resort, one could think of the **definition of exempted transported goods** in order to provide relief to regional transports. Known examples from current systems include e.g. timber transports, bulk milk transport and the transports of productive livestock in the Swiss LSVA-system. Although based on conceptual reasons, these exceptions have a certain regional effect.

In line with these exceptions, a regulation on regional transport within Toll Plus could include **typical "regional" products**, such as wood, milk, livestock, agricultural or dairy products with origin and destination within the Alpine region. Ideally more insight into the type of transported goods by regional transport should be gained in order to get a better understanding of whether this approach might bring relief to the sector. Overall, one must keep in mind that goods-based exceptions heavily rely on the **inspection of freight papers** (esp. when the type of load is not recognizable from the outside) which constitutes a severe administrative effort.

5 Implementation aspects

This section treats technical and administrative aspects of implementing exemptions to a mark-up on tolls according to the Toll Plus concept.

The core concept of Toll Plus is to increase Tolls in the sensitive Alpine region in accordance with European regulations. All concerned transit routes are already subject to Tolls, hence an increase in the tariff of the motorway tolls in the concerned Alpine region is very simple to implement, with the exception of Switzerland, where the Heavy Vehicles Fee LSVA is not a section-based motorway toll but rather a distance-dependent fee on all roads. Yet in the framework of the Toll Plus proposal, solutions have been designed that would also allow for the Swiss LSVA to charge a mark-up on the concerned routes. Such a provisions have been designed into the system from the very beginning, where an "Alpine Transit Tax" quite similar to the Toll Plus concept was discussed as an additional measure.

Hence, for the purpose of this investigation, the issue of how to levy the mark-up fee foreseen by Toll Plus is considered as solved. Here we are only concerned how to manage **exemptions** to this mark-up, with the intention not to create economic burdens to businesses in the concerned Alpine region. Local business will perform almost all of their commercial activities within the region subject to the Toll Plus mark-up, whereas for business outside the region and e.g. engaged in transit traffic, the Toll Plus mark-up will only impact a comparatively small part of their overall commercial activities.

5.1 Implementation aspects for vehicle-based exemptions

Exemptions based on **static characteristics** of the vehicle, such as emission values or type of fuel, are rather easy to implement, provided the data are readily available in the vehicle licence documents and also available in electronic form as a standard data set of standardised tolling on-board units (i.e. according to European standards, especially with regards to the EETS, the interoperable European Electronic Tolling Service).

Also exemptions that are based on **dynamic vehicle characteristics**, i.e. characteristics that change with the presence of a trailer, such as vehicle dimensions, maximum laden weight or number of axles, can be implemented rather easily, given that the data are available, which in practice means that they are part of the common standard data set used for (electronic) tolling.

Dynamic vehicle **characteristics that change due to the presence of load**, especially the actual, current weight of the vehicle, cannot be managed with reasonable effort. All tolling systems rely on characteristics that only change with the presence of a trailer, increasing the number of axles and the maximum laden weight, but do not charge according to actual weight. Actual weight is not available in any documentation or data set and could only be determined by weighing the vehicle.

As stated before, for the definition of exemption rules that would lessen the burden on regional business, **vehicle size is one discerning factor**. Regional business typically does short distance pick-up and delivery-type of operations with smaller vehicles, and not bulk long-distance operations with 40t vehicle combinations.

Vehicle size can be measured in a number of ways, e.g. vehicle length, vehicle maximum laden weight or number of axles. In Chapter 4.2 a discrimination based on a 12t weight limit was discussed and shown to provide a certain relief for regional businesses. Whether a vehicle is above or below 12t is also information that is available in all vehicle documents and is also part of the common data set for interoperable tolling according to the European standards for the EETS. Hence at first glance a scheme appears to be rather easy to implement, where the Toll-Plus mark-up would only apply to vehicles with 12t and above, thus giving relief to local traffic.

Unfortunately, **not all tolling equipment** is designed for interoperable cross-European travel, especially not the equipment that is used by regional businesses. The local on-board units used e.g. in Austria or in Italy employ the number of axles as a measure of vehicle size, and not maximum laden weight. Staff in the tolling booth can easily see the number of axles of a heavy vehicle. In contrast, asking for the maximum laden weight would often require consulting the vehicle licencing documents, which is very time consuming and hence not feasible in practice.

Based on these considerations, a size limit for the applicability of the Toll Plus mark-up is very **easy to implement, in case it is defined by the number of vehicle axles**. The tolling systems in Austria, Italy, France and Slovenia would only require a change of tariffs for vehicles with more than, say, 3 axles. All these tolling systems have tariff categories based on axle-count, hence the implementation effort and also the enforcement effort is minimal.

Switzerland is an exception to this. The Swiss Heavy Vehicles Fee LSVA is dependent on a vehicle's maximum laden weight, and not on number of axles. Consequently, "number of axles" is not a data element known in the LSVA system. Hence, for Switzerland, the Toll Plus mark-up would need to be employed for vehicles above a certain limit on maximum laden weight, roughly equivalent to the axles-count of the other systems (say 12t or 18t, respectively).

A Toll Plus mark-up would be agreed by the concerned Alpine countries, but would need to be implemented individually by each national law. Hence, there appears to be no basic issue that the Toll Plus mark-up would be charged for all vehicles above 2 or 3 axles in general and for vehicles above e.g. 12t, 18t or 24t in Switzerland.

Costs for implementing this "exemption rule based on size" (all vehicles below a certain size are exempt) would be negligible in all countries, since the mark-up for vehicles exceeding a certain size – be it measured in number of axles or in weight limit – can be realised within the existing tariff schemes by a simple tariff increase for certain tariff categories²⁵.

²⁵ Note that this does not apply to introducing the Toll Plus scheme itself. Whereas it is an almost zero-cost in motorway tolling schemes, special provisions and technical installations are required in the Swiss LSVA system.

5.2 Implementation aspects for geographical and transport exemptions

Regarding technical implementation aspects, all exemptions that are in fact based on the specific route driven, suffer from large difficulties, e.g.

- **Origin-destination rules:** E.g. an exemption defined by a transport origin north of a certain line and ending south of a certain line (which might be seen as a practical implementation of a definition whether or not a rail alternative is meaningful), or a definition like for the exemptions to the sector vehicle prohibition in the Tyrol, where origin and/or destination lie in a defined geographical zone
- **Distance-based rules:** E.g. exemptions as proposed for total driving distances less than 40km/150km/300km, see the discussions in Chapter 4.3.

For the **origin-destination** type of rules the main problem lies in the fact that the definitions of "origin" and "destination" are not related to the tolling systems that exist on the transit corridors. For the tolling systems in Austria or northern Italy, e.g., it is not possible to find out in an automated way where a vehicle is coming from or going to, unless the entry and exit is on the same system.

The same applies to **distance-based** schemes: The tolling systems are only capable of assessing distance within the systems. A long distance delivery transport into a region on a motorway cannot be distinguished from a short local trip, just starting outside and ending within.

With a certain effort, mostly in international coordination and data exchange, one could at least distinguish between Alpine transit and other transport (import/export/internal/regional). A vehicle that is seen on the motorway in Tyrol at some suitable point and later on an Italian motorway would certainly be transiting the Alps. Yet such a rule **would only capture true transit** and not allow application of the Toll Plus regime for import and export operations.

Regarding their ability to shift to rail, such a definition might be quite suitable. For a technical implementation there are quite a number of difficulties to master, though. Let us assume first that the vehicle is equipped with a tolling on-board unit that works in all concerned tolling systems. In this case, the implementation would technically be quite simple: just compare the vehicles detected at some point on the motorway the northern Alps (say on the Inntal route) to the ones detected in the south (say near Bolzano), filter out the vehicles on transit and apply the Toll Plus mark-up.

This idea suffers from several problems: for one, not all HGVs are equipped with on-board units. They are e.g. mandatory on Austrian motorways but not in Italy, where a manual option is offered and frequently used. Hence there would be issues with automatically detecting vehicle passage for vehicles paying manually. Secondly there is a severe data protection issue: data on vehicle routes would need to be exchanged internationally. Vehicle routes are considered personal data by European law and it is not conceivable that **data protection laws** would allow for such a vehicle tracking system.

In conclusion, **even under ideal circumstances**, i.e. when the definition of “regional” would be aligned with the electronic motorway tolling systems and when vehicles would be equipped with electronic on-board units, **an automatic handling of geographically or distance-based exemption rules is not conceivable**.

The only remaining alternative to a technical implementation would be an **administrative procedure**. Yet considering the numbers of vehicles involved, this appears not to be a cost effective approach. Note that the numbers are orders of magnitude higher than for handling the exemptions to the sector vehicle prohibition in the Tyrol. A self-declaration mechanism is conceivable in principle, but enforcing this would consume tremendous man power, since checking the self-declaration involves checking the vehicle’s freight papers, which is a time consuming process.

5.3 Implementation aspects for goods-based exemptions

Goods-based exemptions are awkward to handle in principle, since the loaded goods cannot be detected in an automated way. Not all is lost, though, if the exemptions are narrow. For the Swiss Heavy Vehicles Fee, e.g. exemptions for certain transports of milk and wood are handled via an administrative remuneration process. Since the involved case numbers are small, the process remains manageable, albeit costly.

6 Assessment and proposed way forward

We summarise the findings of the previous Chapters in the following tabular overview, as before structured according to the type of exemption.

Vehicle-based exemptions

Example:

Exemption of smaller heavy goods vehicles to Toll Plus (less than 4 axles)

Legal aspects:

Can likely be justified in the framework of the Eurovignette Directive.

Implementation:

Easy to implement in the existing tolling systems of the Alpine region. In practice the Toll Plus mark-up would only be added to the tariffs of the higher vehicle categories. A change of tariff for a vehicle category is a standard process in all tolling systems.

Assessment: **According to our analysis of Alpine crossing traffic volumes this will alleviate the situation for local businesses to a good degree, but will not apply to all local transport** (e.g. regional HGVs with 4 and more axles on the concerned Alps-crossing motorways will not be exempt).

Geographical or route-based exemptions

Example:

Origin/destination-based exemptions to the sector vehicle prohibition in Tyrol on the A12

Legal aspects:

The restrictions from European regulations, further reinforced in the proposed revision of the Eurovignette Directive²⁶, are very stringent. This is best seen in its Article 7(4): *"Tolls and user charges shall not discriminate, directly or indirectly, on the grounds of the nationality of the road user, the Member State or the third country of establishment of the transport operator or of registration of the vehicle, or the origin or destination of the transport operation."*

This applies specifically to tolls and precludes any route-based, regional, sectoral or similar exemption rule for local business. Note that the exemptions to the sector vehicle prohibition in Tyrol on the A12 are in a different policy domain (air pollution) which is not touched by the Eurovignette Directive (but by other more general European equal treatment and free trade regulations).

Implementation:

Route-based exemptions cannot be handled automatically by the existing tolling systems in the Alpine region, hence the implementation would require costly administrative procedures. Since Alpine traffic is cross-border by nature, the required international data exchange would also raise severe data protection issues.

Assessment: **Not realistically feasible.**

²⁶ COM(2017) 275 final, European Commission, Brussels, 31.5.2017

Goods-based exemptions

Example:

Exemptions to the Swiss Heavy Vehicles Fee LSVA for transports of milk and raw wood and for combined transport

Legal aspects:

Since such rules apply to all vehicles on common grounds, they are most likely uncritical, if well justified and well enacted, even if they are predominately effective for local transport.

Implementation:

In general, goods-based exemptions require administrative effort, but this can be rather small when exemptions are granted for goods that require special vehicles for transport, e.g. vehicles for transport of milk or raw wood (actually they then become vehicle-based exemptions, which are easy to handle, see below).

Assessment: Useful as a building block or additional measure, but not a general solution.

Obviously there is no perfect single solution. European regulations put severe restrictions on the type of exemptions that can be granted, especially for any rule that is based on a definition of an exempt region or an origin-destination relation. Considering also the very difficult and costly implementation of such geographical or route-based rules for exemptions to the Toll Plus mark-up, we propose to follow a more modest and practical route.

As a first measure we recommend implementing the Toll Plus mark-up only for vehicles **with 4 or more axles** (or exceeding 18t for Switzerland). This already gives a certain relief to regional business, especially to the small transport undertakings and local crafts men that do not employ the large vehicle combinations. Transports with 4 and more axles can absorb the mark-up much easier and it is also more difficult to argue why such large vehicles should benefit from an exemption.

This base-measure could then be **supported by more targeted exemption rules** based on the goods transported. For local produce like milk and wood, which do indeed employ vehicles with more than 4 axles, load-based exemptions are perfectly feasible and do not require excessive administrative effort. Note that a vehicle for milk transport or for transport of uncut wood cannot be employed for other goods. Such exemptions can be handled quite well with a self-declaration regime if the applicant gives sufficient evidence. Access to freight papers is only required in special cases or for an in-depth check. Also with regard to European regulations, such exemptions can be justified for lack of any transport alternatives.

Similar exemptions might be installed for **local supply**. Again, no viable alternative exists and a shift to rail is not conceivable. Again, an administrative process based on self-declaration is possible, yet not on a transport-for-transport basis but for vehicles that are declared to operate in local supply only. It is not expected that many vehicles are concerned, since they rarely have 4 or more axles. Note that such a "local-supply" declaration could be made visible on the vehicle with appropriate signage, much like for the exemption for the sector vehicle prohibition in the Tyrol. The difficult part here is expected to mostly lie in the definition of "local supply".

7 Conclusions and recommendations

Both on political and technical level, a Toll Plus System has been identified as important measure to further harmonise pricing systems along and between the corridors and for bringing the common voice of the Alpine region to the attention of national and European decision makers.

However, it seems difficult to call for an ambitious implementation of Toll Plus without providing a specific solution on how to deal with regional transport and with regional impacts that could come along with its implementation. The scope of this study has been to contribute to a next step of the Toll Plus design, addressing **options for special regulations for regional transport**.

Unfortunately, **European legislation is very strict** regarding possible discrimination, especially for heavy vehicles (free markets, no barriers to trade, etc.). No exemptions appear to be possible based, e.g., on location of the transport company or on the origin–destination relation of the trip. As discussed in the report, also from an implementation point of view, any exemption to the Toll Plus mark-up that is based on certain characteristics of the transport route (trip length, trip geographical coverage) is exceedingly difficult to implement in the existing tolling systems.

For the purpose of this small study it has not been possible to collect and evaluate representative and significant **data on transport that is related to regional aspects** of transport in the concerned regions. Hence, we had to restrict ourselves to an **exemplifying analysis of the Gotthard corridor**, where reasonably useful data exist thanks to the Swiss Heavy Vehicles Fee system. Nevertheless, based on this small sample a possible approach can be sketched.

We recommend a **simple but reasonably effective base measure** to alleviate the burden of a Toll Plus system especially for small regional businesses. The proposal is to ask for the **Toll Plus mark-up only for vehicles with 4 or more axles**. As has been shown, there are nearly no Alps transiting vehicles with less than 4 axles, hence Alpine transit traffic would be captured and be fully subject to Toll Plus. The discrimination works perfectly in this direction. On the investigated Gotthard corridor, between about 20 and 25% of regional and internal traffic would be exempt, namely the small 2 and 3 axles vehicles. It can be expected that these vehicles represent the businesses that would suffer most from a Toll Plus mark-up, whereas it might be harder to justify exemptions for the larger 4 and more axles vehicle combinations.

Implementation effort is minimal for this proposal. Only the tariff schemes of the tolling systems in the concerned countries would need to be adapted (with special provisions required for Switzerland), which is a standard procedure.

This base measure could be **supported by more targeted exemptions for local produce** that by necessity relies on large vehicles, e.g. for the transport of milk and wood. Further exemptions for local supply can be added if required, but it is questionable whether such transports employ the larger vehicles with 4+ axles.

We recommend **pursuing this basic concept further**. Especially **data-based evidence** is required to be able to judge the efficacy of the proposal. Based on the data available for this small study it has e.g. not been possible to understand the nature of the obviously regional transports on the Alpine corridors that employ vehicles with more than 4 axles. In order to judge economic impact and under which conditions it would be justified to make exemptions also in this "big vehicle" class, such data would be required.

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Basle, 4th December 2017 / 2067.234 / Oe

Annex – Examples for regulations on regional transport

This annex presents the main findings from a literature study into existing regulations and relevant studies that might be **inspiring for the Toll Plus design**. The following (non-exhaustive) **examples** are related to:

- a) National HGV tolling systems
- b) Driving bans for HGV
- c) Tunnels regulations for HGV
- d) Urban Mobility Pricing
- e) Special toll for light vehicles (Sondermaut) in Austria
- f) Limited traffic zones (Zona a Traffico Limitato, ZTL) in Italy
- g) Low emission zones/environmental zones (Umweltzonen) in Germany
- h) Other steering elements

a) National HGV tolling systems

Scheme	Purpose/validity	Special regulations/exemptions
CH: Heavy Vehicle Charge (LSVA) ²⁷	<p>The performance-related heavy vehicle charge is a federal tax levied on the basis of total weight, emission level and the kilometers driven in Switzerland and the principality of Liechtenstein.</p> <p>It must be paid for all the vehicles and trailers which:</p> <ul style="list-style-type: none"> • have a total weight of more than 3.5 tonnes, • are used for the carriage of goods and • are licensed in Switzerland and abroad and drive on Switzerland's public roads network. 	<p>Special regulations apply for the following vehicles and transports:</p> <ul style="list-style-type: none"> • Unaccompanied combined traffic • Timber transports • Bulk milk transport • Transports of productive livestock <p>Following vehicles licensed in Switzerland and abroad are exempt from the tax:</p> <ul style="list-style-type: none"> • Military vehicles with military number plates or civil number plates and the M+ sticker • Vehicles of the police, fire brigade, oil and chemical emergency unit, civil protection and ambulances • Vehicles used for the concessionary transport of persons • Agricultural vehicles (green number plates) • Swiss short-term number plates • Vehicles which are not currently licensed and have dealers' number plates (except for vehicles bound for exportation) • Driving school vehicles for as long as they are used for schooling purposes and are licensed for an approved driving school • Veteran and vintage cars which are identified as such in the vehicle license • Vehicles with electrical traction • Trailers for persons and goods used by the carney industry and circuses • Crawler-type vehicle • Transport axles • On previous application to the Directorate General of Customs: Vehicles used for humanitarian, non-profit or non-commercial purposes <p>Vehicles licensed in CH with low mileage and infrequent border crossings can, upon request, be exempted from the obligation to be fitted with an on-board unit²⁸. In this case, the monthly mileage is declared using a logbook.</p>

²⁷ <https://www.ezv.admin.ch/ezv/en/home/information-companies/transport--travel-documents--road-taxes/heavy-vehicle-charges--performance-related-and-lump-sum-/hvc---general---rates.html>

²⁸ <https://www.ezv.admin.ch/ezv/en/home/information-companies/transport--travel-documents--road-taxes/heavy-vehicle-charges--performance-related-and-lump-sum-/performance-related-heavy-vehicle-charge---vehicles-licensed-in-.html>

Scheme	Purpose/validity	Special regulations/exemptions
DE: Truck Toll ^{29,30}	<p>The truck toll applies on German motorways, including service areas, and selected federal highways.</p> <p>Vehicles subject to toll are defined as all domestic and foreign motor vehicles or vehicle combinations with a gross vehicle weight of 7.5 tonnes or above, which</p> <ul style="list-style-type: none"> are intended for transportation of goods (1st alternative), or are being used for this purpose (2nd alternative). <p>The Fourth Act amending the Federal Trunk Road Act (BFStrMG) of 27 March 2017 entered into force on 31 March 2017. With this Act, on 1 July 2018 the tolled road network will be extended to include all ca. 40.000 km of federal highways.</p>	<p>In accordance with the German Federal Trunk Road Toll Act (BFStrMG), certain vehicles and vehicle combinations are exempt from the toll. Whether a vehicle is or is not subject to toll is directly determined by the law in all cases.</p> <p>a) Vehicles that do not fall under the legal definition of a vehicle subject to toll (according to § 1 (1) of the BFStrMG); these are vehicles that are³¹:</p> <ul style="list-style-type: none"> neither structurally intended for road haulage (e.g. self-propelled working machines) nor used for commercial road haulage or own-account transport operations for charged or business-related transportation of goods (in accordance with § 1 of the German Road Haulage Act (GüKG)). <p>b) Vehicles that identifiably fall under one of the toll exemptions given in § 1 (2) of the BFStrMG³²:</p> <ul style="list-style-type: none"> buses and coaches; vehicles belonging to the armed forces, the police authorities, civil defense and emergency response organizations, the fire brigade and other emergency services, plus Federal Government vehicles; vehicles used exclusively for routine road maintenance, including road cleaning and winter maintenance; vehicles used exclusively for the transport of circus and funfair equipment; vehicles used by non-profit-making or charitable organizations to transport humanitarian relief supplies to alleviate an emergency situation. <p>From 1 July 2018 also agricultural vehicles in commercial freight transport with a maximum design speed of 40 km/h will be exempted from toll³³.</p>
AT: GO-Maut ³⁴	<p>The distance-related toll for twin-track vehicles with a maximum gross vehicle weight of more than 3.5 tonnes serves the surcharges of the infrastructure costs as well as the costs for traffic-related air and noise pollution.</p> <p>From 1 January 2017, noise pollution is also taken into account along with air pollution (EURO emission classes). Hence, the toll rate is broken down as follows:</p> <ul style="list-style-type: none"> Basic kilometer rate for infrastructure Surcharge for traffic-related air pollution Surcharge for traffic-related noise pollution <p>Special night rates apply between 10 p.m. and 5 a.m.</p>	<p>Only the vehicles listed below are permanently exempt from the mandatory toll:</p> <ul style="list-style-type: none"> Vehicles with visible blue headlights or warning lights in accordance with section 20 subsection 1 Z4 and 5 of the Motor Traffic Act 1967 (...) Army vehicles (section 2(1)(38) Motor Traffic Act 1967) Vehicles that are used within the scope of the agreement among the states party to the North Atlantic Treaty and the other states participating in the Partnership for Peace (...) Vehicles that are used for the implementation of measures for securing peace (...) Vehicles belonging to the public security forces, tax authorities, prison services, and foreign security forces (...) Vehicles belonging to foreign public emergency services, foreign fire brigades, or foreign rescue services (...) <p>In addition to the above provision, ASFINAG may in accordance with section 5(2) BStMG and depending on the circumstances, exempt vehicles with a maximum gross vehicle weight of more than 3.5 t that are delivering humanitarian aid in the event of emergencies or disasters from the mandatory toll.</p>

²⁹ <https://www.bmvi.de/SharedDocs/DE/Artikel/G/lkw-maut-weitere-informationen.html>

³⁰ https://www.toll-collect.de/en/toll_collect/rund_um_die_maut/mautpflichtige_fahrzeuge/mautpflichtige_fahrzeuge.html

³¹ https://www.toll-collect.de/en/toll_collect/rund_um_die_maut/mautbefreiung/mautbefreiung.html

³² <https://www.bmvi.de/SharedDocs/EN/Articles/G/hgv-further-information-on-the-hgv-tolling-scheme.html>

³³ <http://www.buzer.de/gesetz/12446/index.htm>

³⁴ The information in this table is based on the Tolling Regulations (version 47) valid from 1 January 2017 and does not take into account possible differences following from the planned new tolling system, GO-Maut 2.0

b) Driving bans for HGV

In many countries general and local driving restrictions for HGV exist. The table below lists some examples in Austria, France and Italy.

Scheme	Purpose/validity	Special regulations/exemptions
AT: HGV driving bans ^{35,36}	<p>General night-time driving ban for HGVs over 7.5 tonnes maximum permissible weight on the entire Austrian road network from 10:00 p.m. to 5:00 a.m.</p> <p>Weekend and public holiday driving ban for vehicles without a trailer and articulated vehicles and self-propelled industrial machines over 7.5 tonnes maximum permissible weight and for vehicles with a trailer if the maximum permissible weight of either the HGV or the trailer is more than 3.5 tonnes on Saturdays from 3:00 p.m. to midnight, on Sundays and public holidays from midnight to 10:00 p.m.</p> <p>Several other, local driving bans. See also below for the main driving bans in the Tyrol.</p>	<p>Exceptions of the HGV driving bans can be found in § 42 StVO "Fahrverbot für Lastkraftfahrzeuge". For example, journeys made exclusively as part of a combined transport operation within a radius of 65 km of predefined transloading stations are exempted from the weekend and public holiday driving ban.</p> <p>Generally, derogations to driving restrictions will be authorized only for journeys which serve exclusively for the transport of milk, fresh meat and livestock, perishable foodstuffs (with the exception of deep frozen goods), newspapers and periodicals, essential repairs to refrigeration plant or the operation of road maintenance vehicles to enable traffic flow to be maintained. In all other cases an exceptional authorization shall be granted only if there is a substantial public interest in doing so. The applicant shall prove in both instances that the journey cannot be avoided by organizational measures or by choosing a different means of transport.</p>
FR: Special traffic bans ³⁷	<p>In France, general and complementary traffic bans relate to vehicles or combination vehicles with a gross vehicle weight exceeding 7.5 tonnes, assigned to the road transport of dangerous and non-dangerous goods, excluding specific vehicles and agricultural machinery and devices.</p> <p>The general traffic ban applies all year long, to the entire national road network:</p> <ul style="list-style-type: none"> • Saturday 22:00 until Sunday 22:00; • the day prior public holidays from 22:00 to 22:00 the next day. <p>The complementary traffic bans apply to part of the Rhône-Alpes network in winter and to the entire national road network in summer.</p> <p>Both French and Italian regulations prohibit traffic crossing the alps in summer from Saturday 7:00 to Sunday 24:00.</p>	<p>Permanent exemptions, not requiring special authorization, are granted under certain conditions, for the transportation of³⁸:</p> <ul style="list-style-type: none"> • livestock, perishable products or foodstuffs • beet pulps, during the beet campaign period • agricultural produce, during the harvest period • press titles • industrial gamma radiography equipment • trucked air freight • fireworks • gaseous hydrocarbons in a liquefied mixture or petroleum products destined for the holding of properly authorized sports competitions • medical gases, hospital waste, linen and goods necessary for the functioning of public or private healthcare establishments • transportation linked to the assembly and dismantling of installations used for economic, sporting, cultural, educational or political events organized in accordance with the laws and regulations in force • transportation linked to office or factory removals in urban areas • transportation linked to itinerant trading, selling products at fairs or markets <p>Exceptional exemptions apply to essential and urgent transportation for the purposes of:</p> <ul style="list-style-type: none"> • dealing with the consequences, including economic consequences, of a crisis, such as a natural disaster, or exceptional natural or climate-related events or phenomena, such as drought, flooding, snowfalls • preventing a risk linked to a serious accident or disaster likely to pose a risk to life or to the integrity of persons, property or the environment

³⁵ <http://www.aisoe.at/gueterverkehr/fahrverbote/>

³⁶ <https://www.iru.org/apps/infocentre-item-action?id=2712&lang=en>

³⁷ Heavy Goods Vehicles 2017, Schedule of special traffic bans: http://www.bison-fute.gouv.fr/IMG/pdf/EN_depliant_calendrier-interdiction_2017.pdf

³⁸ Heavy Goods Vehicles 2017, Traffic restrictions: http://www.bison-fute.gouv.fr/IMG/pdf/Brochure_GB_vehicules_lourds_2017-2.pdf

Scheme	Purpose/validity	Special regulations/exemptions
		<p>Individual exemptions are granted for:</p> <ul style="list-style-type: none"> • transportation deemed essential and urgent, in response to an unforeseen event such as the breakdown of an electricity supply network, a hospital heating system or a fractured water pipe; • supplying a distribution centre threatened with shortages • waste transport for the removal of waste from tips and slaughterhouses • transport of dangerous goods intended for loading or from emergency unloading in maritime ports • procurement of fuel to motorway service stations and of aircraft fuel to airports by tankers, harbours for fishing ships at regular passings • vehicles transporting goods necessary for the continuous operation of certain services or production units. When they concern dangerous goods, those exemptions can only be granted after the opinion of the interdepartmental commission for dangerous goods transportation • vehicles destined to help perform public services or emergency services in response to immediate collective needs • vehicles supplying clean linen and evacuating dirty linen to/from hotel complexes with a cumulative capacity of 200 bedrooms and over • vehicles used to deliver cattle breedings with feeding stuffs
IT: Driving restrictions ³⁹	<p>The circulation of heavy goods vehicles exceeding 7.5 tonnes is prohibited on:</p> <ul style="list-style-type: none"> • Sundays in January, February, March, April, May, October, November and December from 09h00 to 22h00 • Sundays in June, July, August and September from 07h00 to 22h00 • Public holidays and days of heavy traffic <p>The circulation of vehicles transporting dangerous goods of Class 1, regardless of the weight of the vehicle, are prohibited on the dates indicated above and in weekends between 27 May and 10 September from Saturday 08h00 to Sunday 24h00. Exceptions may be granted on motives of absolute necessity or emergency, for work of national importance which renders round-the-clock work indispensable even on public holidays.</p>	<p>Exceptions:</p> <ul style="list-style-type: none"> • public service vehicles used in cases of emergency or vehicles transporting material needed for emergency use (fire brigade, civil protection etc.); • military, Italian Red Cross and police vehicles; • vehicles belonging to companies owning roads or having concessions thereon and having urgent reasons for such transport; • municipal utility vehicles bearing the words "Municipal Highways Department"; • vehicles of the Ministry of Post and Telecommunications; • radio/television vehicles used for urgent services; • vehicles transporting fuel for distribution and consumption; • vehicles transporting animals for authorized competitions which will take place within the next 48 hours or which took place within the previous 48 hours; • vehicles transporting foodstuffs for the supply of aircraft, or those transporting engines and spare parts for aircraft; • vehicles transporting foodstuffs for the supply of the merchant navy, and which are covered by the appropriate documentation; • vehicles transporting only newspapers and periodicals; • vehicles transporting only products for medical use; • vehicles transporting only milk (with the exception of long conservation milk); • agricultural vehicles used for goods transport, travelling on roads which are not part of the national road network; • tankers transporting water for domestic use; • vehicles used to clean septic tanks and drains; • vehicles transporting perishable foodstuffs under the ATP regime; • vehicles transporting perishable goods such as fresh fruit and vegetables, fresh meat and fish, cut

³⁹ <https://www.iru.org/apps/infocentre-item-action?id=1590&lang=en>

Scheme	Purpose/validity	Special regulations/exemptions
		<p>flowers, live animals destined for slaughter or arriving from abroad, as well as sub-products following the slaughter of animals, chickens for rearing, fresh dairy produce, fresh milk derivatives and semen;</p> <ul style="list-style-type: none"> vehicles returning to the company headquarters provided they are at a distance of no more than 50 km from the headquarters when the driving ban begins and that they do not travel on the motorway network. <p>The following vehicles are also excluded provided they have an authorization delivered by the Prefect:</p> <ul style="list-style-type: none"> vehicles transporting goods which, due to their nature or to climatic or seasonal factors, are susceptible to rapid deterioration and must be transported rapidly from the place of production to the place of storage or sale, and vehicles used to transport animal feedstuff; vehicles transporting goods in cases of absolute necessity or emergency in relation to round-the-clock work; agricultural vehicles used for goods transport, travelling on the national road network. <p>Prefects may also deliver a temporary authorization to vehicles supplying fairs, markets or cultural events.</p>

The Austrian Ambient Air Quality Act (Immissionsschutzgesetz-Luft, IG-L) pursues important objectives such as sustained protection against harmful and unacceptable air pollutants and preventive reductions in the emission of air pollutants^{40,41}. Investigations have indicated that a major contributor to these excessive values is motorway traffic. A number of traffic restrictions have therefore been enacted, particularly the “IG-L - Vehicle Prohibitions” (see table below).

Scheme	Purpose/validity	Special regulations/exemptions
Sector vehicle prohibition (Tyrol, A 12 Inntal motorway)	<p>With effect from 1 November 2016, the transport of certain goods by heavy-duty vehicles is prohibited on a section of the A 12 Inntal motorway (in both directions between road distance 6.35 (km) in the Langkampfen local authority region and road distance 72.00 (km) in the Ampass local authority region).</p> <p>The sector vehicle prohibition applies to:</p> <ul style="list-style-type: none"> Heavy goods vehicles and articulated vehicles with a maximum authorized mass in excess of 7.5 t. Heavy goods vehicles with trailers, where the total of the maximum authorized masses of both vehicles is in excess of 7.5 t. <p>The transport of the following types of goods is affected:</p> <ul style="list-style-type: none"> All waste currently included on the European Waste List (in accordance with the Commission Decision on a waste list, 2000/532/EC, as last 	<p>The regulation has provision for exceptions for:</p> <ul style="list-style-type: none"> Heavy-duty vehicles of emissions class Euro V (NOx emissions not exceeding 2,0 g/kWh). Heavy-duty vehicles of emissions class Euro VI (NOx emissions not exceeding 0,4 g/kWh). Destination and origin transport: the prohibition will not apply to journeys by vehicles which are loaded or unloaded in a defined core zone (origin and destination are located in the core zone) or to journeys by vehicles which are loaded and unloaded in an expanded zone (origin and destination in the expanded zone). These exceptions are provided in view of the fact that no viable alternative exists for these transport types. Specifically, moving these transport types to the railways is viable only if certain distances (in excess of 200 km) are being covered. See Figure 12 for a map of the core zone and the expanded zone. Certain journeys in pre- and post-carriage traffic. Urgent journeys by the Austrian Armed Forces or foreign troops currently stationed in Austria as well

⁴⁰ <https://www.tirol.gv.at/en/environment/vehicle-prohibitions-in-accordance-with-the-ig-l/>

⁴¹ <https://www.bmlfuw.gv.at/umwelt/luft-laerm-verkehr/luft/richtlinien/ig-l.html>

Scheme	Purpose/validity	Special regulations/exemptions
	<p>modified by Commission Decision 2014/955/EU)</p> <ul style="list-style-type: none"> • Stone/rock, soils and excavated material • Round timber/logs and cork • Vehicles in the upper and lower groups L1e, L2e, L3e, L4e, L5e, L6e, L7e, M1, M2 and N1 within the sense of Section 3, para. 1 of the Austrian Motor Vehicles Act 1967 • Non-ferrous iron ores and iron ores • Steel, excluding reinforcing and construction steel for supply to construction sites • Marble and travertine • Tiles (ceramic) 	<p>as humanitarian/aid transport by recognized aid organizations.</p> <p>In all cases, an application may be made to the regional administrative authorities to be exempted from this vehicle prohibition on a case by case basis. In addition, the IG-L also has provision for exceptions in Section 16, para 2.</p>
Overnight vehicle prohibition (Tyrol, A 12 Inntal motorway) (LGBl. No. 129/2015)	<p>Journeys by certain heavy-duty vehicles will be prohibited during night hours on a section of the A 12 Inntal motorway (in both directions on the section of the A 12 Inntal motorway between road distance 6.35 (km) in the Langkampfen local authority region and road distance 90.00 (km) in the Zirl local authority region).</p> <p>The prohibition applies to:</p> <ul style="list-style-type: none"> • Heavy goods vehicles, articulated vehicles and self-propelled machines with a maximum authorized mass in excess of 7.5 t. • Heavy goods vehicles with trailers and self-propelled machines with trailers, where the total of the maximum authorized masses of both vehicles is in excess of 7.5 t. <p>The vehicle prohibition will be in force during the following hours:</p> <ul style="list-style-type: none"> • 1 May to 31 October: 10 pm to 5 am, Sundays and public holidays 11 pm to 5 am. • 1 November to 30 April: 8 pm to 5 am, Sundays and public holidays 11 pm to 5 am. 	<p>The regulation has provision for exceptions for:</p> <ul style="list-style-type: none"> • Heavy-duty vehicles of Euro class VI (NOx emissions not exceeding 0.4 g/kWh) (limited to 31/12/2020). • Journeys primarily involving the transport of perishable foodstuffs with a shelf life of just a few days or exclusively for transport of periodical printed materials. • Journeys for the maintenance of urgent medical care. • Transports of live animals. • Certain transport in pre- and post-carriage traffic. • inter alia <p>An application may also be made to the regional administrative authorities to be exempted from this vehicle prohibition on a case by case basis. In addition, the statutory exceptions in accordance with Section 16, para 2 IG-L apply.</p>
Vehicle prohibitions for polluting heavy-duty vehicles (Tyrol, A 12 Inntal motorway) (LGBl. No. 43/2016)	<p>Journeys by certain polluting heavy-duty vehicles will be prohibited on a section of the A 12 Inntal motorway (in both directions on the section of the A 12 Inntal motorway between road distance 6.35 (km) in the Langkampfen local authority region and road distance 90.00 (km) in the Zirl local authority region).</p> <p>The prohibition applies to:</p> <ul style="list-style-type: none"> • Heavy goods vehicles without trailers, self-propelled machines without trailers and articulated vehicles, in each case with a maximum authorized mass in excess of 7.5 t (solo heavy-duty vehicles): <ul style="list-style-type: none"> ◦ As of May 2016: vehicle prohibition for Euro classes 0 & I. ◦ With effect from 1 August 2016: vehicle prohibition for Euro classes 0, I and II. ◦ With effect from 31 December 2017: vehicle prohibition for Euro classes 0, I, II and III, with time limited exception for vehicles of Euro class III, provided that they are being used for short-distance 	<p>The regulation has provision for exceptions for:</p> <ul style="list-style-type: none"> • Certain transport in pre- and post-carriage traffic. • Journeys by historical vehicles within the sense of the Austrian Motor Vehicles Act 1967. • Urgent journeys by the Austrian Armed Forces or foreign troops currently stationed in Austria as well as humanitarian/aid transport by recognized organizations. • Highly-specialized and particularly expensive vehicles. • Destination and origin transport (time limited): for heavy goods vehicles without trailers and self-propelled machines without trailers, the Euro III prohibition will apply with effect from 31 December 2019, provided that the heavy goods vehicle is loaded or unloaded in a defined core zone or is loaded and unloaded in an expanded zone and the journey by a self-propelled machine has its point of departure or destination in this core zone or the point of departure and destination in the expanded zone. <p>In addition, an application may be made to the regional administrative authorities to be exempted from these vehicle prohibitions on a case by case basis. Further exceptions are based on Section 16, para 2 IG-L.</p>

Scheme	Purpose/validity	Special regulations/exemptions
	<p>journeys or distribution transport (see below for detail).</p> <ul style="list-style-type: none"> With effect from 31 December 2022: vehicle prohibition for Euro classes 0, I, II, III and IV. Articulated vehicles with a maximum authorized total mass in excess of 7.5 t and heavy goods vehicles with trailers and self-propelled machines with trailers, where the total of the maximum authorized masses of both vehicles is in excess of 7.5 t: <ul style="list-style-type: none"> As of May 2016: vehicle prohibition for Euro classes 0, I and II. With effect from 31 December 2017: vehicle prohibition for Euro classes 0, I, II and III. With effect from 31 December 2022: vehicle prohibition for Euro classes 0, I, II, III and IV. <p>Even in the event that the permissible Euro classes are satisfied, journeys through the region subject to the prohibition are permissible only if membership of the Euro class can be proven.</p>	

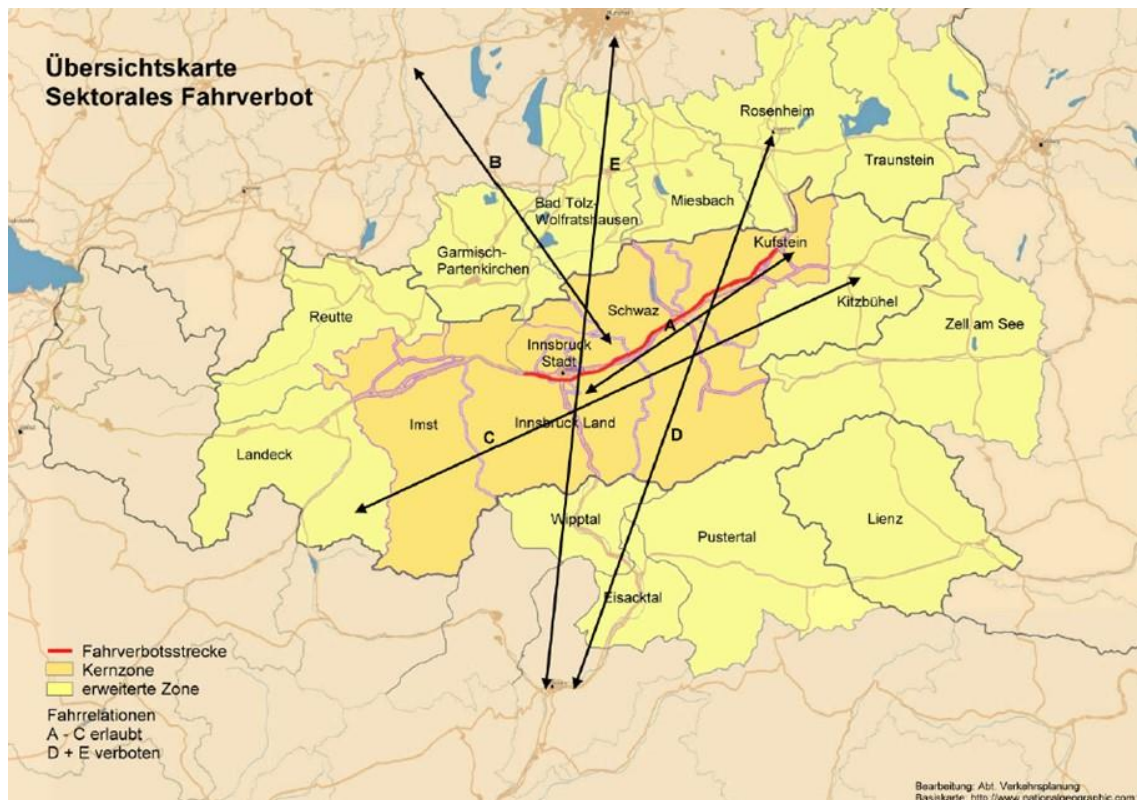


Figure 12: Sector vehicle prohibition in the Tyrol (AT): core zone and expanded zone to define exempted destination and origin transport

c) Tunnel regulations

There are numerous tunnels in the Alpine region, with most of them having special regulations or charges. The table below lists some examples for HGVs in the three tunnels on the main transit corridors of the iMONITRAF! Network: Mont Blanc tunnel, Fréjus Road Tunnel and Gotthard Road Tunnel.

Tunnel	Purpose/validity	Special regulations/exemptions
Mont Blanc Tunnel	<p>ADR tunnel category E: Restriction for all dangerous goods (except five goods with very limited danger)</p> <p>Compliance with tunnel transit conditions⁴² is certified by a pass, issued after the dimensions of the vehicle, the nature of its load (dangerous materials are prohibited), and the European pollution category (transit is prohibited for Euro 0, Euro1* and Euro 2**, i.e. vehicles registered before October 1st 2001) have been checked.</p> <p>* from January 1st 2011 ** from November 1st 2012</p>	<p>Possibility of subscriptions for 10 or 20 passages within 2 years or subscription for 1 month⁴³.</p> <p>On December 31 of each year, a discount is granted. Its rate is determined by the number of annual passes made at the Mont Blanc and Fréjus tunnels⁴⁴:</p> <ul style="list-style-type: none"> • 2%: until 1500 passages. • 7%: between 1501 à 3000 passages. • 13%: beyond de 3000 passages. <p>Requests for authorization for an oversize load exceeding 3,50 m width and/or more than 96 T, and/or more than 25 m in length are possible⁴⁵.</p>
Fréjus Road Tunnel	<p>ADR tunnel code C⁴⁶: Restriction for the carriage of dangerous goods which may lead to a very large explosion, a large explosion or a large toxic release.</p> <p>Euro 0 and 1 vehicles are not authorised to use the tunnel. Euro 2 vehicles will be forbidden as of 1 July 2017⁴⁷.</p>	<p>Possibility of subscriptions for 8, 20 or 30 passages within 2 years or 50 passages within 30 days⁴⁸.</p> <p>On December 31 of each year, a discount is granted based on the number of annual passes made at the Mont Blanc and Fréjus tunnels, see above.</p> <p>Requests for authorization for an oversize load are possible.</p>
Gotthard Road Tunnel	<p>ADR tunnel category E: Restriction for all dangerous goods (except five goods with very limited danger)</p>	<p>An exceptional authorization⁴⁹ may be granted if a particular case of hardship exists, e.g. in case the supply, disposal or work performance, for which a dangerous good is required, cannot be ensured.</p> <p>In principle, there is no room for granting an exception in cases, like the following:</p> <ul style="list-style-type: none"> • There is a time window for a permissible tunnel crossing • There is an alternative route for the tunnel, without general restrictions, some only in the summer • Rail transport is possible for the transport of the dangerous goods without the transport period allowed for the goods being exceeded or the quality of the goods being impaired

⁴² http://www.tunnelmb.net/gb/airederegul_gb.asp

⁴³ https://www.atmb.com/sites/default/files/aapc/2017-01-01_tariffe_f.to_21x12_2017.pdf

⁴⁴ <https://www.atmb.com/en/our-offers/mont-blanc-tunnel-cost-and-subscription/heavy-goods-vehicles-etc>

⁴⁵ <http://www.tunnelmb.net/gb/reglegb.asp>

⁴⁶ <http://www.sfrtf.fr/InfoliveDocuments/info-traffic/reglementcirculationtunnel30062015.pdf>

⁴⁷ <https://www.iru.org/apps/infocentre-item-action?id=1451&lang=en>

⁴⁸ <http://www.sfrtf.fr/InfoliveDocuments/tarifs/tarifunnel.pdf>

⁴⁹ <https://www.astra.admin.ch/astra/de/home/fachleute/fahrzeuge/sonderbewilligungen/tunneltransport-gefahrqueter.html>

Special offers for the Great St Bernard Tunnel⁵⁰:

Transport companies purchasing cards for 10 or 20 crossings for heavy vehicles (Class 4) between 1.1.2017 and 31.12.2017 will be granted 2% discount for every 500 crossings.

Until 31 December 2017, electric cars that cross the Great St Bernard Tunnel are entitled to a free return ticket by presenting the one-way ticket within 72 hours of purchase.

Many events and exhibitions in the Aosta Valley and Valais entitle to a free return ticket through the Great St Bernard Tunnel. For example, by presenting the one-way Great St Bernard Tunnel ticket and the entry ticket to the Gianadda Foundation or the St Bernard Dog Museum in Martigny within 72 hours of purchase, cars and busses will be granted a free return ticket. By presenting the one-way ticket and the ski pass of one of the defined ski resorts in Aosta Valley or Switzerland within 72 hours of purchase, cars will be granted a free return ticket.

d) Urban mobility pricing

Regulations in the frame of urban mobility pricing sometimes include elements for regional traffic that might be useful for Toll Plus. The table below lists the two main congestion charge schemes in Europe: in the UK (London) and in Sweden (Stockholm and Gothenburg).

Scheme	Purpose/validity	Special regulations/exemptions
London Congestion Charge ⁵¹	<p>The Congestion Charge is an £11.50 daily charge for driving a vehicle within the charging zone between 07:00 and 18:00, Monday to Friday.</p> <p>There is no charge on weekends, public holidays, between Christmas Day and New Year's Day inclusive, or between 18:00 and 07:00 on weekdays.</p> <p>There are a range of exemptions and discounts available to certain vehicles and individuals.</p>	<p>Vehicles are exempt from paying the charge if they are recorded at the DVLA or DVANI in one of these categories:</p> <ul style="list-style-type: none"> Two-wheeled motorbikes (and sidecars) and mopeds Emergency service vehicles, such as ambulances and fire engines, which have a taxation class of 'ambulance' or 'fire engine' on the date of travel NHS vehicles that are exempt from vehicle tax Vehicles used by disabled people that are exempt from vehicle tax and have a 'disabled' taxation class Vehicles for more than one disabled person (for example Dial-a-Ride) that are exempt from vehicle tax and have a 'disabled' taxation class <p>Taxis and private hire vehicles (PHVs) are exempt from paying the charge when actively licensed with London Taxi and Private Hire (TPH).</p> <p>Certain vehicles, including buses, registered in European Economic Area member states, must be registered with TfL to qualify for an exemption.</p> <p>Other categories of exemption include:</p> <ul style="list-style-type: none"> HM Coastguard and Port Authorities Certain operational vehicles used by the London boroughs The armed forces Royal Parks Agency

⁵⁰ <http://www.letunnel.com/datapage.asp?id=13&l=3>

⁵¹ <https://tfl.gov.uk/modes/driving/congestion-charge>

Scheme	Purpose/validity	Special regulations/exemptions
		<ul style="list-style-type: none"> Breakdown organizations <p>People can apply for a discount in the following categories:</p> <ul style="list-style-type: none"> Residents' discount Blue Badge holders Accredited breakdown Vehicles with 9+ seats Ultra Low Emission Discount (ULED) Motor tricycles Roadside recovery vehicles Cars or vans (not exceeding 3.5 tonnes gross vehicle weight) which emit 75g/km or less of CO₂ and that meet the Euro 5 standard for air quality qualify for a 100% discount on the Congestion Charge. <p>You can check the CO₂ emissions of your car on the V5C registration document. Any car registered as new with the DVLA on or after 1 January 2011 is deemed to meet the Euro 5 standard.</p> <p>Some cars registered before this date will also meet the Euro 5 standard. Vans should be registered as new on or after 1 January 2012 to meet the Euro 5 standard.</p> <p>You also qualify if your vehicle is registered with the DVLA and has a fuel type of 'electric' (you can check this on the V5C registration document the DVLA sent you), or alternatively, if your vehicle is a 'plug-in hybrid' and has been approved as an ultra-low emission vehicle by the Office for Low Emission Vehicles. You can find more information at the You can find out more about low emission vehicles on the website.</p> <p>Those driving or considering purchasing a new or current vehicle model can check its CO₂ emissions (g/km) and Euro Standard with the franchised dealer or the vehicle manufacturer of the car to ensure that it meets the discount criteria. Alternatively,</p> <p>If your vehicle is a 'plug-in hybrid' you will need to supply a conformity certificate as part of your application.</p> <p>You can apply for a discount online, but you'll need to supply certain documents to show you're entitled to the discount.</p> <p>Documents you need to provide?</p> <p>You will need to upload images or send photocopies of the following documents to apply for the discount:</p> <p>UK-registered</p> <ul style="list-style-type: none"> V5C vehicle registration certificate (logbook) issued by the DVLA <p>Non-UK registered</p> <ul style="list-style-type: none"> The vehicle registration document issued by your vehicle licensing agency <p>The document must clearly show that the vehicle:</p> <ul style="list-style-type: none"> Meets the Euro 5 emission standard Emits less than or equal to 75g/km of CO₂ <p>OR</p> <ul style="list-style-type: none"> Is registered as fuel type 'electric' <p>Petrol hybrid vehicles only</p> <p>You must also submit a photocopy of the conformity certificate as provided by the vehicle dealership.</p> <p>You can upload images of these documents as part of your online application, or you can send copies by post or email later on.</p> <p>Cost</p> <p>You have to pay £10 to register each vehicle for the discount. This will need to be renewed every year.</p>

Scheme	Purpose/validity	Special regulations/exemptions
		<p>Renewing your ULED</p> <p>We will notify you when your discount is due to expire. You will be able to renew your discount online once you have received this notification.</p> <p>Source London</p> <p>Source London is a city-wide electric vehicle charging network. Find out more on theIf you can provide us with all your ULED discount documents you can apply online now.</p> <p>Apply for discount</p> <p>For example, to qualify for the residents' discount (90%), you must live within the Congestion Charge residents' discount zone (see Figure 13).</p>
Congestion Taxes in Stockholm and Gothenburg ⁵²	<p>In Sweden there is a system of congestion taxes in Stockholm and Gothenburg. The tax applies to vehicles registered in Sweden and outside Sweden.</p> <p>If the vehicle is registered abroad, the Swedish Transport Agency has entrusted a notification partner to identify the owner of the vehicle, send out invoices to and obtain payments from the owner of the vehicle via EPASS24.</p> <p>Cars, lorries and buses have to pay the congestion tax.</p> <p>The congestion tax is charged for vehicles that pass a control point on Monday to Friday between 06.00 and 18.29. The tax is not charged on Saturdays and Sundays, public holidays, days before a public holiday or in the month of July.</p> <p>In order that the tax has a real impact on reducing traffic, the amounts charged are different at different times – the cost is highest during the periods and in the places where the traffic is heaviest.</p> <p>The maximum amount per vehicle per day is SEK 60 in Gothenburg and SEK 105 in Stockholm.</p> <p>See Figure 14 for a map of the Stockholm Congestion Tax zone.</p>	<p>The following vehicles are automatically exempt from paying the Stockholm Congestion Tax⁵³:</p> <ul style="list-style-type: none"> • emergency vehicles • buses having a total weight of at least 14 tonnes • diplomat-registered vehicles • motorbikes • foreign-registered vehicles • military vehicles • vehicles that according to details contained in the Swedish Road Traffic Registry of the Swedish Transport Agency are equipped with technology for being run:* <p>a) completely or partly on electricity or a gas other than liquefied petroleum gas (LPG), or</p> <p>b) on a fuel blend that predominantly comprises alcohol.</p> <p>*This exemption applies up to and including July 2012 for vehicles that were entered in the Swedish Road Traffic Registry prior to 1 January 2009. Vehicles entered after this date are not exempt from congestion tax.</p> <p>If you have a Disability Parking Permit, you may apply to the Swedish Tax Agency to exempt a vehicle from the tax obligation. (The Swedish Tax Agency may exempt two vehicles from the tax obligation if there are exceptional grounds.)</p> <p><u>The 'Lidingö rule'</u>: No congestion tax is charged for vehicles that pass two different control points within 30 minutes, one of which must be a control point at Gasverksvägen, Lidingövägen or Norra Hamnvägen.</p> <p>A single charge rule applies in Gothenburg. Under this rule, a vehicle that passes several payment stations within 60 minutes is only taxed once. The amount that must be paid is the highest one.</p>

⁵² <https://transportstyrelsen.se/en/road/Congestion-taxes-in-Stockholm-and-Goteborg/>

⁵³ <https://www.transportstyrelsen.se/en/road/Trangselskatt/Congestion-tax-in-stockholm/Exemptions/>

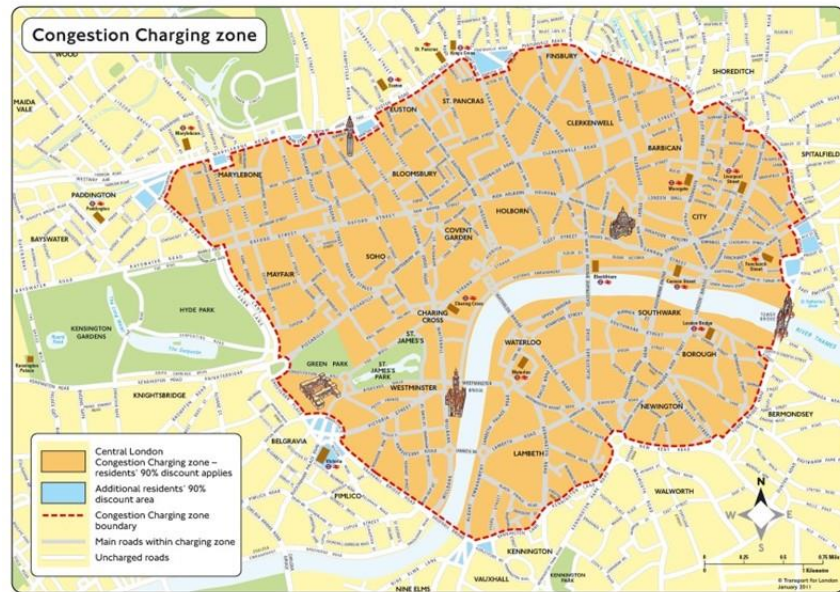


Figure 13: London Congestion Charge zone incl. additional residents' discount area

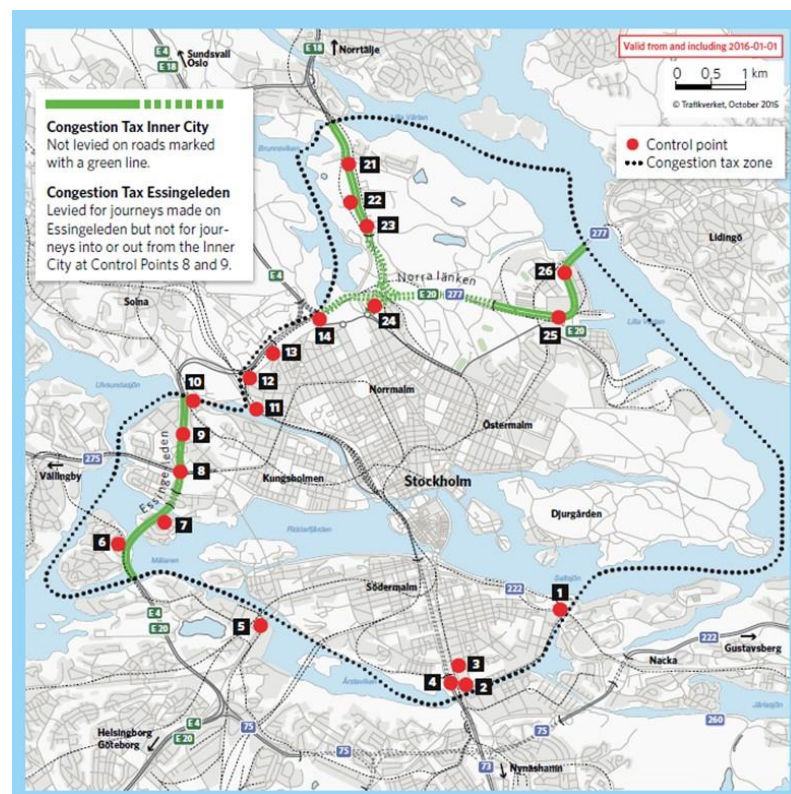


Figure 14: Stockholm Congestion Tax zone⁵⁴

⁵⁴ <https://transportstyrelsen.se/globalassets/global/vag/trangselskatt/congestion-tax-a4.pdf>

e) Special toll for light vehicles (Sondermaut) in Austria

Scheme	Purpose/validity	Special regulations/exemptions
Special toll (Sondermaut) in Austria ⁵⁵	Special toll rates for vehicles with a maximum permissible gross weight of up to 3.5 tonnes apply on the following cost-intensive Alpine crossings: A 9 Pyhrn motorway, A 10 Tauern motorway, A 11 Karawanken motorway, A 13 Brenner motorway and S 16 Arlberg expressway.	<p>The following vehicles are exempt from the road section toll⁵⁶:</p> <ul style="list-style-type: none"> • Vehicles with flashing blue light in accordance with section 2(1)(25) StVO 1960, BGBl. No. 159 (operational vehicles) • Army vehicles (section 2(1)(38) Motor Traffic Act 1967) • Vehicles that are used within the scope of the agreement among the states party to the North Atlantic Treaty and the other states participating in the Partnership for Peace regarding the status of their forces ('PfP-SOFA', BGBl. III No. 136/1998) • Vehicles that are used for the implementation of measures for securing peace within the scope of an international organization, the Organization for Security and Co-operation in Europe, or the European Union in conformity with a Decision made within the scope of the Common Foreign and Security Policy <p><u>Disabled drivers and commuters</u> can apply for a discounted annual card. For example:</p> <p>The annual card for commuters is valid for one year from the date of issue. For all toll roads, with the exception of the A 11 Karawanken motorway, annual cards for commuters can be obtained if the following conditions are fulfilled:</p> <ul style="list-style-type: none"> • The applicant is employed (also applies to conscripts). • Verifiable and plausible confirmation of the place of residence and place of work are provided. Use of the toll road must either be unavoidable or at least constitute the shortest distance. • The annual card for commuters is only issued for one vehicle registered in the commuter's name. <p>In accordance with section 13(3)(1) BStMG, presentation of the allonge (toll sticker tab) from a valid annual toll sticker entitles the holder to a free annual card for commuters. The aforementioned requirements will be checked individually for each subsection (leg) of the toll road sections on the A 9 Bosruck/Gleinalm.</p> <p><u>Resident's card for the A 13:</u></p> <p>Inhabitants of the municipalities of Ellbögen, Gries am Brenner, Gschnitz, Matrei am Brenner, Mühlbachl, Navis, Obernberg am Brenner, Patsch, Pfons, Schmirn, Steinach am Brenner, Trins, and Vals in the Wipp Valley (Wipptal) and the municipalities of Schönberg, Mieders, Fulpmes, Telfes, and Neustift in the Stubai Valley (Stubaital) will receive resident's cards as long as they meet the conditions listed directly below:</p> <ul style="list-style-type: none"> • The registered owner is a natural person. • A valid confirmation of the applicant's main place of residence is provided. • The resident's card is only issued for a vehicle registered in the applicant's name. • The vehicle is registered in the name of a private person only and is not used as a company vehicle. <p>Presentation of the allonge (toll sticker tab) from a valid passenger car annual toll sticker entitles the holder to a free residents' card. Otherwise the holder must purchase a card for € 40.50 (incl. 20% VAT).</p>

⁵⁵ <http://www.asfinag.at/toll/special-and-videotoll>

⁵⁶ Tolling Regulations (version 47) valid from 1 January 2017

g) Low emission zones/environmental zones (Umweltzonen) in Germany

A growing number of German cities have designated low emission zones (LEZ) which purpose is to improve the air quality within these zones and thus protect public health (see also Figure 16)⁵⁹. Only vehicles bearing a sticker for the low emission zone may enter the zone. In a first phase, bans apply to vehicles without a sticker. In the course of the next few years, this gradually applies to vehicles that have either a red or yellow sticker. Foreign motor vehicles are not exempted from the scheme.

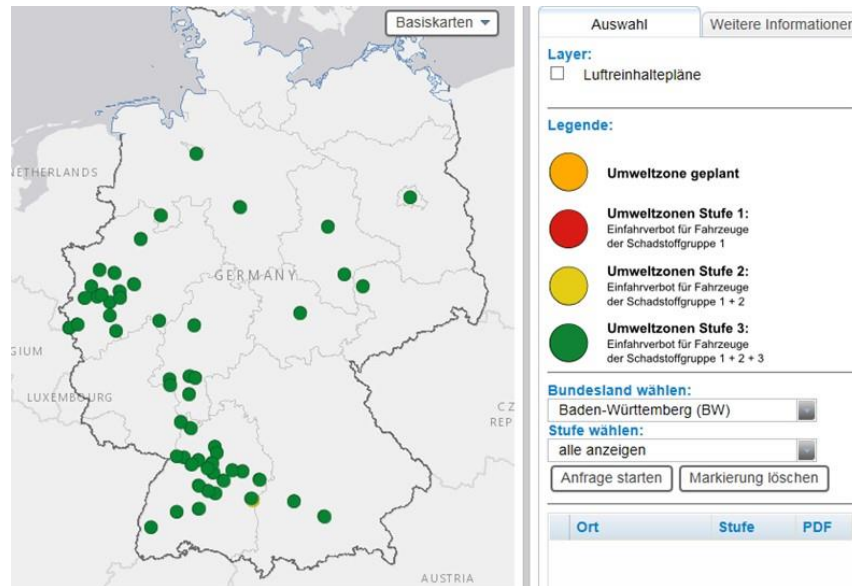


Figure 16: Low Emission Zones (Umweltzonen) in Germany

The following vehicles are legally exempted and are not required to display a sticker:

- Mobile machines and equipment
- Work machines
- Agricultural and forestry tractors/towing machines
- Two-wheeled and three-wheeled motor vehicles
- Ambulances, emergency doctors' vehicles with the relevant markings "Arzt" (doctor) or "Notfalleinsatz" (emergency service) (in accordance with Paragraph 52, Section 6 of the German Road Traffic Licensing Regulations)
- Motor vehicles which are driven by or used to drive persons with an exceptional walking disability, or who require continual assistance or are blind. These individuals must be able to provide evidence of this with the letters aG, H or BI in their severely handicapped ID pass
- Vehicles for which special rights can be claimed in accordance with Paragraph 35 of the German Road Traffic Regulations
- Vehicles belonging to non-German troops from non-contractual states of the North Atlantic Pact, which are in Germany for purposes of military co-operation, and on condition that the vehicles are being used for journeys required for urgent military reasons

⁵⁹ <http://www.umweltbundesamt.de/en/topics/air/particulate-matter-pm10/low-emission-zones-in-germany>

- Civilian vehicles that are being used by order of the German Federal Armed Forces, as long as this concerns undelayable journeys required to fulfil official duties for the German Federal Armed Forces
- Classic cars (in accordance with Paragraph 2, No. 22 of the German Vehicle Registration Regulations) which have a licence plate in accordance with Paragraph 9, Section 1 or Paragraph 17 of the Vehicle Registration Regulations, and vehicles registered in another member state of the European Union, another contractual party to the Agreement on the European Economic Area or Turkey, if they fulfil equivalent requirements

Local exceptions can be defined by the cities themselves. For example, in Munich exemptions can be granted if the following points are fulfilled⁶⁰:

1. The applicant's vehicle was approved before October 1, 2012 in case of a yellow sticker, before October 1, 2010 in case of a red sticker or before October 1, 2008 without any sticker.
2. There is evidence that the vehicle concerned cannot be retrofitted with an exhaust gas purification system. This proof is provided by the certificate issued by an expert agency, which is recognized by a testing organization such as TÜV or DEKRA.
3. One of the following conditions applies:
 - a) You are resident or trader and located in the environmental zone.
 - b) These are trips to supply the population with essential goods.
 - c) These are trips to provide the population with essential services.
 - d) These are trips for impassable individual interests, e.g. regular medical treatments (dialysis, etc.), people in night shifts when there is no public transport alternative.

Fees for the above exceptions are, for example:

- For residents living in the environmental zone: 75 EUR for 1 year
- For traders located in the environmental zone: 150 EUR for 1 year
- Transitional approval for delaying retrofitting or replacement procurement: 50 EUR
- Trips to the population with essential goods or services, trips for impassable individual interests: 60 EUR for 1 month, 200 EUR for 1 year
- Reduced fee for social hardship, e.g. trips for the medical care of chronically ill persons: 10 EUR



Generally, the fees for exceptions are differentiated according to the type of vehicle, the duration of the exemption and the type of exemption applied for.

Exemptions may also be granted in case (1) the respective vehicle does not have the option of retrofitting and a replacement of the vehicle cannot be expected due to financial reasons or (2) the respective vehicle can be retrofitted but the retrofitting cannot be expected due to financial reasons. See Figure 17 for such exceptions in Leipzig⁶¹.

⁶⁰ https://www.muenchen.de/rathaus/Stadtverwaltung/Referat-fuer-Gesundheit-und-Umwelt/Luft_und_Strahlung/Umweltzone/Ausnahmen_und_Befreiungen.html





⁶¹ <http://www.leipzig.de/umwelt-und-verkehr/luft-und-laerm/umweltzone/ausnahmen-vom-fahrverbot/>

Einzelausnahmen private Fahrten; gültig ab 01.01.2015

Kriterien	Plakette	Voraussetzung	Verfahren/Dauer
Besondere Härte im Einzelfall	keine Plakette  	<ul style="list-style-type: none"> Fahrzeug wurde vor dem 19.12.2009 erstmals auf den Halter zugelassen <u>und</u> überwiegendes und unaufschiebbares Einzelinteresse vorliegend (z. B. Arbeitsplatzverlust, gesundheitliche Gründe) <u>und</u> Fahrzeug ist nachweislich* nicht auf grüne Plakette nachrüstbar <u>und</u> Ersatz des Fahrzeugs ist nicht zumutbar <u>oder</u> Fahrzeug ist zwar auf grüne Plakette nachrüstbar, die Nachrüstung stellt aber eine unzumutbare Härte dar 	auf Antrag/ max. 24 Monate (verlängerbar)

* Bescheinigung der Technischen Prüfstelle bzw. einer amtlich anerkannten Überwachungsorganisation für den Kfz-Verkehr, erforderlich für Diesel-Pkw mit Emissionsschlüsselnummer „27“ bzw. „0427“ und der Klartextangabe „96/69/EG I“ mit einem zulässigen Gesamtgewicht von mehr als 2.500 kg sowie Fahrzeuge der Klasse N, M₂ und M₃

Einzelausnahmen Wirtschaftsverkehr/gemeinnützige Zwecke; gültig ab 01.01.2015

Kriterien	Plakette	Voraussetzung	Verfahren/Dauer
Sonderfahrzeuge – Fahrzeuge der Film- u. Fernsehbranche (Filmmotiv)	keine Plakette  	<ul style="list-style-type: none"> Teilnahme des Fahrzeugs am Verkehr ist auf den ausgewiesenen Drehort des jeweiligen Motivs beschränkt 	Anzeige gegenüber der Genehmigungsbehörde
Besondere Härte im Einzelfall	keine Plakette  	<ul style="list-style-type: none"> Fahrzeug wurde vor dem 19.12.2009 erstmals auf den Halter zugelassen <u>und</u> Nachweis, dass Fahrten im öffentlichen Interesse (Versorgung der Bevölkerung mit lebensnotwendigen Gütern/Dienstleistungen) liegen <u>oder</u> aus überwiegend und unaufschiebbarem Einzelinteresse (Aufrechterhaltung von Fertigungs-/Produktionsprozessen, Existenzgefährdung) erforderlich sind <u>und</u> Fahrzeug ist nachweislich* nicht auf grüne Plakette nachrüstbar <u>und</u> Ersatz des Fahrzeugs ist nicht zumutbar <u>oder</u> Fahrzeug ist zwar auf grüne Plakette nachrüstbar, die Nachrüstung stellt aber eine unzumutbare Härte dar 	auf Antrag/ max. 24 Monate (verlängerbar)

* Bescheinigung der Technischen Prüfstelle bzw. einer amtlich anerkannten Überwachungsorganisation für den Kfz-Verkehr, erforderlich für Diesel-Pkw mit Emissionsschlüsselnummer „27“ bzw. „0427“ und der Klartextangabe „96/69/EG I“ mit einem zulässigen Gesamtgewicht von mehr als 2.500 kg sowie Fahrzeuge der Klasse N, M₂ und M₃*

Figure 17: Exceptions for the low emission zone in Leipzig

Driving ban for diesel vehicles in Stuttgart from 2018 onwards

Stuttgart suffers from bad air quality and introduced a low emission zone in 2008. Recently, the city announced that there will be driving bans for many diesel vehicles from 2018 onwards to further improve air quality⁶². Diesel vehicles below the Euro 6 standard are potentially affected by the driving ban, which should be in place in parts of Stuttgart whenever high levels of soot particles are measured and the city has to proclaim a "pollution alarm"⁶³.

Exceptions will be made, especially for police and rescue vehicles and presumably delivery vehicles. However, the city will be careful not to overextend the derogation, otherwise the target, a significant reduction in pollutants, will not be achieved.

h) Other steering elements

The EFFINALP study (2012) evaluated the economic impacts of the transalpine traffic management instruments ACE (Alpine Crossing Exchange), AETS (Alpine Emission Trading System) and TOLL+ (surcharge on existing tolls covering external costs) for different economic sectors and different regions.

It was stated that several hardship cases have to be expected if the relative burden of the traffic management instruments (i.e. ACE, AETS, TOLL+) might lead to critical prospects or changes in locations. The most important criteria for hardship cases are the level of transalpine goods transported:

- supply and delivery market,
- the distance of these trips and the potential for modal shift,
- the ubiquity and competitiveness of the industry and their value added chain,
- the size of the enterprise and the importance of transport time.

Examples show that the cost increase for such hardship cases might be in the magnitude of up to 5%. This excess burden would be especially relevant for regional transalpine transport within short distances and with no possibility for modal shift (e.g. small road transport operators in Alpine regions, transport-intensive industries). An Alpine Crossing Exchange for example might lead to increases of transport costs up to 30-40% for such regional transports. In order to avoid such unjustified increases, specific relief measures have to be considered.

It is therefore strongly believed that the balance for alpine regions (economic losses and economic benefits) is only positive if regional transport is treated separately with specific relief measures. Several relief measures for regional transport were discussed and compared, see Table 4 below.

⁶² <https://global.handelsblatt.com/politics/stuttgart-bans-diesel-cars-709995>

⁶³ <http://www.umweltzone.de/diesel-fahrverbot-in-stuttgart-ab-2018/>

Table 4: Regional relief measures in EFFINALP (2012) – ATR = Alpine Transit Right, RMW = Rolling Motorway

COMPARISON OF REGIONAL RELIEF MEASURES				
	Relief mechanism	Regional relief potential road transport sector	Regional relief potential transport-intensive sectors	Administrative effort for enterprises
Differentiated prices	lower additional costs per transport	Low	Medium	High
Free allocation of ATR	fixed number of transports without additional costs (basis: historical numbers of transports)	High (given that free allocation is sufficient)	High (given that the carriers do not pass no opportunity costs)	High
Exemption	no additional cost for defined actors	High	High	Low
Short RMW	Provide an alternative to road transports	Medium (depending on quality)	Medium (depending on prices and quality)	depending on the quality of the RMW
Redistribution to carriers	additional costs are paid but reimbursed for defined transports	High	High	High
Redistribution to regions	additional costs are paid but the administrations of the regions are compensated	Low	Low	Medium
Redistribution to economies	additional costs are paid but the economies of the regions are compensated	Low	Low	Medium

Especially free allocation, exemptions and redistribution to the transport sector seem to have a high potential to relieve the highly affected regional actors. However, the more differentiated the rules for exemption, the higher the possible administrative efforts.

INFRAS and Metron (2011)⁶⁴ have calculated the reduction of the regional burden for the following measures in Switzerland: differentiated prices, free allocation, exemption and redistribution to regions in case of an introduction of an ACE in Switzerland. It is assumed that all transports with lower distances than 150 km profit from this measure. Therefore, the higher the share of transports with less than 150 km at the total number of transports with origin or destination in the region, the higher the burden relief. This is highly dependent on the structure of the regional economies. Whereas in the Canton Uri about 80% of all transports are shorter than 150 km, in the MS region Lugano only 2% of all transports are shorter than 150 km but in both regions the initial burden is of the same magnitude.

⁶⁴ In: EFFINALP (2012)