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Swiss Federal Roads Office FEDRO

FEDRO ANNUAL REPORT

ROADS AND TRAFFIC 2020

Developments, facts and figures



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FEDRO 2020 annual report

This report presents an insight into the diversified tasks and ongoing projects of the Swiss Federal Roads Office (FEDRO) and documents these activities in the form of current data and statistics.

Cover photo

Designated lanes in Fribourg separate motorised traffic from cyclists and thus enhance road safety.

Dear Reader,



Road traffic accounts for 84 percent of passenger transport in Switzerland. All road users, from pedestrians, cyclists and motorcyclists through to motor vehicle operators and users of trams and buses, need safe, reliable, compatible road infrastructure. Satisfying all the various requirements of road users is one of FEDRO's central and most rewarding duties.

One form of transport which will gain significantly in importance in the next few years is human-powered mobility. For this reason, "Roads and Traffic 2020" focuses on this form of mobility. New legislation governing cycle routes will support the use of bicycles, especially in the agglomerations where road traffic is particularly heavy. Networked cycle routes will separate the various forms of mobility and enhance road safety for cyclists as well as for private motorised and public transport.

The new road traffic regulations are also making human-powered mobility safer. For example, bicycles on cycle lanes in zones with a designated speed limit of 30 km/h will have the right of way, superseding the general rule that the right of way automatically belongs to any traffic coming from the right. Cyclists will be able to turn right at intersections even when the traffic lights are red, as long as this is indicated, and children up to age 12 will be allowed to cycle on pavements if there is no cycle lane. In towns and cities the safety of pedestrians will be enhanced through the addition of road markings drawing attention to trams. Thus the introduction of the compulsory use of lights during the day and the obligatory use of a helmet and a tachometer for fast e-bikes will help reduce the number of serious accidents.

This report also addresses private motorised transport, of course. New traffic regulations aimed at enhancing road safety and traffic flow will enter into effect in 2021: formation of a rescue corridor, use of the zipping principle and passing on the right in traffic queues. In addition, a quicker response to and management of traffic flow situations is to be facilitated through signalling systems. The implementation of this is depicted on the Swiss traffic management road map.

Transport is essential for a country's prosperity and well-being, as is the protection of the environment and the sustainable use of natural resources. This year's report also provides information about efficient electricity use, the promotion of biodiversity along the motorways and national roads, and the measurement of exhaust emissions from moving vehicles.

As you can see, FEDRO's broad-ranging activities focus on people, infrastructure, financing and vehicles, as well as the associated data management. I hope you will find this year's edition of "Roads and Traffic" both interesting and informative. Furthermore, I wish everyone safe and pleasant travel!

A handwritten signature in black ink, appearing to read "J. Röthlisberger". The signature is fluid and cursive.

Jürg Röthlisberger
Director of the Swiss Federal Roads Office (FEDRO)

Highlights of the year

24 May 2019

Discussions between the federal government and the cantons concerning various mobility issues

Representatives of the Federal Office for Transport (FOT), FEDRO and the Federal Office for Spatial Development (ARE) participate in a conference on mobility together with the cantonal transport and engineering directors to discuss multi-modal mobility and mobility pricing. Federal Councillor Simonetta Sommaruga states that close cooperation at all administrative levels will be required for both the expansion of the mobility infrastructure and the further development of the mobility sector.

15 October 2019

New Deputy Director at FEDRO

Pascal Mertenat (57) appointed Deputy Director at FEDRO and head of Road Infrastructure West Division as of the beginning of February 2020. He comes from the canton of Jura, is married and has three adult children. He started work for the canton of Jura in 1999, where his last function was as cantonal engineer. He replaces Jean-Bernard Duchoud, who is leaving FEDRO.

1 March 2019

7 March 2019

FEDRO awards contracts for electric vehicle charging stations at motorway rest areas

The federal government is supporting the installation of fast-charging stations along the motorways/national roads. FEDRO entrusts five providers (four Swiss and one Dutch) with the installation of fast-charging stations at 20 rest areas each.



28 July 2019

Closure of the Axen route for several weeks

For safety reasons, the Axen route (in the cantons of Schwyz and Uri) has to be closed for approximately eight weeks due to rockfalls. Before it can be reopened, around 1,000 tonnes of loosened rock need to be removed and an early warning system has to be installed. For safety reasons, the clearance work can only be carried out by helicopter. In the meantime the early warning system has already proved to be effective on a number of occasions.

1 November 2019

Motorway/national roads network still in good condition

FEDRO publishes its third report on the condition of the motorway/national roads network. Its conclusions: the network is still in good condition, but in order to keep it that way it is likely that additional investments will be required in the future for its maintenance.



12 December 2019

Implementation project for construction of the second Gotthard road tunnel tube

The Federal Department of the Environment, Transport, Energy and Communications (DETEC) examines the implementation project for the construction of the second Gotthard road tunnel tube and grants planning approval under certain conditions. Most of the excavated material is to be used for the renaturalisation of the Urner Lake and the roofing of the stretch of motorway near Airolo. FEDRO is now preparing the detailed project which encompasses all construction aspects. Commencement of construction work: summer 2020.



13 December 2019

Federal Council specifies next steps concerning mobility pricing

The Federal Council takes note of the findings of the theoretical impact analysis of mobility pricing carried out in the region of Zug and subsequently instructs DETEC and the Federal Department of Finance (FDF) to develop a concept for securing the long-term financing of the traffic infrastructure. The aim is to replace the existing taxes and levies with a distance-based fee. In addition, the legal bases are to be created for carrying out pilot trials in the field of mobility pricing.

20 March 2020

Covid-19: regulations to maintain transport capacities

In response to the Covid-19 pandemic, together with the Federal Office for National Economic Supply, FEDRO issues special regulations aimed at maintaining transport capacities. These include suspending the requirement for commercial drivers to attend further education courses and introducing temporary restrictions on driver instruction.

1 April 2020

27 November 2019

Construction programme for the completion of the motorway/national roads network

The Federal Council approves the 10th long-term construction programme for the completion of the network. During the next four years an average of 268 million Swiss francs per annum will be invested in its completion. Priorities: completion of the A9 (canton of Valais) and the A4 (cantons of Uri and Schwyz).

1 January 2020

Federal government adopts 400 kilometres of cantonal roads

Following the creation of the Motorway and Agglomeration Traffic Fund, the federal government integrates around 20 cantonal road stretches with a total length of almost 400 kilometres into the motorways/national roads network. At the same time it hands back the Schaffhausen to Bargaen stretch to the canton of Schaffhausen.



19 March 2020

Fatalities in road accidents in Switzerland below 200 for the first time

In Switzerland, a total of 187 people lost their lives in road accidents in 2019 and 3,639 were seriously injured. These figures support the efforts undertaken in recent years to enhance road safety. There is still a need for action with respect to e-bikes, however: the number of accidents involving e-bike users that resulted in fatalities and serious injuries rose again.

A safe network of cycle routes

People are using bicycles to get around to an ever increasing extent. The federal resolution concerning cycle routes, footpaths and hiking routes entrusts the federal government with the tasks of defining principles for the creation of networked cycle routes and supporting and coordinating the measures implemented by the cantons, municipalities and other players. This mandate is to be fulfilled with the enactment of new legislation governing cycle routes. The associated consultation procedure was initiated in spring 2020.

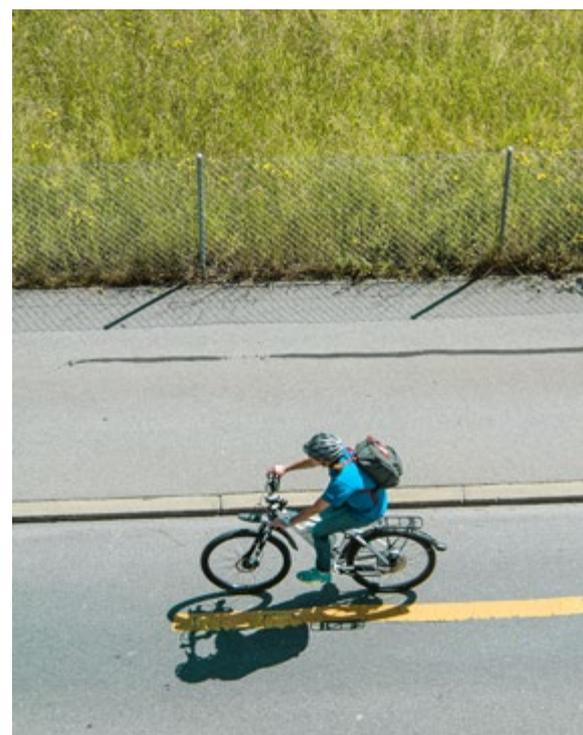
Cycling is becoming ever more popular in Switzerland, for getting to work or going shopping, for example, or as a leisure-time activity. Around two-thirds of Swiss households own at least one bicycle or an e-bike. This means that the availability of bicycles is almost as high as that of cars.

According to the transport perspectives of the Federal Office for Spatial Development (ARE), the accumulated distance travelled (“passenger kilometres”) in the human-powered mobility segment will be higher by around 32 percent in 2050 versus the level recorded in 2015. Bicycles and e-bikes will account for the greatest share of this increase. In towns and cities in particular, short journeys can be carried out by bicycle instead of by bus, tram or car. Exploiting this potential will require the availability of safe and attractive infrastructure, as was confirmed by a survey of e-bike users conducted on behalf of the Swiss Federal Office of Energy (SFOE) in 2014. More than 50 percent of the respondents stated that they would use their e-bike more frequently if the roads were made safer.

By introducing separate legislation governing cycle routes, the Federal Council aims to underscore the importance of cycling and create the necessary conditions for enhancing road safety.

Equivalence of cycle routes with footpaths and hiking routes

On 23 September 2018, all the cantons and 73.6 percent of the electorate voted in favour of the federal resolution concerning cycle routes, footpaths and hiking routes. Thus, the Federal Constitution now stipulates



that cycle routes have to be treated with the same importance as footpaths and hiking routes. The Federal Council implemented the new article in the Constitution by launching the consultation procedure on the cycle route legislation in spring 2020.

In terms of structure and content, the draft of the proposed new legislation is oriented on the Federal Footpaths and Hiking Routes Act.

What will the new legislation regulate?

The federal government has been given the authority to enact legislation that also defines the principles governing cycle routes. It provides subsidiary support for enforcement by the cantons and may also assist with coordination and the provision of information. The cantons will continue to be responsible for the planning, development and maintenance of cycle routes, while the federal government will advise the cantons and, where necessary, the municipalities. The rationale behind the new legislation is that an efficient network of cycle routes will facilitate the separation from motorised traffic and thus enhance the safety of cyclists. A safe network of cycle routes will contribute towards the efficient management of this growing form of mobility. The consultation procedure will end in September 2020.



The key features of the legislation

Planning obligation

The cantons are required to plan cycle routes, which should be networked as far as possible. The cantons may implement and structure the routes at their own discretion. Their plans must be accessible for public authorities, specialists and the general public.

Planning principles

The planning principles are the guidelines that have to be taken into account for the planning of cycle routes. To ensure that they function smoothly and efficiently, cycle routes should be comprehensive and uninterrupted as far as possible. Cycle routes should be planned so that they minimise energy losses (height differences, diversions, halt signs, etc.). They also must be safe to use. The infrastructure should be clear and easy to follow and incorporate a high tolerance for errors, and the standard of construction should be homogeneous over long stretches.

Obligation to provide substitutes for closed cycle routes

In order to ensure planning security and the quality of the cycle route network, substitute cycle routes must be offered for any closed stretches.

Obligation to provide information

The federal government may procure, supply and distribute information about cycle route networks.

The cycle route legislation is intended to promote cycling in towns and cities, as well as in rural areas.

Greater safety for e-bike users

E-bikes are enjoying a great deal of popularity. The number of e-bikes sold in Switzerland in 2019 rose by 20 percent versus the previous year. In towns and cities, short-term rentals of e-bikes are on the rise, but at the same time the number of accidents involving e-bike users is also increasing. FEDRO is currently examining a variety of measures intended to improve the safety of e-bike users on the road.

The popularity of bicycles is reflected in the sales figures: in 2019, around 230,000 bicycles and 133,000 e-bikes were sold in Switzerland. Compared with the previous year, this represents a rise in bicycle sales by 5 percent and an almost 20 percent rise in the sale of e-bikes.

Unfortunately, however, the increase in the use of e-bikes is also being reflected in the road accident statistics: in the period from 2011 to 2018, the number of e-bike users seriously injured or killed in road accidents rose by a factor of almost five. In 2019, the majority of serious e-bike accidents were attributable to skidding or they occurred without the involvement of another vehicle.

The increase in both the number of accidents and the sales of e-bikes raises questions regarding the safety of this form of transport. How can the safety of e-bike users be increased other than by improving the infrastructure? Which measures make the use of e-bikes safer? How can the visibility of e-bike users be improved? The federal government will propose measures to address these matters in the next revision of the federal road traffic legislation.

Three proposals

The following safety measures will be proposed in the consultation process. The **helmet requirement** already in place is to be extended to users of standard e-bikes. Here the accident statistics tell a clear story: the number of e-bike users involved in serious accidents rose from 236 in 2018 to 289 in 2019. Users of fast e-bikes are already required to wear a helmet.

Because the speed limit does not apply to fast e-bikes (e.g. in 30 km/h zones), it is currently not possible to carry out speed checks on them. This situation could be rectified by making speed limits applicable to e-bikes and introducing a **tachometer requirement for fast e-bikes** so that users can be fined if they exceed a designated speed limit. The possibility of requiring **e-bikes to use their lights during the day** is also being considered. Greater visibility can help prevent accidents.

Two e-bike categories

Both standard and fast e-bikes are technically classified as mopeds and have to obey the same traffic regulations as bicycles. Wherever there is a cycle lane, all e-bike users are required to use it. E-bikes are divided into two categories based on technical parameters:

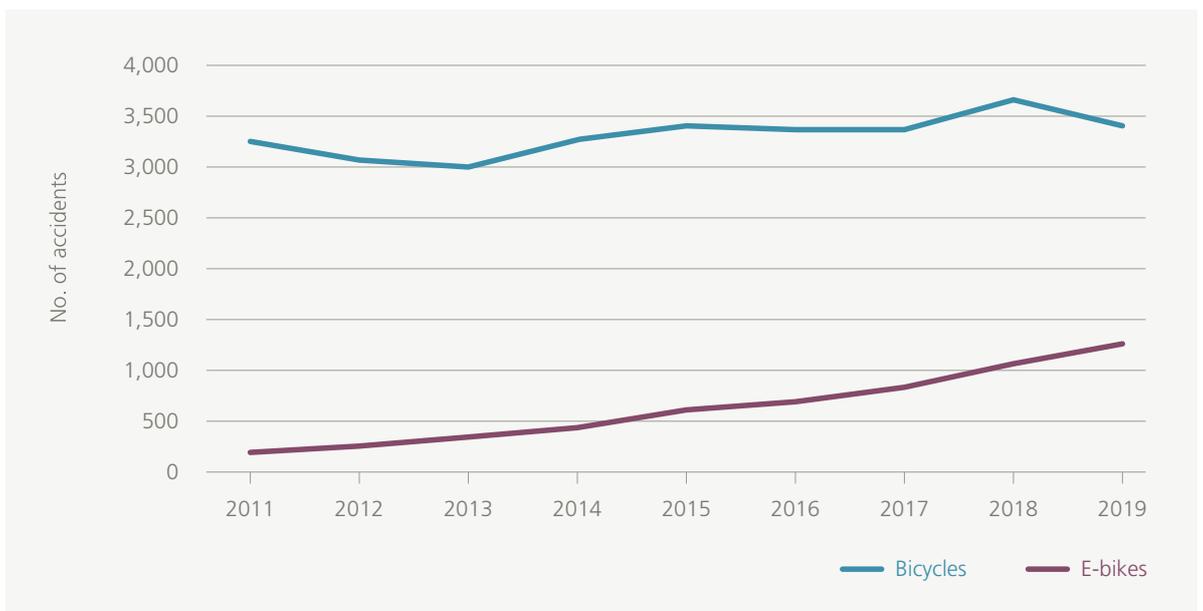
Standard e-bikes may have a motor capacity not exceeding 500 watts, and their maximum permissible speed with motor power only (i.e. without using the pedals) is 20 km/h. The maximum permissible speed with the use of the pedals is 25 km/h. The wearing of a bicycle helmet is recommended for safety reasons, but it is not compulsory. In accordance with the Federal Ordinance on Technical Requirements for Road Vehicles, standard e-bikes are classified as light mopeds. Like bicycles, they do not have to be registered and do not need a licence plate.

Under the same federal ordinance, **fast e-bikes** are classified as mopeds. Their maximum permissible motor capacity is 1,000 watts and their maximum permissible speed without the use of pedals is 30 km/h and with the use of pedals 45 km/h. Fast e-bikes require a licence plate. The wearing of a bicycle helmet is compulsory for users of fast e-bikes.



E-bikes open up new mobility perspectives for young families.

No. of accidents involving cyclists and e-bike users



	2011	2012	2013	2014	2015	2016	2017	2018	2019
Bicycles	3,246	3,061	3,006	3,327	3,405	3,374	3,393	3,629	3,428
E-bikes	196	252	354	450	599	674	820	1,047	1,257

New traffic regulations for cyclists

A number of changes will be introduced for cyclists in 2021: turning right when traffic lights are red; possibility for children to cycle on pavements; promotion of cycle lanes. These measures will enhance cyclists' safety and improve traffic flow.

The Federal Council wants to introduce legislation to promote the use of bicycles, separate cyclists from motorised traffic and enhance road safety (cf. article on pages 6 and 7). To accomplish these aims the Federal Council resolved various measures in 2020 and modified the relevant road traffic regulations. The changes will enter into force on 1 January 2021.

Cyclists will be able to turn right on red at traffic lights where it is indicated that this is permitted. The aim here is to improve traffic flow for all road users, including cyclists. This measure will also encourage the construction of cycle routes.

Children allowed to cycle on pavements

Children up to the age of 12 will be allowed to cycle on pavements if there is no cycle lane or route. This will make it safer for children to cycle because it avoids dangerous overtaking by motor vehicles. During the consultation procedure numerous objections to this regulation were raised citing increased danger for pedestrians. But traffic experts argued that the majority of children only cycle short distances to and from school and all road users, including pedestrians, are familiar with the locality. This reduces the danger on pavements.

Right of way on cycle lanes

In zones with a designated speed limit of 30 km/h it will now be possible to suspend the general rule that traffic on the right has right of way, in favour of cyclists. This means that cycle lanes can be given right of way. A special road sign – "Cycle Lane", as used in the pilot trials carried out in selected towns – will not be required. Signposting will be optional. Cycle lanes may also be indicated by marking a large bicycle pictogram on the road surface to warn motorists about the presence of cyclists. This measure requires an amendment to the ordinance on 30 km/h and pedestrian priority zones.



Children up to the age of 6 are already allowed to cycle on pavements.

Parking fees for all vehicles

In the past, parking fees only applied to motor vehicles. The applicability of parking fees is to be extended now to all vehicles. This means that parking spaces subject to payment of a fee can also be introduced for motorcycles, mopeds, fast e-bikes and bicycles.

Road markings to warn about trams

The trend in accident statistics is essentially positive with respect to pedestrians. Nonetheless, the federal government is implementing additional measures aimed at enhancing road safety with effect from 2021.

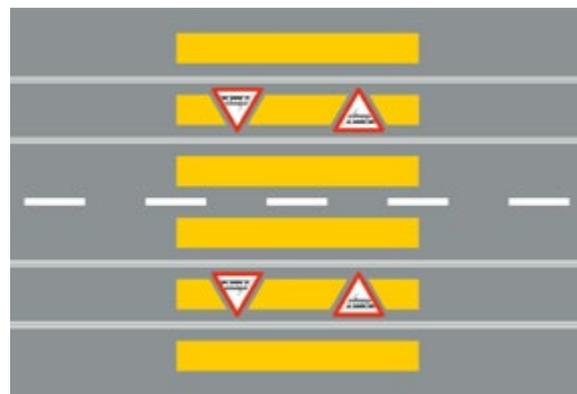
The trend towards fewer accidents involving pedestrians is pleasing. In 2019, only 37 pedestrians were killed in road traffic, which is six fewer than in 2018. The number of serious injuries was also lower. The most frequent cause of accidents involving pedestrians is failure to grant right of way on pedestrian crossings. In 2019, 15 people were fatally injured on a pedestrian crossing – five more than in 2018.

To make pedestrian crossings safer, the Federal Department of the Environment, Transport, Energy and Communications (DETEC) amended the directives concerning special markings on road surfaces. Markings to warn about trams can now be placed on the surface of a pedestrian crossing. A trial conducted together with selected towns revealed that this measure can have a positive effect on the safety of pedestrians.

Outlines of feet can now also be marked on the ground to indicate suitable points for pedestrians to cross the road, which is especially important for enhancing the safety of children walking to and from school. This marking is placed on the pavement. It is also suitable for use in 30 km/h zones, where pedestrian crossings are only indicated in exceptional cases.

50-metre rule

The Federal Ordinance on Traffic Regulations stipulates that pedestrian crossings must be used if they are less than 50 metres away. A study conducted by FEDRO in 2013 revealed that the 50-metre rule does not need to be amended. Repealing the rule or reducing the specified distance would in fact be counterproductive because it would make the accident risk for pedestrians crossing the road significantly higher.



Tram warning on a pedestrian crossing.

Devices similar to vehicles

Scooters, inline skates and skateboards are classified as devices similar to vehicles. People using these devices must observe the same traffic regulations as pedestrians. The devices may be used:

- on pavements;
- in pedestrian zones;
- on cycle lanes;
- on secondary roads with low traffic frequency that do not have pavements, footpaths or cycle lanes;
- in 30 km/h and pedestrian priority zones.

These devices may be used for play on the same surfaces that are intended for use by pedestrians and on secondary roads with low traffic frequency (e.g. in residential zones), as long as other road users are not hampered or endangered.

In response to the Burkart postulate calling for a complete overview of human-powered mobility, FEDRO is currently preparing a report on devices similar to vehicles.

These devices are now included as a separate category in FEDRO's road accident statistics. In 2019, 39 users of these devices were seriously injured (2018: 40 users). There were no fatalities in 2019 (2018: 5 fatalities). The age group with the largest number of seriously injured users of devices similar to vehicles is children aged 2 to 13 (21 in 2019, versus 30 in 2018).

Improving safety and traffic flow

These new rules are intended to enhance road safety and improve traffic flow. They also respond to a number of parliamentary initiatives. The changes will necessitate amendments to the Ordinance on Traffic Regulations. They will enter into effect on 1 January 2021.

Creating a rescue corridor will be compulsory. In situations where traffic is advancing at slow pace or is at a standstill, drivers must allow enough space for rescue vehicles to pass between the left-hand and right-hand lane, or in the case of three lanes between the left-hand lane and the two lanes to the right of it. The emergency lane must remain free for breakdowns. This will enable rescue vehicles to reach and clear accident scenes more rapidly and thus restore traffic flow more efficiently. Failure to comply with this regulation will be punishable with a fine.

The **“zipping principle”** is to become compulsory when entering a motorway and when a motorway lane is closed: drivers must allow vehicles travelling on lanes that come to an end to enter the lane on which they are travelling. In addition, when a lane is closed, vehicles on it may only change lanes at the end of the terminating lane in order to make maximum use of the available road surface. Failure to apply the zipping principle will be punishable with a fine.

Passing on the right-hand side in queues in the left or middle lanes will now be permitted. Up to now this was only allowed in cases of parallel queues. This measure will facilitate smoother traffic flow on both lanes. Overtaking on the right-hand side, i.e. swinging out into the lane on the right followed by an immediate manoeuvre back into the original lane of travel, remains forbidden. Right-hand-side overtaking will now be punishable with

The regulations governing motorised traffic will undergo some changes in 2021. The most important changes concern the following areas: creation of a rescue corridor, compulsory “zipping principle” when motorway lanes are closed, and expanded possibilities for passing on the right-hand side in traffic queues.

a fine instead of the previous warning, as long as the overtaking manoeuvre does not risk endangering other road users.

The maximum permissible speed for light motor vehicles with trailers weighing up to 3.5 tonnes is to be increased **from 80 to 100 km/h**, providing that trailers and the towing vehicles are designed to travel at this speed. The ban on driving heavy-duty vehicles on Sundays and at night is to be lifted for **blood donation services**.

www.motorway-driving-guidelines.ch

A symbol for charging stations

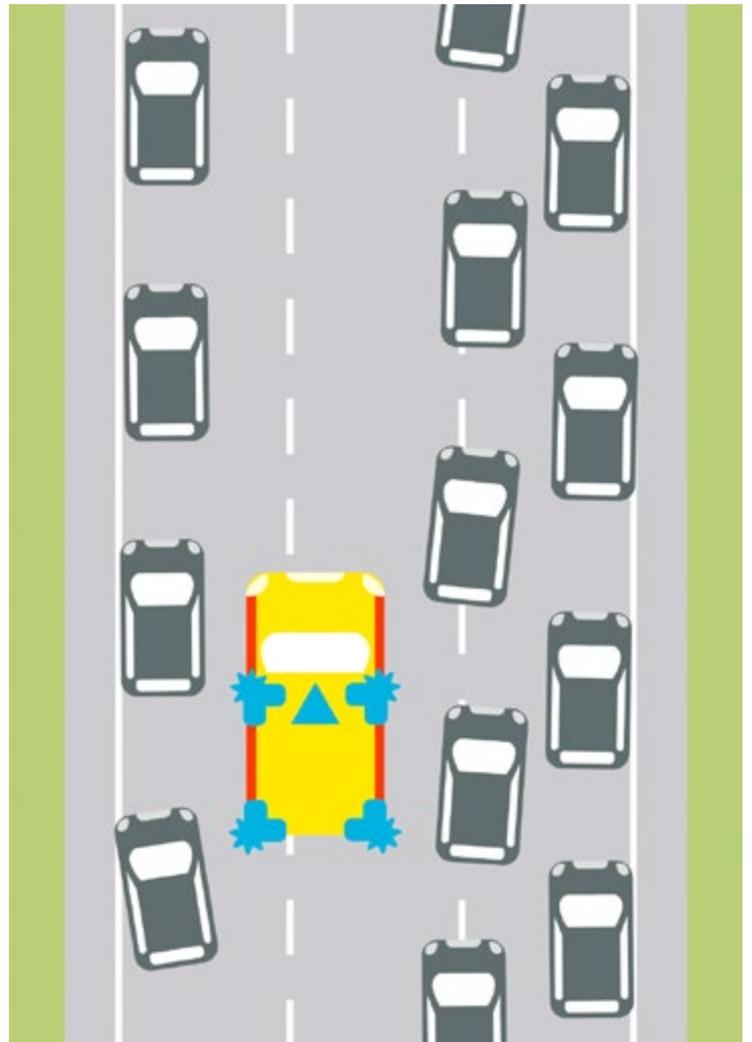
Parking spaces with charging stations for electric vehicles will now be indicated with a green pictogram with the aim of facilitating identification.

Alcohol at motorway service areas

The Ordinance on Motorways and National Roads also regulates the serving and sale of alcoholic beverages at motorway service areas. In an amendment to the ordinance the Federal Council has now lifted the ban. This decision is in line with a motion filed by the Transport and Telecommunications Committee of the National Council. The amendment will enable shops and restaurants at motorway service areas to supply alcohol beverages as from 1 January 2021. In contrast to rest areas (i.e. those without catering facilities), which are under federal jurisdiction, motorway service areas are governed by cantonal law.



Zippering traffic at the end of an access road: on the A1 near Brutiseller junction (canton of Zurich).



On three-lane motorways, the rescue corridor always has to be formed between the left-hand and the two right-hand lanes.

Road map for traffic management

In the next few years, a variety of systems will be introduced for influencing traffic flow on the motorway/national roads network. The schedule for this has been defined in a road map for traffic management in Switzerland. The objective is to achieve the rapid implementation of traffic management measures.



Near Rubigen (canton of Bern): traffic speed coordination or speed regulation and hazard warnings are now increasingly being carried out with the aid of electronic signals.

In its strategic objectives, FEDRO has set itself some ambitious targets, one of which is to reduce the number of traffic jam hours on the motorways and national roads by 25 percent by 2030 versus the figure recorded in 2015. FEDRO also wants to level off the peaks in daily traffic volumes, especially in the agglomerations.

It aims to achieve this by encouraging better and more efficient use of the existing infrastructure. FEDRO therefore intends to actively manage and influence traffic flows. Based on its strategic objectives, FEDRO has formulated a separate traffic flow strategy in which it has defined 19 measures that are to be implemented in the course of the next four years. The measures range from legal provisions, such as the introduction of overtaking on the right and application of the zipping principle in traffic queues, through to the possibility of introducing mobility pricing and the creation of carpooling spaces, and the implementation of a Swiss traffic management road map that will facilitate the rapid realisation of additional traffic management systems. The latter primarily encompass speed coordination and hazard warning systems, plus the controlled feed-in of traffic to motorways and the use of emergency lanes.

Use of the road map for the rapid implementation of tried-and-tested measures

Speed coordination and hazard warning systems are already in use, for example on the A6 between Thun and Bern and on the A14 between Rütihof junction and Rotsee. These systems automatically adjust speed limits to traffic conditions and thus ensure better traffic flow. Around 800 kilometres of further motorways/national roads are to be equipped with these systems by 2026.

Where necessary and feasible, these systems are to be supplemented by the use of emergency lanes during peak periods. Since 2010, the temporary use of emergency lanes has been successfully trialled on the A1 between Morges and Ecublens. Over the next few years, a trial of the temporary use of emergency lanes is to be conducted along more than 250 kilometres of motorway in the major agglomerations, which will allow the structural feasibility to be examined and the impact on traffic flow to be monitored closely, so that the measure can subsequently be implemented.

Furthermore, around 110 additional motorway feed-in facilities are to be trialled throughout Switzerland. Their structural feasibility and impacts on traffic flow will then be carefully examined. The facilities that prove to be effective will be introduced on a step-by-step basis by 2026. The use of existing feed-in facilities (e.g. at the Kirchberg motorway entrance) has demonstrated that this measure facilitates the controlled entry of traffic into motorways and reduces interruptions on the main axes.

Uncoupled from maintenance and expansion projects

The success of traffic management systems depends on their rapid realisation, for which FEDRO's infrastructure offices are responsible. The additional traffic management measures have been defined for each region together with a corresponding course of action. Unlike in the past, these measures will be realised separately from maintenance and expansion projects. This means that the traffic management systems will be managed as separate projects and implemented on a step-by-step basis.

Following implementation, the success of the various measures will be closely monitored. The findings will be available towards the end of the 2020s.

Mobility pricing irons out traffic peaks

Traffic jams are almost a daily occurrence in many places on Switzerland's road network, and public transport services are often overcrowded, especially at peak times during the morning and evening. The problem could be ameliorated if high traffic volumes were to be spread out more evenly over time, thus making better use of the road infrastructure. An impact analysis on mobility pricing shows that this can work in theory.

Many traffic jams are not the result of inadequate road capacity but are caused by too many people travelling at the same time, especially during peak hours. Outside of peak periods – in the morning, at midday and in the afternoon – roads are mostly underutilised. Fewer traffic jams would occur and trains would not be so crowded if a portion of the peak-time traffic could be spread over periods when traffic volumes are lighter. A theoretical impact analysis carried out by the canton of Zug indicates that this works both for road and rail traffic.

Encouraging results of the impact analysis

Within the framework of a theoretical impact analysis, the federal government together with the canton of Zug has conducted a study on how the road network could be used with the aim of ironing out traffic congestion during peak periods. The study focused on the question of how levies based on traffic use – referred to as mobility pricing – could impact mobility and the population. At the same time, the technical feasibility of mobility pricing and related data-protection issues were clarified.

In the impact analysis, earmarked fuel taxes on road traffic, the motorway sticker ("vignette") and the motor vehicle tax were replaced by a distance-based levy (kilometre charge). A distance-based system of tariffs was also adopted for public transport. For the more limited area of the city and agglomeration of Zug, time-differentiated tariffs were adopted instead of the uniform kilometre charge. The analysis revealed that, during peak periods, the volume of private motorised traffic can be reduced by around 9 to 12 percent. With respect to public transport, a reduction by around 5 to 9 percent can be anticipated.

In the analysis, the kilometre charges were higher at peak hours (7 to 9 a.m. and 5 to 7 p.m.) than during off-peak periods. But the impact analysis was based on the premise that, overall, road users do not have to pay more than they do currently.

Conclusions: the desired result can be achieved with time-differentiated tariffs and the volume of traffic on overloaded sections of the road network can be significantly reduced.

www.astra.admin.ch/mobility-pricing

Next steps

The Federal Council has instructed the Federal Department of the Environment, Transport, Energy and Communications (DETEC) to seek out cantons, cities and municipalities that are willing to carry out pilot trials with mobility pricing. The most severe traffic congestion problems occur in the cities and agglomerations. To carry out the pilot trials, however, it will be necessary to create the necessary legal basis. DETEC is currently in the process of developing the relevant draft legislation.

The Federal Council has also instructed DETEC and the Federal Department of Finance (FDF) to develop a concept for ensuring the long-term financing of the transport infrastructure. The aim is for fuel taxes and other traffic levies to be replaced by a tax based on distance driven. This is also necessary for reasons including the growing number of electric cars and vehicles with alternative means of propulsion, which in the medium term will result in falling revenues from fuel taxes.

Marked reduction in traffic volumes during the corona virus pandemic

Traffic volumes on the motorways and national roads fell significantly during the corona virus pandemic in spring 2020: for example, in Renens/Lausanne by 59 percent, in Bern and Würenlos by 40 percent. During this period, there were almost no reports of traffic jams except in connection with accidents. In other words, the fall in traffic volumes also resulted in zero traffic jams during peak hours.

Comparison of daily traffic volume curves



Average daily traffic volume: comparison between March 2019 and March 2020.

Motorway/national roads network extended by some 400 kilometres

On 1 January 2020, the federal government took charge of and integrated a number of cantonal roads into the motorway/national roads network. The preparatory work for implementing the new federal resolution on the network was completed to a large extent by the end of 2019.

The new federal resolution on the motorway network regulates the integration of approximately 400 kilometres of cantonal roads (including feeder roads) into the motorway/national roads network as of 1 January 2020. This measure is in line with the original federal resolution, which was adopted by Parliament in 1969 and which first defined the motorway/national roads network. The latest amendment to the resolution incorporates the national roads of both the two half-cantons of Appenzell, with the result that the network now covers all 26 cantons. The 3.4-kilometre stretch from Schaffhausen to Bargaen has been returned to the canton of Schaffhausen. As of 1 January 2020, the network comprises 2,254.5 kilometres of motorways and national roads (see page 25).

The stretches of cantonal road added to the network have been integrated into FEDRO's administrative processes.

Preparatory work was carried out on the added stretches in several sub-projects before they were integrated into the network. Ownership of these stretches has been legally distinguished from that of subordinate roads and the maintenance perimeter of the stretches has been defined. The new responsibilities of the cantonal civil engineering authorities have been fully defined and contractually established on the basis of the maintenance perimeter. FEDRO has taken over ongoing and future projects on the added stretches from the cantons and re-ordered and prioritised them for inclusion in its

standard project processes. FEDRO's infrastructure offices have obtained a general overview of the condition of these stretches and prioritised measures to be taken in the next five years.

The subdivision of the land will be carried out on the basis of the Federal Council's resolution of 19 February 2020 in the next three years.

Prioritising projects

FEDRO has prioritised the projects foreseen for the new stretches and drawn up a plan to implement them by 2025. Implementation will be carried out on the basis of available resources, project and approval processes, safety requirements and development standards for the entire motorway/national roads network.

The projects are prioritised according to the following criteria:

- Ensuring operational maintenance;
- Structural maintenance and renovation;
- Development projects:
 - Safety;
 - Legally required environmental measures;
 - Traffic flow;
 - Environmental measures beyond those legally required;
- Capacity expansion;
- Expansion for the benefit of third parties.



The stretch between Thielle and Murten crosses the Grand-Marais region and is now part of the motorway/national roads network.

	4-lane <i>in use</i>	3-lane <i>in use</i>	2-lane <i>in use</i>	Mixed traffic <i>in use</i>	Total <i>in use</i>
Aargau	4.6		2.1		6.7
Appenzell-Ausserrhoden			11.2		11.2
Appenzell-Innerrhoden			4.2		4.2
Basel-Landschaft	16.0		25.1		41.1
Basel-Stadt					
Bern	23.0	1.1	22.6	15.3	62.0
Fribourg				5.5	5.5
Geneva					
Glarus			9.8		9.8
Grisons			3.0	53.1	56.1
Jura				7.3	7.3
Lucerne					
Neuchâtel	12.6	2.2	14.8		29.6
Nidwalden					
Obwalden					
St Gallen	7.5		13.4		20.9
Schaffhausen			7.1		7.1
Schwyz					
Solothurn					
Thurgau	2.2		33.5		35.7
Ticino			10.8	16.1	26.9
Uri					
Valais	0.3	6.7	2.1	38.2	47.3
Vaud					
Zug	2.6		1.5		4.1
Zurich	17.0		21.2		38.2
Total	85.8	10.0	182.4	135.5	413.7

413.7 kilometres of former cantonal roads have been integrated into the motorway/national roads network as of 1 January 2020.

40 years of travel through the Gotthard

The Gotthard road tunnel was handed over to traffic 40 years ago, on 5 September 1980. Construction of the 16.942-kilometre tunnel took ten years and five months.

The Gotthard road tunnel is located in the heart of the Swiss Alps on the A2, which runs between Basel and Chiasso. It links Göschenen and Airolo and provides the shortest route through the central Alps. It runs parallel to the Gotthard railway tunnel, which was completed in 1882.

In 1960, the Federal Council set up a "Gotthard Tunnel Study Group" under the leadership of the former Federal Office for Road and River Engineering. Five alternatives were proposed in 1963, including widening the existing railway tunnel and merging it with a road tunnel, and transferring the railway line to a base tunnel between Amsteg and Bodio. In the end, the "Göschenen-Airolo" option was chosen. In 1965, Parliament adopted a resolution to supplement the motorway/national roads network with the construction of a road tunnel through the Gotthard.

The construction work was split into lots. Preparatory work on the two portals in Göschenen and Airolo was initiated in autumn 1969. A ceremony was held on 5 May 1970 to signal the official initiation of the drilling operations.

Work had to proceed with extreme caution at a distance of just 1.2 kilometres from the northern portal: here the road tunnel crossed under the existing railway tunnel and the rock layer between the two tubes was a mere 5.2 metres thick.

A portion of the excavated material was used as the substructure for the road for the Göschenen connecting structures to the north, while the remainder was used at the southern end for the construction of embankments for the motorway.

The breakthrough to the safety shaft on the eastern side of the tunnel was accomplished on 26 March 1976, and to the main tunnel on 16 December. A ceremony was held to officially open the tunnel to traffic on 5 September 1980 at 5 p.m.

Accident statistics, Gotthard road tunnel

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total accidents	9	10	11	12	6	10	10	9	7	9	9	14	10
<i>with fatalities</i>	0	1	0	0	1	2	0	2	0	0	1	0	1
<i>with injuries</i>	1	1	4	4	2	0	4	1	3	2	1	6	2
<i>only material damages</i>	8	8	7	8	3	8	6	6	4	7	7	8	7
Total victims	4	4	12	7	3	5	4	5	7	2	7	9	8
<i>Fatalities</i>	0	1	0	0	1	2	0	2	0	0	2	0	1
<i>Injuries</i>	4	3	12	7	2	3	4	3	7	2	5	9	7

Start of construction work for the second tube

The approval procedure for the second tube of the Gotthard road tunnel has been concluded. DETEC formally approved the plans on 10 December 2019. The preparation of the detailed projects was also initiated in 2019. Detailed projects form the basis for the calls for tenders. The preparatory work was initiated in 2020 and construction will commence in 2021. The aim is for both tunnels to be in operation as of 2032.

Transfer of overhead power lines to the tunnel

The first project combining road construction and electricity supply infrastructure is to be implemented during the construction of the second Gotthard road tunnel tube: the integration of a Swissgrid high-voltage transmission line into the second tube. This transmission line, which currently runs above the Gotthard massif, will be transferred to a separate utilities duct in the tunnel.

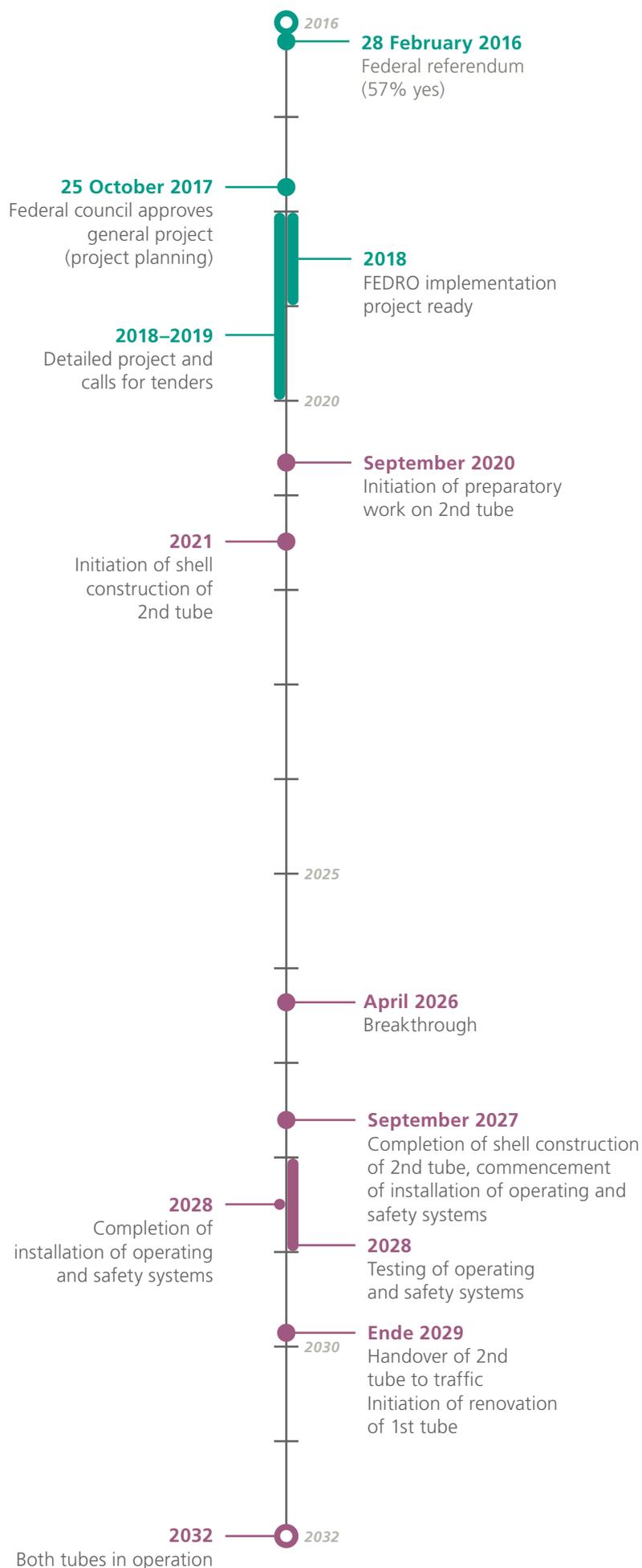
Costs

Gotthard road tunnel	Billion Swiss francs
2nd tube	2.02
Utilities duct for high-voltage transmission line	0.06
Renovation of existing tunnel tube	0.75

Traffic volume in the Gotthard road tunnel

Year	Total	Motor vehicles*	Heavy-duty v.
1981	2,884,230	2,713,230	171,000
1990	5,699,840	5,151,840	548,000
1994	6,117,765	5,310,765	807,000
2000	6,837,246	5,650,246	1,187,000
2005	5,865,352	4,940,473	924,879
2010	6,238,770	5,295,540	943,230
2015	6,415,905	5,617,859	798,046
2016	6,426,478	5,645,084	781,394
2017	6,469,291	5,687,037	782,254
2018	6,412,955	5,632,247	780,708
2019	6,399,350	5,625,379	773,971

* Cars, utility vehicles, motorcycles and buses



Helping commercial drivers plan their journeys

In 2011, at the request of the Federal Council, FEDRO drew up a concept for the installation of parking areas for heavy goods vehicles (HGVs) along the motorways/national roads. Today, thirteen are in operation, one is under construction and seven more are in the planning stage. These facilities enable HGV drivers to more efficiently plan and organise their journeys and rest periods.

A total of 54,000 HGVs, including semi-trailers, are registered in Switzerland. Each year around 900,000 HGVs travel along the north-south axes. The Federal Council's goal is to bring about the transfer of a large proportion of goods transport from road to rail, but the traffic statistics clearly underscore the continued importance of heavy goods transport on Switzerland's roads.

HGV drivers are required by law to periodically take rest breaks. Thanks to the establishment of parking areas along the motorways and national roads, they can now plan their journeys and rest periods more efficiently and thus make our roads safer.

Total of 21 HGV parking areas

The Büttiker postulate calling for more parking areas for HGVs along the motorways and national roads and in urban centres resulted in the formulation of a concept for the creation of more of these facilities. The original objective was to construct 16 such parking areas. There were already five major parking areas like this in operation: Bern-Grauholz (canton of Bern), Forrenberg South (canton of Zurich), Ripshausen/Erstfeld (canton of Uri), Stalvedro (canton of Ticino) and Realta (canton of Grisons).

In the meantime, a further eight have been established and another is currently under construction in Bodio/Monteforno (canton of Ticino), which will provide 300 parking spaces for HGVs and also serve as an HGV inspection centre. By way of comparison: the existing HGV inspection centre in Ripshausen has space for 400 HGVs. This facility also serves as a holding zone for HGVs in advance of the Gotthard when necessary due to adverse weather conditions or a temporary closure of the tunnel. A further seven parking areas are currently in the planning stage. Thus, in the medium term there will ultimately be a total of 21 HGV parking areas along the motorway/national roads network.



Multiple functions

As a rule, these parking areas are not reserved exclusively for HGVs, but also include spaces for other motor vehicles so that the facilities can be put to optimal use. Because they are multiple-function facilities it is not possible to calculate the specific costs for the parking areas for HGVs.

In addition to these special parking areas and rest areas (without restaurant facilities), HGV drivers can also take a break at the 48 service areas (with restaurants) along the motorway/national roads network. And at the 120 rest areas that provide picnic zones and toilets, and for which FEDRO is responsible, HGVs can park free of charge. Parking here will remain free of charge in the future.



HGV parking area in Mägenwil, canton of Aargau.

Ongoing completion

Work on the completion of the motorway/national roads network is proceeding, although no new stretches will be opened to traffic in 2020. The cantons are responsible for carrying out the construction work, while FEDRO is the supervisory authority.

Construction work is being carried out at a variety of locations on the A9 in the canton of Valais, including Pfynewald (compensation measures), Riedberg tunnel, the St. German underpass, Raron (covered stretch) and the Visp and Vispental tunnels. The three-kilometre stretch between the Gampel/Steg East and Raron junctions was scheduled for completion in 2021, but this has had to be postponed until 2022 due to pending objections. A 3.7-kilometre stretch has been planned on the A8 in the canton of Obwalden between Lungern North and Giswil South (including the 2.1-kilometre Kaiserstuhl tunnel). Here, planning approval has been granted. The project, budgeted at 270 million Swiss francs, can now go ahead and preparatory work has already been initiated. Planned completion: 2029.

The Axen route (A4) runs along the Lake of Lucerne in the cantons of Schwyz and Uri. The planning approval procedure (and thus the go-ahead) for the new route

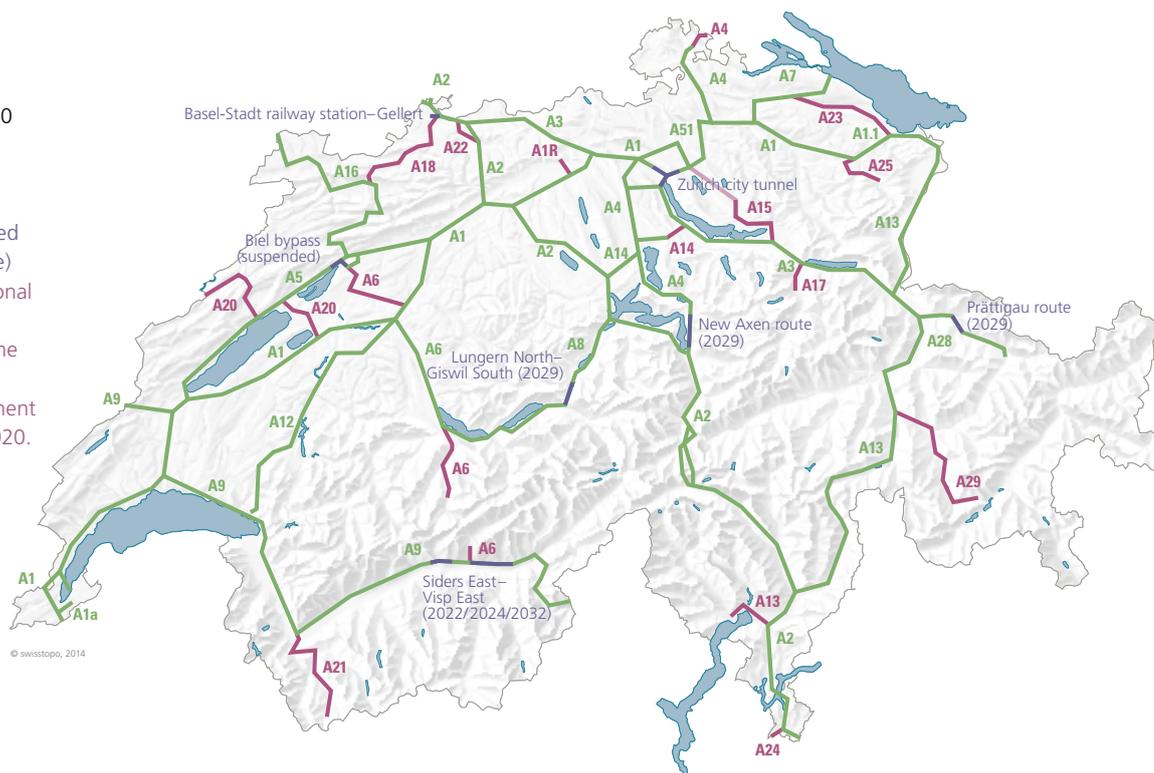
is pending. The 8.9-kilometre stretch incorporating the Sisikon (4.4 kilometres) and Morschach (2.9 kilometres) tunnels will cost around a billion Swiss francs. Planned completion: 2029. This new route will ensure the future availability, functional capacity, safety and environmental compatibility of the north-south transit axis for private motorised transport. The tunnels will ensure that the new Axen route will be better protected against natural hazards.

Biel western bypass subproject suspended

The planned 7.2-kilometre Biel western bypass comprises three sections: an access road on the right shore of the lake (Port tunnel), a stretch to the west and the Vingelz bypass (Vingelz tunnel). The 2.3-kilometre western stretch subproject was suspended at the request of the cantonal council of Bern.

Status, January 2020

- Completed
- In the project or construction stage (anticipated completion date)
- Motorway/national road stretches adopted by the cantons by the federal government on 1 January 2020.



The Swiss motorway/ national roads network

Total length by road category (km)

	8-lane	7-lane	6-lane	5-lane	4-lane	3-lane	2-lane	Mixed traffic	Added to network on 1.1.2020*	Total
	<i>in use</i>	<i>in use</i>	<i>in use</i>	<i>in use</i>	<i>in use</i>	<i>in use</i>				
Aargau		1.2	14	1.7	86.9		2.1		6.7	105.9
Appenzell AR							11.2		11.2	11.2
Appenzell IR							4.2		4.2	4.2
Basel-Landschaft			9.5	3.3	30.8		25.1		41.1	68.7
Basel-Stadt			3.5		6					9.5
Bern			13.2	3.1	160.4	1.1	72.1	34.7	62	284.6
Fribourg					84			5.5	5.5	89.5
Geneva					27.2					27.2
Glarus					16.6		9.8		9.8	26.4
Grisons					43.6		100.7	81	56.1	225.3
Jura					35.4		11.8	7.3	7.3	54.5
Lucerne			2.6	2.7	53.2					58.5
Neuchâtel					46.1	2.2	17.8	1.9	29.6	68.0
Nidwalden					22.9		2.9			25.8
Obwalden					1.8		22.3	13.3		37.4
St Gallen				4.3	144.9		13.4		20.9	162.6
Schaffhausen							12.3		7.1	12.3
Schwyz				2.7	40.5		2.2	4.3		49.7
Solothurn			6.5	5.4	31.9					43.8
Thurgau					45.1		33.5		35.7	78.6
Ticino			7.3	18	81		40.6	16.1	26.9	163.0
Uri					37.1		16.3	16.1		69.5
Valais					71.6	6.7	17.7	66.6	47.3	162.6
Vaud	0.6		2.8	5.7	183.4		12.8			205.3
Zug			6		15.9		1.5		4.1	23.4
Zurich	1.2		31.3		131.4	1.9	21.2		38.2	187.0
Total	1.8	1.2	96.7	46.9	1,397.7	11.9	451.5	246.8	413.7	2,254.5

* On 1 January 2020 the federal government integrated 413.7 kilometres of cantonal roads into the motorway/national roads network in accordance with the new Federal Motorway Network Resolution.

In 2019, no new stretches of the motorway/national roads network were opened. The total length was therefore unchanged. However, as of 1 January 2020, 413.7 kilometres were added (cf. page 18). The new stretches were former cantonal roads that were integrated into the motorway/

national roads network in accordance with the New Network Resolution. This means that the total length of the network is now 2,254.5 kilometres, and the federal government is responsible for these former cantonal roads, thus easing the burden on the cantons concerned.

Efficient energy use on the motorway/national roads network

The federal government has taken the initiative on energy use and energy efficiency with a project known as “the federal government as role model in the energy sector”. FEDRO is actively involved in the 2020-2030 Climate Package with various measures in the area of infrastructure.

With Energy Strategy 2050, Switzerland aims to take advantage of the changed situation in the energy sector while maintaining its high standards of supply. At the same time, the strategy aims to contribute to reducing energy-related environmental burdens. The “federal government as role model in the energy sector” initiative is one of the measures advocated in Energy Strategy 2050.

FEDRO publishes a periodical report on the energy budget for the operation of the motorway/national

roads network. The statistics below provide information on energy consumption in this context. The report makes it possible to verify the efficiency of the measures to be implemented in the energy strategy.

The following FEDRO measures are to be carried out:

- The electricity supply will be 100 percent from renewable sources (hydropower);
- Efficient use of energy in infrastructure construction (“Minergie” standard);



LED lighting in the Mittal Tunnel on the A6 in the canton of Valais between Goppenstein and Gampel.

- Rapid modernisation of the electrical installations at depots as of 2020;
- No more use of fossil fuels in new heating systems;
- Increased own electricity generation (e.g. solar panels on buildings);
- Use of LED lighting in tunnels;
- Construction of 100 fast-charging stations in motorway service areas for electric cars (cf. box).

Safety standards versus energy efficiency

The motorway/national roads network consumes a total of approximately 155 GWh of electricity per year, 82 percent of which is used in tunnels, of which lighting accounts for approximately 60 percent.

Electricity consumption in tunnels and on stretches of open road increased in the period from 2001 to 2012 by 10 percent. Since 2012, however, the increases in electricity consumption (for new tunnels or tunnel equipment) have been offset by the reductions resulting from improved energy efficiency (use of LED lighting).

On the other hand, new operating and safety equipment is increasing electricity consumption. For example, since the fire in the Gotthard road tunnel in 2001, safety shafts are being built alongside single-tube tunnels. To ensure that safety shafts are able to maintain a continually higher level of air pressure – in order to prevent smoke penetrating the safety tunnel in the event of a fire in the main tube – ventilators are in permanent operation. Furthermore, electricity consumption is being increased by the equipment for switching the use of the breakdown lane and for harmonising traffic speed and danger-alert systems that are necessary for ensuring smooth traffic flow.

Electricity consumption 2019

Motorways/national roads	Gigawatt hours (GWh)	%
Tunnels	126	82.0
Open roads	12	7.5
Works depots	16	10.0
Heavy vehicle inspection centres	1	0.5
Total	155	100.0

Energy-efficient technologies

In addition to lighting, tunnel walls are painted with light, dirt-resistant colours. Light reflection allows less intensive lighting to be used, thus lowering electricity consumption.

Already in 2012, FEDRO began to optimise the operation of tunnel ventilators. In the case of the Gotthard road tunnel, for example, electricity consumption by ventilators and lights fell from 15.3 to 11.6 GWh between 2011 and 2014. FEDRO has since been constantly optimising these processes.

Further potential is to be seen in the air-conditioning equipment of the technical rooms in the tunnel safety centres. Nowadays, it is possible to cool or heat individual rooms through a system of electronically operated valves. The choice between simple, inexpensive equipment and state-of-the-art, maintenance-intensive equipment must be weighed up on a case-by-case basis. Significant reductions in electricity consumption have been achieved with these technologies in the tunnels of the new “Transjurane” (A16) motorway.

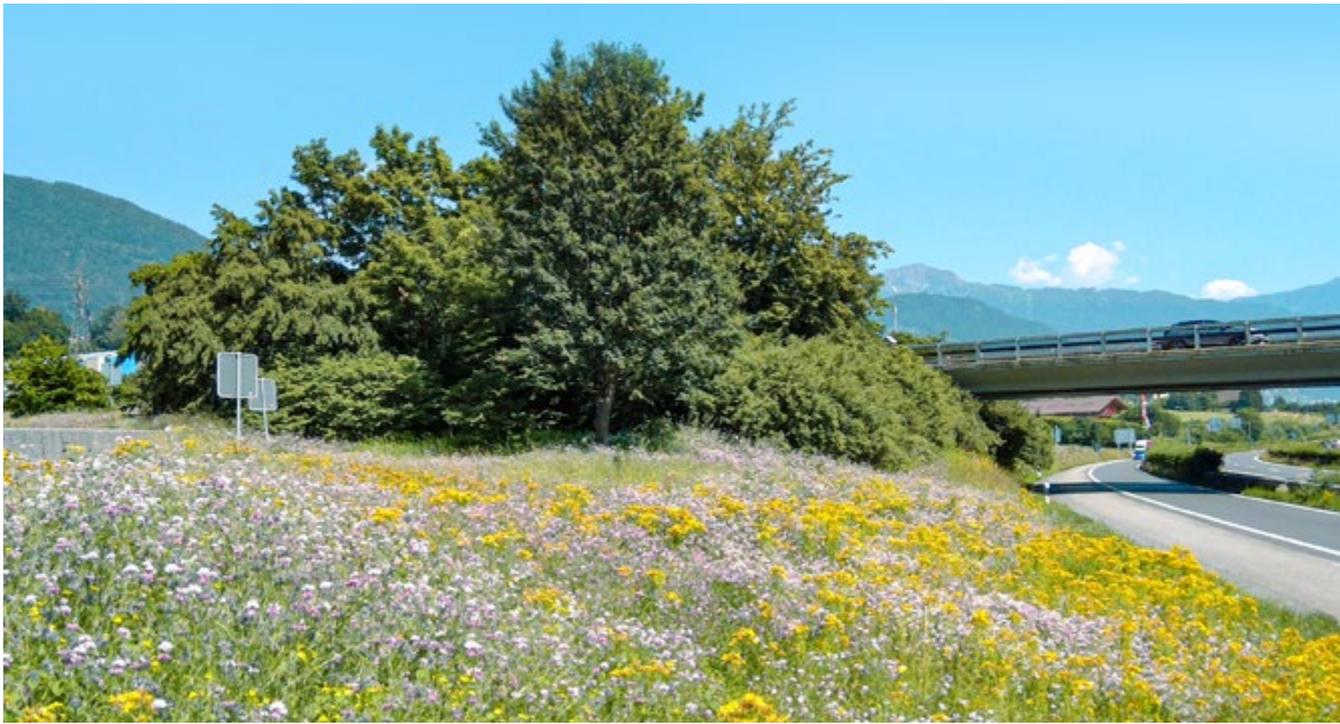
The most energy-efficient technologies are always incorporated in the construction of new tunnels or the renovation of existing ones.

100 fast-charging stations in rest areas

Electric cars contribute to achieving the objectives of the federal government’s energy and climate policies. The government expects their market share to continue increasing in the coming years. In 2019, the number of electric cars in Switzerland stood at 28,716 (9,535 more than in 2018). FEDRO actively promotes electric mobility and is in the process of equipping 100 of the 120 rest areas with fast-charging stations.

Four Swiss suppliers and one Dutch company have been signed up to carry out the work at 20 locations. Each of these companies is required to bring into operation the first five charging stations of their allocation within one year of the issue of the general licence. The 100 rest areas must be equipped with a fast-charging station within the next ten years. The first will become operational in 2020 at the following rest areas: Chilchbuehl and Inseli in the canton of Lucerne, and Chrüzstrass in the canton of Zurich.

FEDRO is responsible for their electrical connection, including transformers, and will finance in advance the fixed costs of the construction of the electrical infrastructure. Operators are required to pay an annual user charge based on the investments made by FEDRO until the investment has been paid off.



On the A12 near La Veyre (canton of Vaud) above Vevey.

Habitats for flora and fauna along the motorways and national roads

The Federal Council adopted its “Biodiversity Strategy” action plan in 2017 and FEDRO is making its own contribution: it is creating many areas of greenery along the motorways/national roads to provide habitats for flora and fauna and promote biodiversity.

The total size of the areas of greenery along the motorways and national roads is roughly equivalent to the size of the canton of Basel-Stadt. Aside from the grassy recreational zones at rest areas, most of the areas of greenery are in the form of embankments, hedges and grasslands along entrance and exit roads. There are also wetlands and ponds. Since 2018, FEDRO has been working together with external biologists to promote biodiversity in these areas of greenery by maintain-

ing them in an appropriate manner. FEDRO’s Western Switzerland regional office in Estavayer-le-Lac has completed a biodiversity inventory. The area for which this regional office is responsible encompasses the cantons of Geneva, Vaud, Fribourg, Neuchâtel, Jura and Bern. For this biodiversity project, biologists appraised 1,267 areas of greenery; 636 plots (224 hectares) were added to the biodiversity register.



A national action plan

The federal government and cantonal authorities adopted an action plan in the field of environmental protection. They are working together to protect nature and promote biodiversity. The action plan directly promotes biodiversity (creation of ecological infrastructure, conservation of species, etc.). Biodi-

versity is also to receive greater attention as an issue in the areas of transport, agriculture, spatial planning and economic development. The promotion of biodiversity on areas of greenery along the motorways and national roads is an integral part of the national action plan.

Traffic noise and the maintenance work required for road safety reasons are the only disruptive factors on these areas of greenery. During their studies, the biologists involved repeatedly expressed their surprise at the biodiversity they found. They discovered rare types of orchids as well as fauna such as sand lizards, wall lizards, grass snakes and smooth snakes. Appropriate measures are now being taken to protect and sustain this wildlife. Wherever possible, wildlife corridors connecting neighbouring regions are to be created so that the fauna and flora can be provided with the best possible habitats.

Different approaches to caring for areas of greenery

In the biodiversity study the initial focus was on the preservation of the existing plant diversity. The first step was to divide the areas of greenery into sections. The biologists then determined which areas of greenery were suitable for a particular type of plant diversity. The areas in question were then depicted in detail on special maps. The maintenance crews from the regional offices thus now have precise information at their disposal concerning the different areas of greenery.

Since 2016, the maintenance crews have been caring for the greenery areas in accordance with the FEDRO guidelines applicable thus far, which already include measures relating to biodiversity. Now FEDRO is taking things a



Bee orchid ("Ophrys apifera") on the A1 near Avenches (canton of Vaud).

step further: the maintenance of around 20 percent of the areas of greenery along the motorways and national roads will be oriented on the Biodiversity Strategy. Since no fertilisers are ever used on these areas, they are predestined for the promotion of biodiversity.

This targeted approach to looking after areas of greenery will be consistently implemented as of 2020 on a step-by-step basis and the programme will be in operation on all designated areas of greenery by 2022. To promote biodiversity in these areas, a variety of maintenance methods have been defined that do not disturb the flowering and seeding stages of the plants, so their preservation and propagation can be assured. Together with the biologists involved, FEDRO has defined six different methods of maintaining the various areas of greenery in keeping with the specific natural environment. These

methods take account of aspects such as the right season for plant care, trimming frequency, cutting height, qualities of the equipment used and preservation of retreat zones. In addition, the large-scale felling of trees and bushes is to be avoided and mowing is to be timed correctly. This requires only very little extra work. Structural measures may also be implemented, such as the installation of stone or wood piles and adjustments of fences, which benefits both plants and animals, for whom new habitats are thus created.



Plant diversity on the A16 near Porrentruy (canton of Jura).



Top: area of greenery created in the dividing strip on an entrance road between Muri (Bern) and Thun.
Bottom: plant diversity on a rock face, above the wildlife corridor near Brienzwiler (canton of Bern).



FEDRO director heads Conference of European Directors of Roads

In 2020, it is Switzerland's turn to chair the Conference of European Directors of Roads, making FEDRO director Jürg Röthlisberger head of this body for this year.

The Conference of European Directors of Roads (CEDR) was founded in 2003. It is a private-law association based in Brussels and provides the national road administrations of European countries with a platform for exchanging information and knowledge. It comprises 28 members from 27 countries.

Management board of the Federal Roads Office

Top, from left to right:

Jürg Röthlisberger, Director

Katrin Schneeberger, Assistant Director until 31 August 2020 (head of Political and Official Affairs Division)

Guido Biaggio, Deputy Director (head of Road Infrastructure Division, Eastern Region)

Pascal Mertenat, Deputy Director (head of Road Infrastructure Division, Western Region)

Lorenzo Cascioni, Deputy Director (head of Road Traffic Division)

Bottom, from left to right:

Erwin Wieland, Deputy Director (head of Road Networks Division)

Christian Kellerhals (head of Steering and Finance Division)

Marianne Wannier (head of Human Resources)

Benno Schmid (head of Information and Communication Section)

Petra Ebner (Executive Assistant)

Issues currently under discussion within the CEDR concern traffic safety, the operation and maintenance of road infrastructure, the environment, innovation and digitalisation, and the harmonisation of standards. Exchanges among the national road administrations take place both among delegates in working groups and workshops and within the framework of meetings of the CEDR's internal bodies.

The highest body of the CEDR is the General Assembly, comprising the national road administration directors. It convenes twice a year. The Governing Board prepares the meetings of the General Assembly and as a rule convenes six times a year (via Skype). Jürg Röthlisberger is chair of the CEDR Governing Board for one year in 2020 in accordance with a rotation principle.

During FEDRO's chairmanship, Switzerland will be able to set the priorities for the thematic debates within the CEDR. FEDRO has declared the efficient use of existing infrastructure as its priority theme.

www.cedr.eu

Three new members of the FEDRO management board

The FEDRO management board has three new members. Lorenzo Cascioni (56, from Lyss) has been Deputy Director and head of the Road Traffic Division since May 2019. Previously, he was head of the Section for Strategic Management Support within the Swiss Federal Chancellery. Pascal Mertenat (57, from Delémont), who was previously cantonal engineer of the canton of Jura, was appointed head of the Road Infrastructure Division, Western Region in February 2020, and holds the rank of Deputy Director. Marianne Wannier (40, from St. Sulpice, canton of Vaud/Ittigen, canton of Bern), who was previously head of Human Resources at the School of Engineering of the Federal Institute of Technology, Lausanne, was appointed head of Human Resources in October 2019.

Measuring emissions from moving vehicles

As part of a research project, a consortium has been commissioned by FEDRO to measure the emissions from moving vehicles. The aim is to detect defective components or cases of manipulation of exhaust systems. The project was initiated in spring 2020 and will last two years.

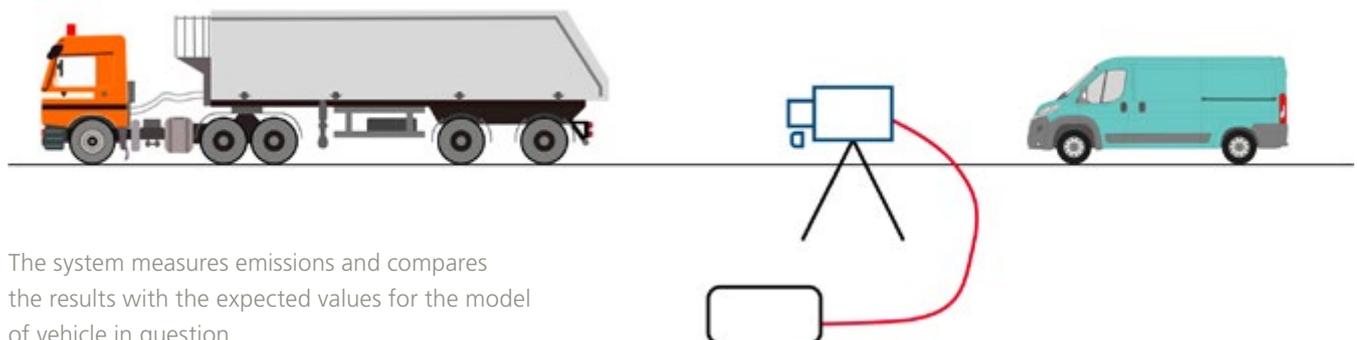
Modern vehicles are equipped with an on-board-diagnosis system to monitor exhaust emissions. In the case of vehicles with these systems, however, it is becoming increasingly difficult to verify during inspections or controls that exhaust systems are functioning correctly. This FEDRO research project is now investigating whether it is possible to identify vehicles on the open road with defective exhaust systems or with exhaust systems which have been manipulated.

The exhaust emissions from vehicles on the open road are measured using a remote sensing detection machine. The measuring device is either placed on the side of the road or on a support above the road. The readings generated from the emission measurements of a specific vehicle are then compared, using the vehicle's licence plate, with the expected values indicated for the type of vehicle in question. This method of data comparison can reveal significant irregularities.

The research project will run for two years. Initial results are expected to be available in spring 2022.

Exhaust manipulations of heavy-duty vehicles

The inspections carried out on heavy-duty vehicles include tests to detect emission offences, including manipulations of diesel exhaust fluid, also known as AUS 32 or AdBlue. Since the end of 2016, when exhaust emission manipulations first became known, detected cases initially increased. By 2018, however, the number of cases declined as a result of the checks being carried out.



The system measures emissions and compares the results with the expected values for the model of vehicle in question.

Facts, figures, statistics

630 employees



People

Tunnels: 280

Construction projects: 809

Connections: 480

Heavy vehicle inspection centres: 6

5,510 managed datasets

10 locations



Data

39 IT systems

Rest areas (picnic): 122

Replacement value of motorway/national

roads network: 83.2 billion Swiss francs

Expenditure: 3.21 billion Swiss francs

Traffic counting

stations: 320

Concluded contracts in 2019: 3,560

Investment in infrastructure:

2.1 billion Swiss francs

Finance



Construction sites: 105

Bridges: 4,270 (main axes and overpasses)

HGVs via main transalpine routes: 898,000

Service areas (restaurants): 48 (ownership by cantons)



Infrastructure

Junctions: 51

Vehicle kilometres on the network: 27 billion

Drainage water treatment plants: 152

Large-scale wildlife
corridors: 41

Vehicles



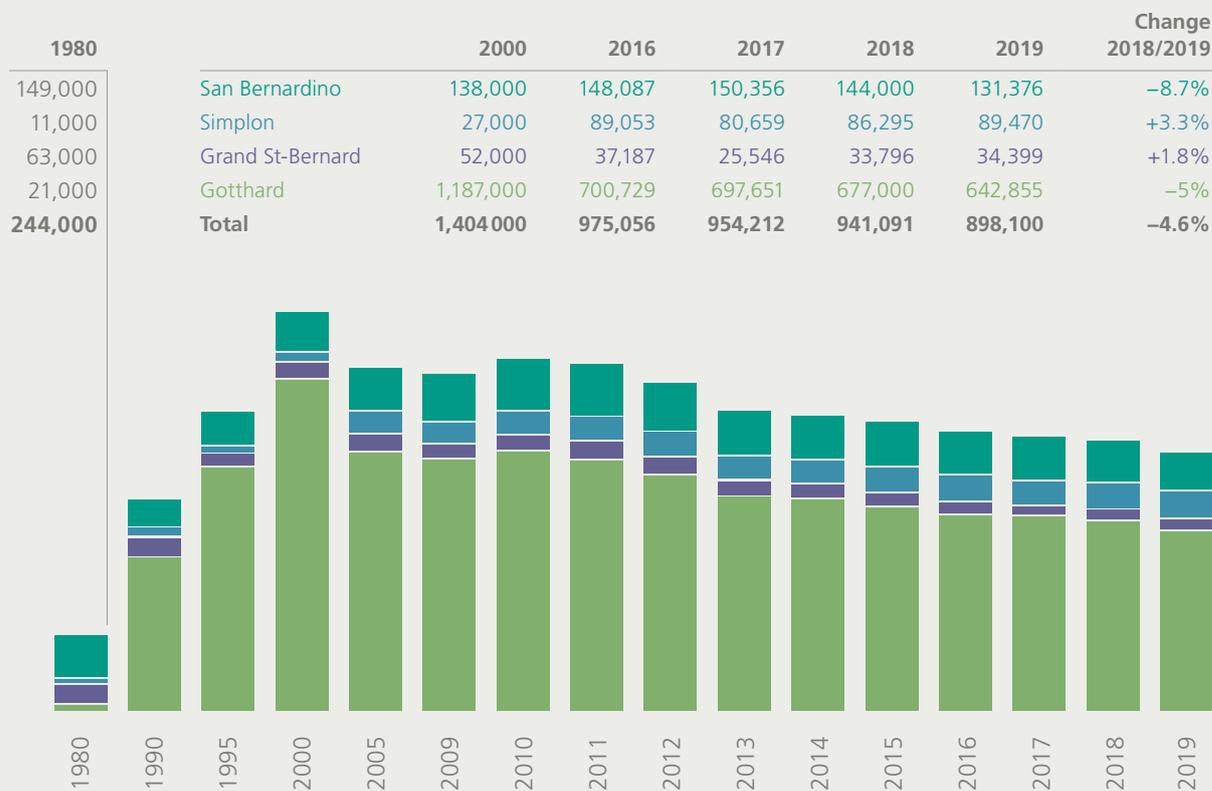
2,254.5 kilometres Length of motorway/national roads network

Highest average daily traffic volume: 144,000 vehicles (Wallisellen)

Further reduction in the volume of heavy vehicles through the Alps

The volume of heavy vehicles travelling through the Alps is continuing to fall: in 2019, the total number amounted to 898,100 vehicles, i.e. 42,991 or 4.6 percent down on the previous year, compared with a decline of 1.4 percent in 2018 versus 2017. Heavy traffic travelling through the Alps was at its highest in 2010 with 1,235,861 vehicles. Since then, the volume has fallen steadily. The number in 2019 was 27 percent lower than

in 2010. 29.4 percent of all goods traffic through the Alps, i.e. also by rail, was transported by road. The most frequently used routes through the Alps remain the San Bernardino in Grisons and the Gotthard. 642,855 heavy vehicles passed through the Gotthard last year, i.e. 72 percent of all heavy vehicles travelling through the Alps in Switzerland.



Source: Federal Roads Office (FEDRO)

More heavy traffic for the same distance travelled

In 2019, the total accumulated distance travelled on the Swiss motorway/national roads network was 27.799 billion kilometres. This number represents a slight increase (0.4 percent) in the total distance travelled. By contrast, the volume of heavy vehicles increased by 3.9 percent.

The increasing trend in traffic on motorways and national roads is thus continuing. For the fourth consecutive year the total distance travelled has exceeded 27 billion kilometres. The annual increase is nevertheless significantly lower than in 2015 when a plus of 4.2 percent was reported.

The most heavily travelled stretches were those around the major agglomerations of Zurich, Basel and Bern (cf. table opposite). As before, the highest traffic volume was recorded in the region of Wallisellen, near Zurich. Owing to road works on the Zurich northern bypass, however, there are no records for this stretch in 2019.

The distance covered by heavy vehicles was 1.649 billion kilometres, or 5.9 percent of the total accumulated distance. The volume of this category of vehicle increased in 2019 by 3.9 percent versus the previous year, i.e. significantly more than in the previous years.

Accumulated vehicle-kilometres on the Swiss motorway/national roads network

Year	Billion km	+/- (in %)	Heavy vehicles, billion km	+/- (in %)
2013	25.170		1.506	
2014	25.415	+1.0	1.541	+2.3
2015	26.485	+4.2	1.544	+0.2
2016	27.131	+2.4	1.566	+1.4
2017	27.680	+2.0	1.591	+1.6
2018	27.696	+0.1	1.598	+0.4
2019	27.799	+0.4	1.649	+3.9

Number of traffic jam hours on the Swiss motorway/national roads network*

Causes	2017	2018	2019	+/- (in %)
Congestion	24,959	23,854	26,832	+12.5
Accidents	2,787	2,815	2,835	+0.7
Roadworks	289	419	245	-41.6
Other	217	318	319	+0.4
Total	28,252	27,406	30,230	+10.3

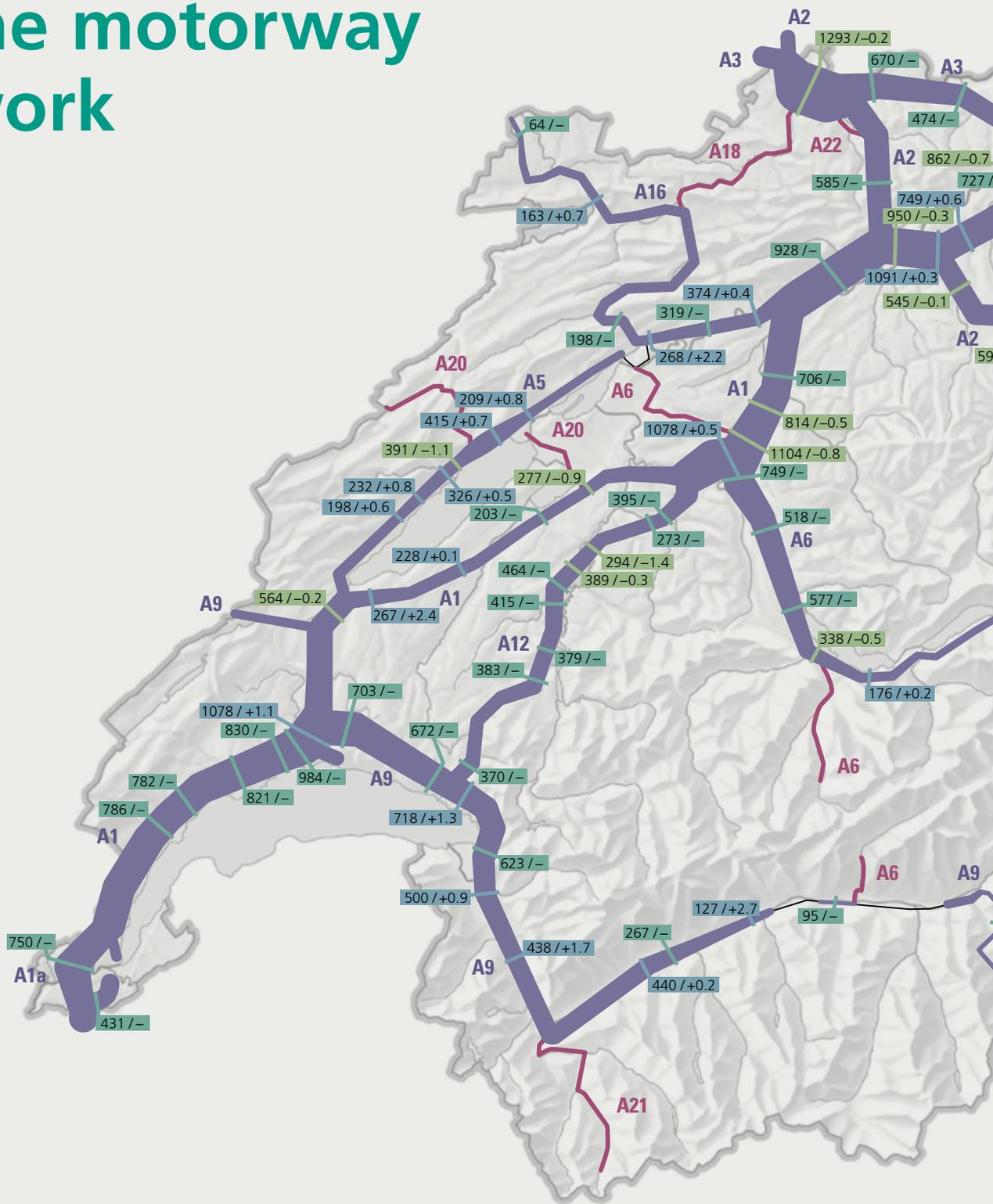
*Traffic-jam data were calculated with the aid of a new method, including for 2017 and 2018.

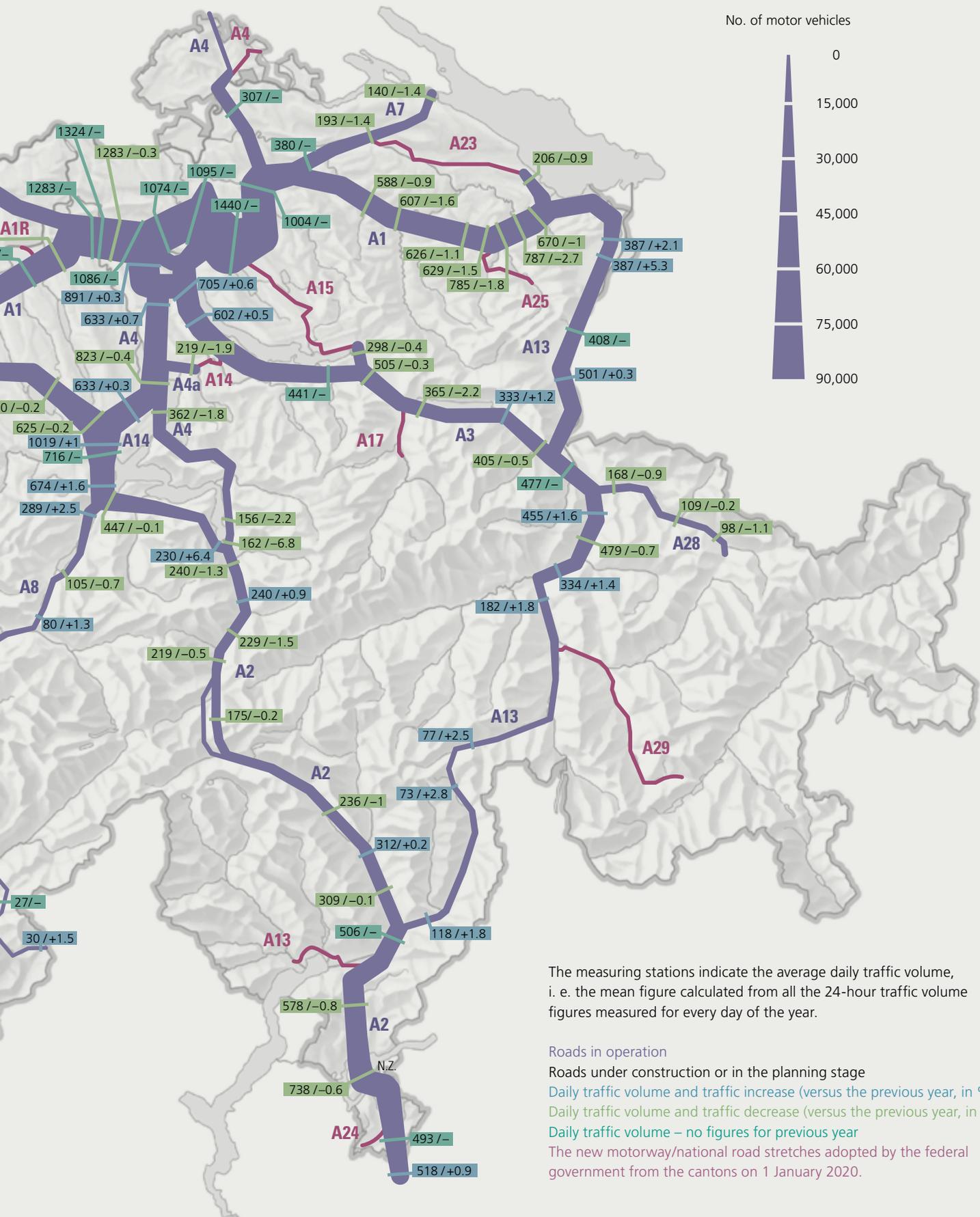
Highest daily traffic volume (DTV)

Highest DTV figures	DTV 2019	Share of heavy vehicles (%), 2019	DTV 2018	Share of heavy vehicles (%), 2018	Change in DTV 2018/2019
Muttenz, Hard (BL)	129,306	6.3	129,505	6.9	-0.2%
Wuerenlos (AG)	128,277	6.5	128,670	6.7	-0.3%
Schoenbühl, Grauholz (BE)	110,386	6.2	111,297	6.5	-0.8%
Oftringen/Rothrist (AG)	109,064	9.3	108,751	10.2	0.3%
Bern, Forsthaus (BE)	108,829	4.8	108,557	5.1	0.3%
Bern, Felsenau Viaduct (BE)	107,780	6.0	107,270	6.4	0.5%
Renens (VD)	107,763	3.4	106,588	4.4	1.1%
Lucerne, Reussport tunnel (LU)	101,866	4.1	101,398	4.4	0.5%
Preverenges (VD)	98,409	3.6	98,451	3.6	0.0%
Winterthur-Thoess (ZH)	95,147	6.8	94,694	6.7	0.5%

Owing to road works, the measuring stations at the following locations have been temporarily deactivated: Wallisellen (A1, Zurich), Baden-Baregg tunnel (A1, Aargau), Neuenhof (A1, Aargau), Weiningen-Gubrist (A1, Zurich), Zurich-Affoltern bypass (A1, Zurich).

Map of traffic volume on the motorway network





The measuring stations indicate the average daily traffic volume, i. e. the mean figure calculated from all the 24-hour traffic volume figures measured for every day of the year.

- Roads in operation
- Roads under construction or in the planning stage
- Daily traffic volume and traffic increase (versus the previous year, in %)
- Daily traffic volume and traffic decrease (versus the previous year, in %)
- Daily traffic volume – no figures for previous year
- The new motorway/national road stretches adopted by the federal government from the cantons on 1 January 2020.

Figures shown in the map are in hundreds (e.g. 12 = 1,200)
Source: geodata © swisstopo



Approximately 46,500 more vehicles in Switzerland

2019 inventory of motor vehicles in Switzerland

	Motor vehicles (total) 2019	Motor vehicles (total) 2018	Increase versus 2018 (in percent)	Cars 2019	Petrol 2019	Diesel 2019	Hybrid drive 2019	Gas 2019
Total*	6,160,262	6,113,791	0.76%	4,623,952	3,099,442	1,382,645	98,399	11,207
Lake Geneva region	1,132,660	1,128,032	0.41%	857,656	595,846	234,641	20,337	1,761
Vaud	535,684	533,615	0.39%	416,941	286,738	115,614	10,780	1,262
Valais	293,414	290,611	0.96%	221,496	149,467	67,449	3,119	202
Geneva	303,562	303,806	-0.08%	219,219	159,641	51,578	6,438	297
Central plateau	1,388,722	1,377,074	0.85%	1,025,608	704,571	294,287	18,723	2,418
Bern	754,390	749,289	0.68%	537,981	361,354	162,507	9,541	1,486
Fribourg	244,983	241,614	1.39%	188,367	131,269	51,485	4,363	276
Solothurn	208,333	205,825	1.22%	158,801	110,263	44,799	2,372	406
Neuchâtel	122,957	122,897	0.05%	96,740	69,469	25,027	1,681	152
Jura	58,059	57,449	1.06%	43,719	32,216	10,469	766	98
Northwest Switzerland	800,189	792,767	0.94%	614,246	414,685	180,328	13,042	1,842
Basel-Stadt	85,723	86,100	-0.44%	65,644	42,815	20,509	1,508	355
Basel-Landschaft	195,220	193,540	0.87%	149,263	102,834	41,734	3,113	467
Aargau	519,246	513,127	1.19%	399,339	269,036	118,085	8,421	1,020
Zurich	959,484	953,698	0.61%	742,388	484,571	229,349	19,047	2,061
Eastern Switzerland	931,753	921,763	1.08%	683,353	443,291	222,765	11,203	1,387
Glarus	32,168	31,905	0.82%	23,773	15,274	7,963	346	69
Schaffhausen	63,313	62,625	1.10%	46,085	31,133	13,680	788	139
Appenzell Ausserrhoden	43,888	43,717	0.39%	32,008	21,272	9,925	529	47
Appenzell Innerrhoden	14,412	14,193	1.54%	9,832	6,464	3,139	148	5
St Gallen	379,922	375,953	1.06%	282,870	182,900	92,726	4,765	625
Grisons	160,267	158,820	0.91%	113,977	67,114	44,573	1,509	109
Thurgau	237,783	234,550	1.38%	174,808	119,134	50,759	3,118	393
Central Switzerland	642,609	634,056	1.35%	477,328	307,117	155,323	9,716	1,140
Lucerne	300,642	297,408	1.09%	218,026	143,771	68,143	4,155	456
Uri	27,907	27,531	1.37%	20,192	12,738	7,140	235	10
Schwyz	136,531	134,140	1.78%	102,839	68,704	31,111	1,997	179
Obwalden	32,398	32,025	1.16%	22,884	14,444	7,801	438	24
Nidwalden	36,059	35,838	0.62%	27,014	17,746	8,426	615	27
Zug	109,072	107,114	1.83%	86,373	49,714	32,702	2,276	444
Ticino	304,845	306,401	-0.51%	223,373	149,361	65,952	6,331	598

In 2019, the total number of motor vehicles in Switzerland increased by 46,471 (or 0.8 percent), to a total of 6,160,262, of which three quarters were private cars. The number of private cars increased by 21,264 (0.5 percent), to 4,623,952.

However, the number of private cars grew less strongly than the population for the third consecutive year, reflecting a slight fall in the number of cars per capita. In 2019, this number stood at 541 private cars per 1,000 residents in Switzerland

* Total; excluding mopeds and fast e-bikes ** Including other vehicles with an electric motor *** No cantonal statistics available
Source: Swiss Federal Statistical Office

Electric drive 2019	Others 2019	Passenger transport vehicles 2019	HGVs, articulated vehicles, semi-trailers 2019	Utility vehicles up to 3.5 tonnes 2019	Agricultural vehicles 2019	Industrial vehicles 2019	Motor-cycles 2019	Mopeds incl. electric bikes 2019	
								Total	of which e-bikes**
28,716	3,543	83,054	54,126	386,669	193,834	74,085	744,542	211,283	***
4,518	553	12,688	7,933	69,085	22,868	10,960	151,470	17,430	***
2,298	249	6,177	3,602	31,059	13,635	4,282	59,988	8,521	3,597
1,140	119	3,807	2,563	19,802	7,706	4,932	33,108	2,493	***
1,080	185	2,704	1,768	18,224	1,527	1,746	58,374	6,416	***
4,828	781	23,338	11,390	88,950	61,045	18,400	159,991	65,902	***
2,663	430	14,905	5,989	51,373	38,877	11,496	93,769	42,286	***
850	124	3,196	1,995	14,174	9,915	2,578	24,758	8,152	3,310
832	129	2,748	2,098	13,142	5,629	2,251	23,664	11,920	5,412
341	70	1,797	903	6,655	2,901	1,307	12,654	2,303	578
142	28	692	405	3,606	3,723	768	5,146	1,241	174
3,819	530	10,236	8,550	50,668	18,032	7,042	91,415	35,700	14,024
376	81	977	1,310	6,905	153	674	10,060	3,749	1,818
1,005	110	2,414	1,713	13,090	3,932	1,680	23,128	9,475	3,761
2,438	339	6,845	5,527	30,673	13,947	4,688	58,227	22,476	8,445
6,736	624	11,690	7,154	56,700	16,245	11,297	114,010	27,273	14,528
4,137	570	13,138	10,219	60,278	43,911	15,421	105,433	33,447	***
107	14	386	341	2,205	1,417	682	3,364	979	318
279	66	1,113	652	3,963	2,901	817	7,782	2,136	799
206	29	672	295	2,450	2,453	587	5,423	1,563	1,895
73	3	147	127	925	1,296	296	1,789	697	***
1,618	236	4,957	4,220	24,175	15,636	5,484	42,580	15,576	***
617	55	2,489	2,319	11,446	9,089	4,339	16,608	3,207	***
1,237	167	3,374	2,265	15,114	11,119	3,216	27,887	9,289	3,245
3,618	414	9,297	6,261	40,341	27,621	7,654	74,107	27,509	***
1,294	207	4,501	3,467	19,012	15,170	3,306	37,160	14,850	6,890
60	9	486	232	1,593	1,366	564	3,474	1,109	136
781	67	1,854	1,144	7,994	5,564	1,949	15,187	5,064	1,336
150	27	524	343	2,054	2,111	525	3,957	1,982	488
166	34	545	211	1,901	1,364	373	4,651	1,792	641
1,167	70	1,387	864	7,787	2,046	937	9,678	2,712	1,223
1,060	71	2,667	2,619	20,647	4,112	3,311	48,116	4,022	189

(543 in the previous year). The number of hybrid vehicles as a share of the total number of private cars rose in 2019 versus the previous year from 1.7 to 2.1 percent (98,399 vehicles), while the proportion of fully electric cars rose from 0.4 to 0.6 percent (28,716). Zug was the

first canton to pass the one percent mark with electric cars making up 1.4 percent of the total.

Number of new electric vehicles has more than doubled

New registration of motor cars

	2009	2015	2016	2017	2018	2019
Total	266,478	327,143	319,331	315,032	300,887	312,902
Type						
Limousine	184,590	166,465	155,175	153,638	141,329	128,686
Station wagon	72,948	154,122	156,642	153,883	153,168	177,713
Convertible	8,940	6,556	7,514	7,511	6,390	6,503
Engine capacity (cc)						
Below 1,000	10,817	27,397	27,072	30,582	36,200	37,491
1,000–1,399	67,525	75,995	72,221	69,161	55,858	44,972
1,400–1,799	65,009	69,118	64,217	55,473	56,291	60,295
1,800–1,999	72,452	95,673	98,247	104,003	100,208	116,761
2,000–2,499	19,588	23,076	22,660	19,062	14,899	10,109
2,500–2,999	20,562	22,472	22,966	23,847	23,387	22,635
3,000 and over	10,468	9,530	8,423	7,975	8,633	7,442
Not specified	57	3,882	3,525	4,929	5,411	13,197
Gear mechanism						
Manual*	198,694	224,729	210,466	196,941	179,098	190,415
Automatic	57,705	84,352	90,496	98,955	103,055	101,363
Others**	10,079	18,062	18,369	19,136	18,734	21,124
Fuel						
Petrol	182,174	185,469	178,666	183,637	188,847	192,430
Diesel	78,755	127,899	125,595	113,848	90,360	79,618
Petrol & battery	3,899	7,676	9,949	11,564	14,563	22,513
Diesel & battery	1	1,109	638	282	869	3,863
Electric drive	57	3,882	3,525	4,929	5,411	13,197
Gas	1,063	1,080	944	769	805	1,252
Others	529	28	14	3	32	29
Drive						
Front-wheel drive	178,430	177,723	162,519	151,015	142,069	141,757
Rear-wheel drive	18,685	17,466	15,756	14,504	11,593	10,912
4 × 4	69,363	131,954	141,056	149,513	147,225	160,233
Output (kilowatts)						
below 60	30,652	24,310	18,340	15,290	12,377	11,009
60.01–80	61,987	47,614	40,985	39,543	36,342	33,597
80.01–100	42,438	65,552	68,241	62,412	58,301	54,603
100.01–120	62,245	67,705	63,049	61,483	57,802	61,656
120.01–140	24,080	53,137	56,166	60,050	58,530	63,036
140.01–200	33,295	40,105	41,808	42,297	40,910	44,348
200 and over	11,766	28,682	30,737	33,950	36,621	44,648
Not specified	15	38	5	7	4	5
CO₂ emissions (g/km)						
0–50 g	64	5,523	5,522	7,211	7,579	18,165
51–100 g	1,376	30,405	32,720	25,696	20,431	13,028
101–150 g	85,112	182,648	198,195	194,190	170,331	161,563
151–200 g	110,535	74,468	67,140	74,275	85,431	99,530
201–250 g	27,662	9,605	7,347	6,351	9,946	15,882
251–300 g	6,229	2,156	2,791	2,567	3,344	3,365
301+ g	1,705	575	813	805	1,039	1,273
Unknown	33,795	21,763	4,803	3,937	2,786	96

* Includes dual clutch transmission and automatic transmission, ** For example, infinitely variable transmission
Source: Swiss Federal Statistical Office

Source: Swiss Federal Statistical Office

The number of newly registered petrol-fuelled vehicles rose in 2019 versus the previous year by 1.9 percent to 192,430, while the number of newly registered diesel vehicles fell by 11.9 percent to 79,618. Nevertheless, the number of diesel vehicles as a share of the total number of private cars remained stable in 2019 at 29.9 percent, while the proportion of petrol cars fell by 0.6 percent to 67.0 percent.

The number of newly registered hybrid vehicles increased by 70.9 percent to 26,376 and the number of newly registered fully electric vehicles (13,197) more than doubled compared with 2018 (+143.9 percent).

No. of new vehicles put into circulation (all types)

	2009	2019
Cars	266,478	312,902
Passenger transport vehicles	2,843	6,497
Goods vehicles	25,853	40,008
<i>Utility vehicles</i>	<i>21,415</i>	<i>35,480</i>
<i>HGVs</i>	<i>3,325</i>	<i>3,226</i>
<i>Articulated vehicles</i>	<i>6</i>	<i>6</i>
<i>Semi-trailers</i>	<i>1,107</i>	<i>1,296</i>
Agricultural vehicles	3,134	3,115
Industrial vehicles	3,604	4,700
Motorcycles	44,917	42,654
Trailers	18,258	19,913
Total vehicles	365,087	429,789
Total motor vehicles	346,829	409,876

Fatalities in road accidents in Switzerland below 200 for the first time

In 2019, for the first time ever the number of fatalities in accidents on Swiss roads fell below 200. In Switzerland, a total of 187 people lost their lives in road accidents and 3,639 were seriously injured. These figures support the efforts undertaken in recent years to enhance traffic safety. There was a total of 53,528 accidents (850 fewer than in the previous year).

Both figures – 187 deaths and 3,639 people seriously injured in road accidents – are the lowest since records on road accidents started: in 1940 for fatalities and in 1970 for serious injuries. The figures show a continuation of the long-term trend in the falling number of road accident victims. Thanks to various measures relating to the human factor, vehicles, data and infrastructure, Switzerland is now among the world leaders in traffic safety.

In 2019, 65 passengers in cars died in road accidents (14 fewer than in the previous year). 706 people were seriously injured (minus 91 versus 2018).

In addition, fewer pedestrians lost their lives in traffic accidents: 37 in 2019 compared with 43 in 2018, while 537 people were seriously injured in 2018 compared with 524 in 2019. By contrast, there were 15 fatalities in accidents on pedestrian crossings (5 more than in the previous year).

For the first time, FEDRO's statistics now keep separate records for accidents involving devices similar to vehicles (skate boards, roller blades, scooters, kickboards, etc.). In 2019, 39 people were seriously injured in accidents involving these devices (2018: 40). There were no fatalities

in 2019 (5 in 2018). The age group with the highest number of individuals seriously injured or killed in accidents involving personal mobility vehicles were children between the ages of 2 and 13 (21 in 2019; 30 in 2018).

In 2019, 16 cyclists were killed in road accidents (11 fewer than in the previous year). 802 cyclists were seriously injured (877 in 2018).

Increase in accidents involving e-bikes

As in previous years, there was an increase in the number of serious injuries among e-bikers: 11 people were killed (2018: 12) and 355 people were seriously injured (2018: 309). While the number of people seriously injured in accidents involving high-speed e-bikes declined from 85 to 77 last year, the number of people seriously injured in accidents involving standard e-bikes increased from 236 to 289. In approximately three-quarters of cases, the e-bikers themselves were primarily responsible for the accident, most of them being skid-related or not involving other road users.

www.accident-statistics.ch

All road accidents

Year	Total no. of accidents
2011	54,269
2012	54,171
2013	53,052
2014	51,756
2015	53,235
2016	55,053
2017	56,112
2018	54,378
2019	53,528

Accidents resulting in fatalities/injuries

	2019	2018
Fatalities	179	228
Serious injuries	3,454	3,640
<i>life-threatening injuries</i>	173	148
<i>severe injuries</i>	3,281	3,492
Minor injuries	14,128	14,165
Total	17,761	18,033

Serious injuries and fatalities

	Serious injuries 2019	Fatalities 2019	Serious injuries 2018	Fatalities 2018
By form of transport				
Cars	706	65	797	79
Passenger transport vehicles	35	1	43	3
Goods transport vehicles	54	10	45	4
Motorcycles	990	30	1,068	42
Motor scooters	59	5	71	5
Electric bikes	355	11	309	12
Bicycles	802	16	877	27
Pedestrians	524	37	537	43
<i>on pedestrian crossings</i>	234	15	257	10
<i>elsewhere</i>	290	22	280	33
Devices similar to vehicles	39	0	40	5
Others	75	12	86	13
Total	3,639	187	3,873	233
by assumed main cause				
Influence of alcohol	387	21	332	24
Speeding	409	30	415	37
Inattention/distraction	469	18	528	19
by type of road				
Motorways and expressways	204	26	235	23

Number of confiscated licences stable

In 2019, 79,922 drivers had to surrender their driving licence, showing a slight decline of 0.2 percent versus 2018. As before, the main reasons for confiscation of Swiss driving or learner's licences were speeding and driving under the influence of alcohol.

According to FEDRO's statistics on administrative measures (ADMAS), the number of confiscations in Switzerland in 2019 amounted to 79,922, thus falling just below the 80,000 mark. In 27,407 cases, licences were confiscated for speeding (minus 0.3 percent versus 2018) and in 13,128 cases for driving under the influence of alcohol (plus 0.3 percent versus 2018). In 7,886 cases, licences were confiscated for endangering others through careless driving (plus 1.6 percent versus 2018). This increase follows several years of steady declines.

In 2019, 22,329 foreign driving licences were confiscated, an increase of 13.1 percent versus 2018.

Almost 6 million people with a driving licence

As at 31 December 2019, 5,981,596 people in Switzerland had a licence to drive a private car (including both learner's and permanent licences). This number shows a 1 percent increase versus 2018. 54 percent of licence holders were men.

Administrative measures

	2019	2018	+/- (in %)
Measures imposed against drivers			
Warnings to holders of a learner's licence	309	298	3.7
Warnings to holders of a driver's licence	48,068	47,403	1.4
Withdrawal of learner's licence	3,516	3,340	5.3
Withdrawal of driver's licence	72,744	73,063	-0.4
<i>Of which withdrawal of provisional licence</i>	5,998	6,088	-1.5
Withdrawal of other licences	3,662	3,674	-0.3
Cancellation of provisional driver's licence	1,217	1,304	-6.7
Refusal of learner's or driver's licence	3,066	3,050	0.5
Refusal to accept a foreign driver's licence	22,329	19,747	13.1
Instruction in road use	1,715	1,542	11.2
New driving test	3,298	3,366	-2.0
Examination by specialised psychologists	4,418	4,516	-2.2
Special requirements	6,726	7,264	-7.4

More people failing driving tests

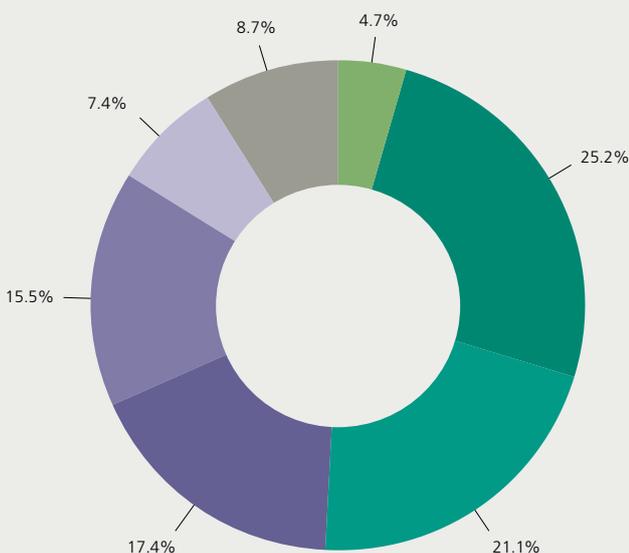
One of the reasons for the denial or confiscation of learner's licences is the sharp increase (plus 40 percent) in applicants who failed the driving tests: from 205 in 2018 to 286 in 2019. FEDRO is following this development closely and is analysing the reasons.

Administrative measures

	2019	+/- (*)
Reasons for withdrawal		
Speeding offences	27,407	-0.3
Drink driving	13,128	+0.3
Inattention	7,886	+1.6
Failure to give way	4,187	-0.9
Failure to observe traffic signals	1,218	-11.9
Unlawful overtaking	1,647	-1.8
Other driving errors	4,560	-6.7
Alcohol addiction	1,435	-12.2
Influence of drugs	4,762	+2.2
Drug addiction	2,472	-1.7
Sickness or infirmity	5,464	-4.4
Other reasons	20,133	0.0
Duration of withdrawal		
1 month	31,700	+1.9
2 months	1,293	-3.0
3 months	15,728	-0.8
4-6 months	6,908	+1.4
7-12 months	2,216	-1.6
More than 12 months	1,002	+1.8
Indefinite period	21,064	-3.0
Permanent withdrawal	11	-42.1

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	2019	+/- (*)
Age of persons affected		
Under 20	3,784	+2.5
20 to 24	9,870	-4.2
25 to 29	10,217	-1.3
30 to 34	8,860	-2.8
35 to 39	8,027	+5.7
40 to 49	13,906	+3.7
50 to 59	12,391	+0.7
60 to 69	5,900	+0.7
70 and over	6,967	-6.4
Reasons for withdrawal or refusal of learner's/driver's licence		
Learner driving unaccompanied	398	-4.1
Driving error	2,166	+1.4
Drink driving	703	+12.1
Driving without a licence	2,531	-1.9
Failure to pass driving test	286	+39.5
Driving despite withdrawal of licence	153	-8.9
Theft	349	-9.6
Sickness or infirmity	131	+8.3
Other reasons	1,876	+4.3
Reasons for warnings		
Speeding	42,709	+3.7
Drink driving (> = 0.050 to 0.079%)	4,818	+0.8
Inattention	3,185	-3.0
Failure to give way	1,910	-6.0
Driving an unroadworthy vehicle	2,451	15.9
Failure to observe traffic signals	961	-6.2
Unlawful overtaking	311	+4.4
Other reasons	9,046	+21.2



* Change in percent versus 2018

Withdrawn driving licences by age group

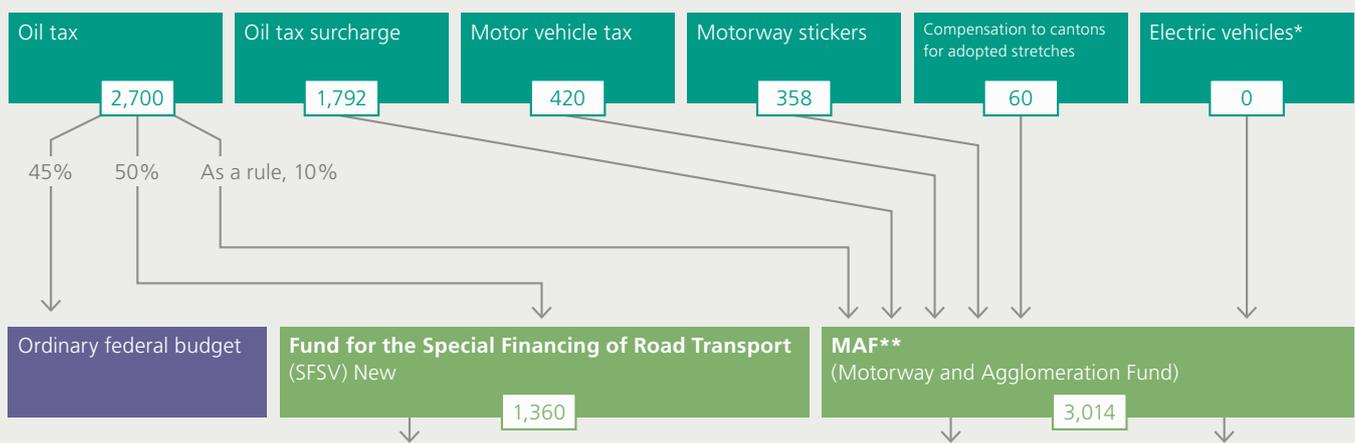
- Under 20
- 20 to 29
- 30 to 39
- 40 to 49
- 50 to 59
- 60 to 69
- 70 and over

Finance flows for the two road transport funds

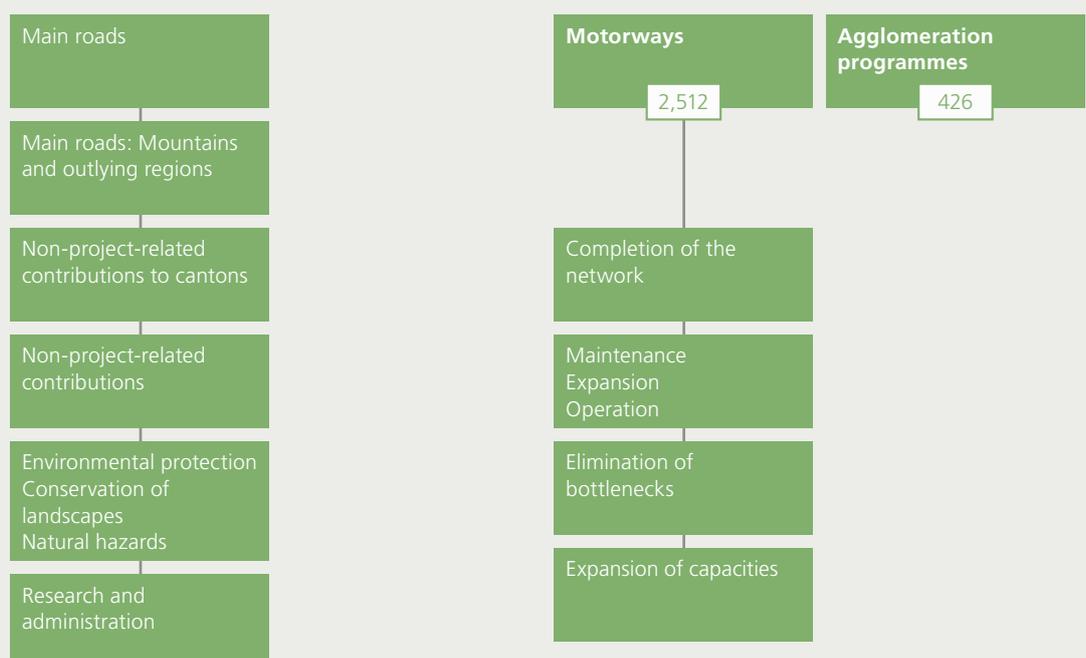
The Motorway and Agglomeration Traffic Fund finances the motorways and major projects in the agglomerations. The Fund for the Special Financing of Road Transport primarily supports cantonal road transport infrastructure.

Flows of funds in 2020 (in million Swiss francs) in accordance with 2020 budget

Revenue



Expenditure



* Date of introduction still open
 ** Including a portion of the reserves from the Special Fund for the Financing of Road Transport, plus various other sources of revenue

Figures taken from the federal budget 2020. Amounts in the totals may differ due to rounding up or down of the individual figures.

Expenditure for the motorways/national roads encompasses operation, maintenance, expansion, elimination of bottlenecks, major projects and completion of the network. All this expenditure is financed from the Motorway and Agglomeration Traffic Fund, which entered into effect on 1 January 2018. It increases transparency and simplifies the short- and medium-term management of credit facilities.

Parliament decides how much may be withdrawn from the fund each year, which is not governed by the federal debt brake mechanism. The balance of any approved funding that is not utilised remains in the fund. This increases liquidity, and the funds remain available for use at a later date. The Motorway and Agglomeration Traffic Fund enables greater flexibility and transparency and increases the long-term planning and implementation certainty for FEDRO's large-scale projects.

Composition of deposits:

- Oil tax surcharge (100%)
- Motorway sticker (100%)
- Vehicle tax (100%)
- Oil tax (as a rule, 10%)
- Levy on electric vehicles (100% – date of introduction as yet unspecified)
- Compensation from the cantons for the transfer of cantonal roads to the federal government as per the new federal resolution

Special Fund for the Financing of Road Transport: all transfer payments from a single source

This fund is the single source for all transfer payments in the road transport sector at the federal level, as well as for the administrative and research costs of FEDRO. It is financed from half the revenue from the oil tax and, where necessary, from vehicle tax revenue. It is managed via the ordinary federal budget.

Deposits into the Motorway and Agglomeration Traffic Fund (in million Swiss francs)

	2018 C*	2019 C*	2020 B**
Oil tax surcharge	1,792	1,768	1,792
Vehicle tax	398	407	420
Motorway levy	349	356	358
CO ₂ reduction (passenger cars)	11	31	0
Oil tax (10%)	135	133	270
Temporary deposit from reserve (Special Fund for the Financing of Road Transport)	475	183	148
Revenue from third-party funding	36	46	29
Management income	10	9	9
Deposit from Special Fund for the Financing of Road Transport (contribution to cantons for transfer of roads)	0	0	60
Reductions of deposits into traffic fund as of 2020			-72
Total Deposits	3,206	2,933	3,014

Withdrawals from the Infrastructure Fund (from the Motorway and Agglomeration Traffic Fund) (in million Swiss francs)

	2018 C*	2019 C*	2020 B**
Operation of motorways/national roads	362	371	432
Expansion and maintenance of motorways/national roads	1,501	1,577	1,670
Completion of motorway/national roads network	190	140	190
Elimination of bottlenecks	168	150	100
Capacity expansion and other motorway/national road projects	–	–	120
Contributions for main roads in mountainous and outlying regions	150	180	427
Total withdrawals	2,371	2,419	2,939

* Charged ** Budgeted

Due to rounded up or down figures, minor differences may arise in the totals.

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